To the Graduate Council:

I am submitting herewith a dissertation written by Robert Culp entitled "Per Mile Emissions Taxes and Lump Sum Emissions Taxes: A Comparative Study using a Mathematical Approach to Demand Estimation." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Economics.

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Per Mile Emissions Taxes and Lump Sum Emission Taxes:

A Comparative Study using a Mathematical Approach to Demand Estimation

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Robert Paul Culp

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Abstract

The primary purpose of this study was to compare two common emissions based taxes by implementing a mathematical approach to consumer demand estimation for new vehicles. The model developed allows the researcher to derive demand from observed firm output and market prices using assumptions about firm and consumer behavior, and market structure. The advantage of this revealed demand approach is that it does not require the specification of the consumer's utility function or any firm's production function. In addition, the own price and cross price elasticities of vehicle demand are determined without statistical regression.

The model developed in this paper assumes Cournot-Nash behavior and divides the automobile market into five homogenous segments. Then, a global optimization program is used to mathematically determine the range of values the coefficients of demand must take in each segment to satisfy market equilibrium. These coefficients are then used to estimate own and cross price elasticities of demand and construct demand equations.

From these demands, simulations were performed to examine the comparative impact on social welfare of both the per mile emission tax (PMET) and the lump sum emission tax (LSET) in the automotive and travel markets. In the simulations, a global optimization program was used to allow market conditions to change while holding constant the level of pollution reduction and satisfying the other constraints of the model.

The simulation, performed without discounting future gains from trade, found that in five of the thirty-two quarters examined, and regardless of market conditions, that the LSET produced more gains from trade. In the remaining quarters and in the other simulations performed, the outcomes varied depending upon the cross price elasticity of vehicle demand and upon the sensitivity of consumers to vehicle operating cost.

When vehicle prices are not sensitive to vehicle operating costs, and consumers view vehicles in different segments as good substitutes, the simulations indicate that the PMET reduces pollution by the desired amount with more gains from trade than the LSET. On the other hand, when vehicle prices are sensitive to vehicle operating costs, and vehicles in different segments are not very close substitutes, the LSET reduces pollution by the desired amount with more gains from trade than the PMET.

The simulations also show that an approximately 20 percent reduction in emissions from new vehicles is achieved by the LSET with a median tax rate of $155.74 per gram of average CO emissions per mile. Consequently, a vehicle that emits an average of two grams of CO per mile would pay a one-time fee of $311.48. The median tax rate required by the PMET is $0.00666 per gram per mile. Accordingly, a vehicle that emits two grams of CO per mile on average would pay $0.0103 per mile or $1332.46 for every 100,000 miles traveled. The difference between the two tax rates, required to achieve the same pollution reduction goal, is likely the result of consumers highly discounting the PMET's future payments.

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Chapter 1 Introduction

The purpose of this paper is to examine the welfare impact of two market-oriented emissions taxes, the lump sum emissions tax (LSET) and the per mile emissions tax (PMET) using a new mathematical approach to demand estimation.

Introduction

Urban air pollution is divided by source into two main categories: mobile, which consists primarily of motor vehicles, and non-mobile (fixed) sources such as factory or utility smokestacks. To reduce pollution from fixed sources, the government effectively uses not only fixed standards, but also market-oriented policies. Market-oriented policies lower the cost of pollution reduction because firms that can decrease pollution output at the lowest cost reduce pollution more than those firms where the cost is higher. Market-oriented policies on fixed source emissions sites, such as marketable trade permits, bubble zones, and emissions taxes, have allowed the government to achieve greater pollution reduction at a lower cost from these fixed source sites than would be possible with fixed standards alone.

To reduce pollution from mobile sources, the regulators have tried two main strategies. The first is to reduce pollution from new vehicles by mandating a certain level of emissions performance for new vehicles. The second is to require testing of current

vehicles to ensure that they are emitting no more than a certain level of emissions (Harrington, 1994). The government has not tried market-oriented solutions to the mobile pollution problem, with the exception of a few experimental programs. Instead they have relied on emissions standards and testing, and these programs have not reduced pollution levels to the Environmental Protection Agency's required levels. In fact, pollution levels from automobiles have been rising in urban areas due to the increased usage of automobiles and greater population concentrations (Krupnick, 1991, EPA, 1993).

Economists, realizing the potential advantages of a market-oriented system, have proposed many different approaches to reduce pollution. These include marketable trade permits, flexible standards such as Corporate Average Standard Emissions (CASE), voluntary scrapping of high emission vehicles, tradable permits, congestion taxes, and emissions taxes. While each of these has advantages and disadvantages, this dissertation will examine the most common form of emissions tax that has been proposed; the per mile emissions tax (PMET), and compare its effectiveness in reducing emissions to a lump sum emissions tax (LSET). First, a brief explanation about how each type of emissions tax seeks to reduce emissions.

Per Mile Emissions Tax (PMET)

The PMET is structured to have the consumers pay a tax based on the amount of miles traveled during the prior year and the emissions characteristics of the consumer's vehicle.

A consumer who drives a given number of miles with a high emission vehicle will pay more than a consumer who drives the same number of miles with a lower emission vehicle. There are three main objectives of a PMET:

Objective 1: Cause consumers with high emission vehicles who live in high pollution areas to drive fewer miles.

Objective 2: Cause consumers to prefer lower emission vehicles due to the high taxes associated with operating a high emission vehicle.

Objective 3: Cause auto manufacturers to produce lower emission vehicles, in response to consumer demands, at such prices and quantities that overall the level of emissions is reduced.

Objective 1 is satisfied as long as the decision on vehicle miles traveled for consumers in areas where pollution reduction is desired is sensitive to travel cost. Stated another way, will an increase in the cost of travel due to the PMET cause drivers of high emission vehicles to decide not to travel? If the answer is 'yes', then pollution reduction will occur.

Objective 2 will be satisfied if the consumer's choice of which new vehicle to purchase is significantly affected by how much it costs to travel in the vehicle.

Objective 3 will be satisfied if objective 2 is satisfied, and if the cost of implementing and producing the new lower emission vehicles is not too high. Also, the price of the low emission vehicles must be low enough so that consumers do not hold on to their older, higher emissions vehicles.

Pollution reduction will occur under the PMET in the following instances. If objective 1 is satisfied, pollution reduction will occur regardless of whether or not the other two objectives are satisfied. Pollution reduction will also occur if both objectives 2 and 3 are satisfied, independent of objective 1.

Lump Sum Emissions Tax (LSET)

The LSET is a tax that is paid at the time of vehicle purchase based upon the expected lifetime emissions of that particular vehicle. For example, suppose the tax rate for carbon monoxide is set at one cent per every 10 grams of carbon monoxide. Also suppose that a particular vehicle emits 5g of Carbon monoxide per mile, and the vehicle is expected to travel 10,000 miles each year and have a useful lifetime of 10 years. The tax on this vehicle is $500, which is the tax rate times the total amount of carbon monoxide emissions expected over the lifetime of the vehicle. Therefore, if the manufacturer cuts emissions to only 2.5g of carbon per mile, the consumer would only have to pay $250.

The objective of the LSET is solely to satisfy PMET objectives 2 and 3. Unlike the PMET, the LSET will not change marginal travel costs because the consumer only pays a lump sum tax at the time of original purchase. Consequently, consumer travel behavior will not be impacted. Therefore, the only way emissions will be reduced under the LSET is if auto manufacturers decide to produce cleaner vehicles in response to consumer demands.

There have been several prior studies of market-oriented solutions to the pollution problem. Espey (1997) and Harrington et al. (1995) examine the reaction to PMETs by auto manufacturers. They conclude automakers would increase per mile gasoline efficiency as a lower cost method to reduce per mile emissions; since as a vehicle increases its fuel efficiency, it will emit less pollution per mile, at least when under test conditions. But, they argue emissions would not be reduced during actual driving conditions because actual driving conditions are varied. In particular, some vehicles may spend long periods idling in traffic or may experience stop-and-go driving conditions where the driver repeatedly suddenly accelerates or decelerates. These conditions reduce gasoline-burning efficiency and thus increase emissions. Because a vehicle that is used more in difficult driving conditions burns more gasoline, the emissions caused by burning a gallon of gasoline is more important than per mile emissions. Therefore, both Espey and Harrington advocate a tax based on emissions per gallon of gasoline. They disagree, however, on how such a tax should be collected.

Harrington argues that an emissions tax at the time of annual vehicle registration is the best way to enforce the tax, while Espey's view is that a gasoline tax is the most appropriate method of enforcement. Espey's view is opposed by Khazzoom (1991) who argues that people resist giving up travel, particularly localized travel where emissions reductions are most needed. This results in a low long run price elasticity of travel demand. Studies of the elasticity of travel demand indicate elasticities with respect to fuel prices are statistically significant, but relatively small. Hensher et al. (1990) found travel elasticity in the -.14 to -.34 range, Rouwendal and Vries (1999) found values from 0 to -.65 depending on automobile model, Hensher reported elasticities in the -.06 to -.39 range. However, none of these studies estimated the elasticity of localized travel only, and so it is not known whether or not Khazzoom's claim of a small elasticity of localized travel demand is accurate.

Espey's argument for a gasoline tax is, however, supported by Heninger et al. (1998) and partially supported by Innes (1996). Innes believes that a gasoline tax by itself is too blunt an instrument because it fails to reward consumers for choosing lower emission vehicles over equivalent models offering the same fuel economy, but higher emission characteristics. Innes constructs a theoretical utility model and finds that a combination of gasoline taxes and differentiated taxes on new automobiles, based upon projected vehicle emissions, produces the most effective results. This latter tax on vehicles based upon

projected emissions is referred to in this paper as a lump sum emissions tax (LSET). The effectiveness of this LSET at reducing emissions will be compared to its counterpart the PMET.

Estimating Demand from Firm Behavior

In this paper quarterly new vehicle sales were examined from the 32 quarters between 1989 and 1996. In each quarter new vehicle demand was estimated using a new approach to demand estimation. This approach determines elasticities of demand by observing each new vehicle's segment price and each firm's output decisions. Given certain profit maximizing behavioral and manufacturing assumptions, these decisions will reveal what demand must have been in order to explain firm behavior in each quarter.

In particular, the auto market will be assumed to consist of five homogenous vehicle segments: small sedan, large sedan, SUV, pickups and vans, and luxury vehicles. The market will also consist of four non-cooperative profit maximizing firms: Ford, General Motors, Chrysler, and the remaining producers grouped as one firm. Each firm will be assumed to behave in the Cournot-Nash framework, and vehicles are placed into their segments based upon their use and on available production facilities. This market structure is explained in more detail in Chapter 3. For now it is sufficient to say that the profit maximizing first order conditions (FOC) generated by this framework will be examined to determine the range of elasticities that allow, given other known

information, the first order conditions specified by the Cournot-Nash framework to be satisfied.

Estimating demand elasticities requires only limited information within this theoretical market structure: vehicle sales price, quantity sold by each firm, and the marginal cost of the last vehicle sold for each firm. While the first two are easily obtained, the last is more troublesome. Information regarding vehicle production costs are very closely held and marginal cost data is even harder to obtain. However, gross profit data was available and combined with a few manufacturing assumptions it allows for a limited range of values for marginal cost to be constructed.

Using the observed market data and certain assumptions, a range of own and cross price elasticities that satisfy the first order conditions can be found. The following assumptions are made to narrow the range of elasticities that satisfy the first order conditions:

Demand is symmetric. This is a common assumption that assumes if a price change of X in market 1 causes output to change by Y in market 2, then a price change of X in market 2 will cause output to change by Y in market 1. This occurs as long as there is no income effect which is reasonable in the automobile industry given the infrequency of vehicle purchases.

Own price effects are stronger than cross price effects. This simply means that vehicle price is more strongly influenced by changes in production within the same segment than by changes in a different segment.

All vehicles are substitutes for one another, even if distant. In particular, vehicle prices are assumed to decrease in every segment by at least one dollar if output in any segment was to increase by ten million units within one quarter. This assumption seems likely given that total U.S. auto sales in all segments have never exceeded 18 million units.

Per vehicle profit and cost of manufacturing are consistent with known information. While little is known about vehicle production and profit, some vehicle segments are known to have relatively higher or lower production costs or gross profit. Accordingly, restrictions on these values are made so they are consistent with this information.

Lower production cost firms will produce more compared to higher cost producers. This is an implication of the Cournot-Nash framework.

Production costs in each segment are independent of production in other segments. In other words, if a firm increases production of vehicles in one segment, the cost of producing vehicles in all other segments is unchanged. This assumption seems reasonable

given that capacity constraints tend to occur in vehicle assembly and not in their shared parts supplies. Therefore, increasing the production of vehicles in one segment will impact the cost of assembly for vehicles in that segment only.

To determine the range of elasticities that satisfy the first order conditions and the restrictions above, a global optimization program was used and certain non-binding restrictions were imposed to improve the speed of the optimization. In the actual optimization, elasticities are not used since the first order conditions are in inverse demand form, but it will be shown how the coefficients from the first order conditions can be easily converted into own and cross price elasticity form. These elasticity results will then be compared to other researchers' work.

The coefficients will also be used to construct a system of demand equations for each quarter. The demand equations will be compared from quarter to quarter to estimate the magnitude of shifts in demand. Then the factors that likely caused the demand shifts will be examined through regression to determine what influence each factor has on the demand shifts. Of particular interest is the impact of vehicle operating costs on vehicle demand. This should provide a good indication of how demand will change in response to the PMET, which also raises vehicle-operating costs. To ensure the consistency of these results, the results will be compared to other researchers' work.

Once a system of demand equations has been found for each quarter and subsequently identifying the amount of demand shift caused by changes in vehicle operating costs, the next step is to determine the instrumental impact of each tax. This means determining how the PMET and LSET change each firm's first order conditions. These first order conditions will change in response to each tax given each firm compares the benefits of pollution reduction to the costs of pollution reduction.

Therefore, before the new first order conditions can be derived, a function conforming to economic principles needs to be constructed that relates per vehicle expenditures on abatement equipment with the resulting per vehicle level of emissions. Since vehicles in different segments have different physical characteristics, a different abatement function will be created for each segment. Each abatement function will reflect the differing expenditures needed to achieve the same emissions per mile.

Given these abatement functions, the profit maximizing level of abatement under each tax will be determined and the first order conditions adjusted to account for the addition of each tax. Under the LSET, the changes in the first order conditions only reflect changes caused by increased production costs and the LSET. Under the PMET, the changes in the first order conditions reflect not only increased production costs, but since per mile operating costs increase and accordingly, the desire to travel will change, the

degree to which the PMET changes demand in both the automotive and travel markets will be calculated. The change in travel demand is determined by applying prior research.

Once each firm's new first order conditions are specified, and it is estimated how demand for new vehicles and travel demand will change, the new equilibrium outcomes under each tax can be calculated. The new equilibrium in each quarter are restricted to the range of elasticity values that satisfy the original first order conditions.

After the new market equilibrium is found, the impact of each tax on social welfare can be estimated, and the gains from trade in the travel and automotive markets can be analyzed. While it might be preferable to make a comparison of the welfare losses rather than the total gains from trade, it was computationally necessary to calculate the total gains rather than welfare losses. The difference between the total gains from trade under each tax is equivalent to the difference between the welfare losses under each tax, since any bias in the total gains from trade is shared equally and thus eliminated when the difference is taken.

Estimates of consumer welfare in each market will be calculated by linearizing the elasticity estimates and calculating simple Walrasian consumer surpluses. Producer welfare in the automotive market will be estimated by taking the difference between market price and the value given by the estimated marginal cost for each unit sold. Since

the elasticity of supply in the travel sector is assumed to be perfectly inelastic, producer surplus in the travel market will be assumed to be negligible.

In addition to consumer and producer welfare, the government also gains tax revenue from each tax. One might question whether this revenue should be included in the estimation of social welfare. In this model, the level of pollution reduction achieved under each tax is set to the same level by the optimization program; therefore, it is only social welfare that is different. Thus, the possible beneficial nature of the tax revenue can not be ignored. Since any tax revenue collected is revenue that could be redistributed to generate at least an equal amount of consumer surplus, tax revenue is included as part of the gains from trade for either tax.

Once the method of estimating social welfare has been defined, the value of each tax can be adjusted by computational computer estimation until the new equilibrium achieves the desired level of pollution reduction

Method of Calculating Pollution Reduction

Pollution reduction is not simply the reduction in per unit emissions. It is the net of the reduction in pollution achieved taking into account both the decrease in pollution from the reduction in vehicle miles traveled and the increase in pollution caused by consumers postponing new vehicle purchases and holding on to older higher emission vehicles.

Therefore, in each quarter a simulation will be performed that will adjust each tax until both taxes achieve the desired level of pollution reduction at the new market equilibrium given the same market conditions. Because each tax will yield different social welfare results depending on market conditions, certain market conditions will also be allowed to adjust so that the market conditions most favorable to the PMET and LSET can be found.

The objective is to determine which market conditions favor each tax and to reach overall conclusions about the effectiveness of each tax. The desired result would be for one tax, regardless of market conditions, to achieve the same level of pollution reduction as the other tax with consistently higher gains from trade. This would indicate that one tax is superior and should be chosen by policy makers.

Chapter 2 The Model

To determine whether the PMET or the LSET is more effective at reducing pollution, a simulation will be performed. The effect of the PMET and LSET on demand and each firm's response to this change in demand will be determined. First, a demand system must be estimated.

Properties Desired in a Demand System

The first step in the simulation is to determine the demand for each automobile type. The desired system of demands should have the following properties:

i. Allow for Cournot-Nash behavior

ii. Estimate the elasticities of the true demand relation

iii. Account for the aggregation problem

The Cournot-Nash framework is desirable because it can model supply behavior regardless of the number of firms in the market. Furthermore, the Cournot-Nash framework fits well with economic theory and seems to mimic firm behavior. In fact, Berndt, Friedlaender, and Chaing (1990) found that the automobile market behavior could be explained by either Cournot-Nash or by the market leader model, but Ramrattan (1991) found that the U.S. automobile market no longer followed a market leader model after the mid to late 1980s. In addition, Langlois (1996) found that Japanese firms are

short run profit maximizers, thus rejecting the conjectural variations model that asserts each firm bases its pricing decisions on how the other firms in the industry will react to those pricing changes. For these reasons, the Cournot-Nash model has been used extensively by economists to model the automobile industry. Among those who have modeled the automobile industry using Cournot-Nash behavior are: Goldberg (1995); Berry, Levinsohn, Pakes (1995); Fershtman (1999); and Arguea (1994).

Estimating the elasticities of the true demand function is important because these estimates will affect the accuracy of any simulation that uses them to approximate demand. When regressions are used to estimate demand, it is important that these regressions account for changes in supply. Failing to account for supply means the model can mistakenly attribute the resulting equilibrium price to changes in demand when in fact supply had changed. This can result in an inaccurate estimation of the elasticites of demand because market price is not determined by demand alone but simultaneously determined by supply and demand. This is called the 'problem of simultaneity' and is well discussed in economic research (Greene, 2000). To avoid this misspecification of the demand elasticities, economists try to account for the conjoined effects of supply and demand. One method commonly used with regression methods is to simultaneously determine demand and supply. Any regression model of demand that fails to include supply in its estimate of demands may simply be estimating a path of equilibrium and not the true demand relations, thus biasing the elasticity estimates.

Another threat to estimation accuracy is aggregation. Accounting for the aggregation problem is also important because failing to do so can bias estimates when using time series data where incomes and demographics are constantly changing. Many models have addressed this problem; most are variants of the linear expenditure system which normalizes the data by evaluating relative expenditures rather than prices alone.

Therefore, the best model for demand allows for Cournot-Nash behavior, estimates the true demand relations, and addresses the aggregation problem. A review of the literature, summarized below, revealed only one model framework that met these criteria: the revealed demand method of demand estimation.

Review of Methods Used to Estimate Demand

One common method for estimating demand is to use the discrete choice model to develop an estimate of price elasticities and then use these price elasticities to generate a linear approximation of demand. Jorgensen (1990), McCarthy (1991), Verboven (1996), and Levinsohn (1988) all use this demand only approach. Some then use this demand combined with a modeled supply. The supply estimate is determined by imposing a predetermined market structure, such as competitive or Cournot-Nash, or by a linear programming profit maximizing problem assuming some functional form of cost equations. These models fail to estimate the true demand. While these approaches may be

appropriate for the topic under study in their research--usually the value placed by consumers on particular vehicle attributes--they are not appropriate for an analysis of the entire market.

While estimating a system of demands simultaneously with supply using regression analysis produces accurate estimates of the true demand relations, it requires identifying an instrument variable and establishing an equilibrium condition. An instrument variable is a variable that acts as a shift indicator for one of the curves. The instrument variable must be associated with only one of the curves so that each individual curve may be identified. Finding a reliable instrument variable can be difficult since the instrument variable should, ideally, only be dependent upon only one of the curves, but factors that change demand usually shift supply as well. For example, interest rates not only cause consumer demand to change but may also reduce the willingness of the producer to produce since high interest rates also reduce the desire of a firm to hold and obtain capital. To avoid this problem, researchers have come to depend on mean independent variables. Mean independent variables are instruments that may impact both demand and supply but change one more than the other on average, hence the term mean independent (Berry, et al. 1995).

Even if the researcher is able to determine an instrument variable, the researcher must also establish an equilibrium condition or set of conditions that must be satisfied for

equilibrium to occur. This can be very complicated in an imperfect oligopolistic market such as the automobile market.

Berry, Levinsohn, and Pakes (1995) establish a new general approach to determining market demand coefficients by using a set of first order conditions that must be satisfied for an equilibrium to occur in the Cournot-Nash framework. Then they solve for marginal cost in the marginal revenue equals marginal cost conditions in terms of demand characteristics only. This approach is referred to in this paper as a Revealed Demand System (RDS) because it assumes firms behave in a certain manner and from this assumption the coefficients of demand are revealed.

Berry, et al. apply their general approach in the following manner. They first assume a utility function for each consumer of the same particular functional form, for example Cobb-Douglas, so that these individual consumer preferences can be aggregated into a market demand. The utility function depends on certain vehicle characteristics: air conditioning, miles per dollar, size, and horsepower to weight. Before estimation, the utility functions are aggregated to generate a market demand function. Then a linear cost function with respect to those characteristics is assumed and combined with the market demand function to find the Cournot-Nash first order conditions for equilibrium in terms of vehicle characteristics only. These first order conditions yield a system of equations in terms of vehicle characteristics, quantity produced by each firm, and market prices. It is

this system of equations that they "take to the data" for regression estimation of the unknown coefficients of vehicle characteristics

Goldberg (1995) and Arguea and Hsiao (1993) each use Berry, Levinsohn and Pakes' approach. Goldberg extends the model by using a nested logit formulation rather than simple logit estimation. Arguea and Hsiao add the condition that certain vehicle characteristics are subject to competitive arbitrage. Fershtman et al. (1999) extends the model. Instead of solving for marginal cost and then regressing the results, he derives input demand functions and solves them in terms of demand characteristics only. He then proceeds in the Berry, Levinsohn, and Pakes framework to find coefficients on vehicle characteristics.

This dissertation will use a technique similar to Berry, Levinsohn, and Pakes (BLP). Firms will be assumed to follow the Cournot-Nash assumptions and each firm's first order condition will be used to reveal consumer demand, however, that is where the similarities end. The technique applied in this dissertation simply examines each firm's first order conditions and observes the pricing and output decisions of each firm. These pricing and output decisions will be shown to reveal what consumer demand must have been in order to explain each firm's behavior.

As indicated in Chapter 1, this method assumes that vehicles within each segment are homogenous. While it loses the ability to distinguish between each vehicle's differing characteristics within each segment, it has the advantage that it does not require the assumption of a specific utility function or production function. Further, since Fairen (1996) found that vehicle characteristics tend to converge toward a common set of features, the assumption that vehicle characteristics are the same within a segment is not unreasonable.

The method is analogous to the revealed preference method used in utility theory. Just as consumer behavior, given known constraints, reveals the consumer's underlying utility function; a firm's behavior, given certain assumptions, can reveal important aspects of consumer demand.

A Revealed Demand Approach to Estimating Demand Systems

The revealed demand approach determines the elasticites of demand at equilibrium by assuming firms act in a certain manner. In this case, firms are assumed to be profit maximizers in the Cournot-Nash framework. Accordingly, each firm seeks to maximize profits assuming that changes in their output will not change the output decisions of competing firms. However, they do take into account how changes in their own output will impact market price. Since one of the manufacturing assumptions made above is that

the marginal cost of producing each good is independent of the production of the other goods, each firm's objective function is:

Max profits: $\prod$ = P Q – TC where P is the vector of prices in each automotive segment, Q is the vector of quantities by each firm in each segment and TC is the total cost of all production.

Therefore, assuming the cost of production in one market segment is independent of the quantity produced in any other market segment, each i^{th} firm 's first order conditions (FOC) are[1]:

$$\begin{aligned}
&\frac{\partial \Pi_i}{\partial x_i} = P_x + \frac{\partial P_x}{\partial x_i} X_i + \frac{\partial P_y}{\partial x_i} Y_i + ... \frac{\partial P_z}{\partial x_i} Z_i - MC_{xi} = 0 \\
&\frac{\partial \Pi_i}{\partial y_i} = P_y + \frac{\partial P_x}{\partial y_i} X_i + \frac{\partial P_y}{\partial y_i} Y_i + ... \frac{\partial P_z}{\partial y_i} Z_i - MC_{yi} = 0 \\
&. \\
&. \\
&\frac{\partial \Pi_i}{\partial z_i} = P_z + \frac{\partial P_x}{\partial z_i} X_i + \frac{\partial P_y}{\partial z_i} Y_i + ... \frac{\partial P_z}{\partial z_i} Z - MC_{zi} = 0
\end{aligned} \qquad \textbf{(1)}$$

---

[1] Each firm's actual FOC is $\frac{\partial \Pi_1}{\partial Q_1} = \Sigma \frac{\partial P}{\partial Q_1}\frac{\partial Q_1}{\partial Q_i} + \frac{\partial P}{\partial Q_1}\frac{\partial Q_1}{\partial Q_1} + P - \frac{\partial TC_1}{\partial Q_1} = 0$ but since Cournot-Nash assumes that $\frac{\partial Q_1}{\partial Q_i}$ =0, this FOC simplifies to the equations given above.

FOCs repeated for each of N firms

Where {x, y, …, z} represent the different products that each firm can make P_x, P_y, P_z are the market prices at equilibrium, and X_i ,Y_i ,Z_i are the quantities produced by the i^{th} firm at equilibrium, and MC is the marginal cost of the last unit produced.

For a Cournot-Nash equilibrium to exist each of the FOC listed in equation set 1 must simultaneously hold.

After substituting for the known variables of market price in each market segment and quantity sold in each market segment by each firm, the above system of equations can be solved for the coefficients of demand in terms of each firm's marginal costs and the coefficients of demand.

Since the effect of an increase in output by any firm has the same effect on price as an increase in industry output in the Cournot-Nash equilibrium, this means that for all firms i ➔k:

$$\frac{\partial P_x}{\partial x_T} = \frac{\partial P_x}{\partial x_i} = \frac{\partial P_x}{\partial x_j} = \ldots = \frac{\partial P_x}{\partial x_k} \qquad \textbf{(2)}$$

, where x_T is industry output.

Therefore, if the marginal cost of the last unit sold by each firm were known, the above system of equations would be expressed solely in terms of the coefficients of demand.

There are two difficulties with this approach. First, some variables may not be precisely known. Second, the number of unknown variables may be greater than the number of equations resulting in equations that are solved not only in terms of known variables but also in terms of unknown variables. Both of these problems, however, can be addressed by not explicitly solving the system of equations, but rather determining a range of values that satisfy the system of equations. To do so, certain assumptions are made about consumer behavior and the range of values that certain variables must take. Therefore, the coefficients of demand in each market segment can be found within a certain range. From these coefficients, a linearized estimate of the inverse demand function can be constructed.

This Revealed Demand System satisfies all the desired properties.

I. There is no aggregation bias, since it is calculated using only current information.

II. It uses the Cournot-Nash model.

III. It estimates the true demand elasticities.

Potential Problems with Incorrectly Specifying the Market Structure

Since this model uses firm behavior and market structure to determine demand, misspecification of the market structure can lead to incorrect results. In particular, the model could incorrectly combine unrelated vehicle segments or unrelated firms. Therefore, the consequences of these misspecifications should be examined.

First, suppose in specifying the market structure that unrelated segments are lumped together as one unit. Accordingly, the average price used in the revealed demand system (RDS) would really be the average of the price between the two markets and total output would be the combination of the two markets. As a result, the RDS will find the elasticities that explain this average pricing and output behavior. Therefore, the RDS will estimate a weighted average of the two markets and the RDS' elasticity estimates will not reflect the true elasticity of the individual markets. However, since the elasticity estimate is a weighted average of the two markets, the results will be impacted as any average would, i.e., the RDS estimate of elasticities will be closer to the market with more observations. In addition, if the elasticities of the individual segments are close, then the elasticities found by the RDS will be close.

The impact of the second type of misspecification, incorrectly combining firms to act as one firm, is less severe, assuming the remaining firms are correctly specified. In particular, if two competing firms that make independent output decisions are incorrectly

assumed to behave as one single decision making body, the RDS will incorrectly attribute the combined firm's high level of output to a lower cost of production rather than competition.

The possibility of incorrect combination is the only complication anticipated because regardless of the number of firms in the market, each individual firm's first order condition equations stay the same. Therefore, the correctly specified firms' first order condition equations still must be satisfied and can only be satisfied by the correct elasticities. This is not to say that industry output or elasticity at market equilibrium is not impacted by firm entry. It simply means that the estimates of elasticities at market equilibrium by the RDS are not biased since each of the correctly specified firms' output decisions must be explained given the observed prices.

In this chapter, the properties desired in a demand system were specified and previous methods of demand estimation were examined. Next, a new revealed demand system approach was fashioned, and the potential misspecification problems examined. In the next chapter, the revealed demand approach developed in this chapter will be applied to the automobile market.

Chapter 3 Applying the RDS to the Automobile Industry

To obtain estimates of the coefficients on demand requires establishing the market structure and then obtaining the relevant data.

Market Structure

Since the top three automakers, General Motors, Ford, and Chrysler held around 75 percent of the U.S. market during the 1989-1996 time frame of this study, and none of the remaining firms obtained much more than 10 percent market share, the remaining firms were combined into one firm called "Alternative producers." The U.S. auto market consists of new vehicles sold in the U.S., regardless of manufacturing location.

Therefore, the model of the automobile industry used in this paper consists of firms grouped into the four following divisions:

1) Ford
2) Chrysler
3) General Motors
4) Alternative producers

Vehicles were assigned into homogenous segments partially on use, but also on manufacturing facilities. The view of homogenous segments is supported by

manufacturing reports from Harbour, an industry trade publication, which show that a variety of models share the same manufacturing facilities for many of their key components. For example, Ford's Lima production facility makes an engine that is used for Ranger pickups, Aerostar/Windstar vans, and Sable/Taurus sedans. In addition, Ford also uses the same transmissions in a wide assortment of vehicles from their large Crown Victoria sedans, Econoline vans, F-series pickups, Expedition and Explorer SUVs, to Mustang sports cars.

As Friedlaender et al. (1983) observed "N*ot only are the same dies used to produce parts for a wide range of different models and makes, but parts and major components such as engines are often interchangeable as well. Therefore, from the point of view of production it seems reasonable to define output in terms of broad product lines (e.g. luxury, full size, compact, subcompact, etc.). Each of which has a range of generic attributes (e.g. wheelbase, weight, engine displacement, etc.).*"

The assumption of homogenous segments is also supported by Fairen (1996). In his study, Fairen found that vehicle characteristics tend to converge toward a common set of features. Therefore, the assumption that vehicle characteristics are homogenous within each segment is reasonable.

Vehicles are assigned to segments as determined by Ward's Automotive. Ward's Automotive is an industry observer that collects information on various aspects of the automobile industry. The segments are generally organized according to vehicle characteristics, and coincidentally, emission rates. The following categories divide the automobile market divided into five homogenous segments:

1) Small Sedan
2) Large Sedan
3) SUVs
4) Pickups and Vans
5) Luxury vehicles

The number of firms and products are limited for two reasons. First, it is desired that each firm or grouping of firms produce vehicles in every market segment. Second, for computational reasons it is necessary to limit the number of firms and products because the time required for computation increases dramatically as products and firms increase.

The Data

The next step in applying the RDS is obtaining the relevant data. The data required is vehicle price in each segment, vehicle sales by each producer in each segment, and the marginal cost of the last vehicle sold by each producer in each segment.

Vehicle Price Data

Information from the Consumer Expenditure Survey was used to obtain estimates of vehicle price in each segment as paid by consumers. The Consumer Expenditure Survey (CES) conducted by the Bureau of Labor Statistics contains information about all individual household purchases, demographic information and household income. The CES contains information on household vehicle purchases by make, model and year, and reports the price paid for each vehicle. For this paper, vehicle price in each segment was estimated from the average price paid by households for vehicles in the corresponding segment.

Vehicle Sales Data and Segment Categorization

Vehicle sales and segmentation data were obtained from Ward's Automotive. Segmentation of vehicles by firm and model is shown in Appendix 1. Ward's Automotive reports automobile sales in nine segments: commercial, cross utility, large sedan, mid-size sedan, small car, pickup, sport utility, van, and luxury vehicle. Commercial vehicles were not included in this paper since their demand is likely to be significantly different

from consumer demand. Cross utility vehicles were combined into SUV sales since these vehicles are very similar and this category was not created until 1996. Mid-size sedans were combined into large sedan sales since large sedans had prices comparable to, and many cases cheaper, than mid-size sedans. Vans and pickups were combined into one segment for two reasons. First, these vehicles are similarly priced and are interchangeable to many consumers. Second, vans and pickups use many of the same components and production facilities so their cost of production is similar.

The model used in this paper assumes that vehicles within each segment are homogenous hence the collection of average price paid in each segment. This assumption is also consistent with research done by Bajic in which he found strong substitutability between automobile characteristics (Bajic 1993).

Marginal Cost Data

The next piece of data collected was marginal cost, but exact information about the marginal cost of the last unit for each automobile producer was not readily available. Each corporation closely holds this information, for obvious competitive reasons. Therefore, ranges of reasonable costs were assumed that were consistent with information found in the Harbour Yearbook, an industry trade publication, and information provided by the Office of Automotive Transportation. The Office of Automotive Transportation

provided information regarding the minimum gross profit per vehicle per segment and the minimum marginal cost of each vehicle.

The minimum marginal cost of vehicle production in each category was reported to be greater than $8000 in each segment. More specific information was not available. This marginal cost estimate includes on-site manufacturing cost, delivery, variable marketing agreements, and dealer compensation.

To summarize, gross profit and marginal cost data were reported to be the following[2]:

Gross profit of at least $1000 on small vehicles

Gross profit of at least $3500 on mid to large vehicles

Gross profit of at least $5000 on all other vehicles

Marginal cost of at least $8000 on all vehicles

Application of Gross Profit Data

The gross profit information is very important because it allows for the calculation of a range of values that contain the true marginal cost; if marginal cost equals average variable cost, then gross profits can be used to estimate marginal cost. This is illustrated below:

---

[2] The gross profit figures were obtained from internal domestic producer documents.

If marginal cost = average variable cost, then

Since gross profit per vehicle = price – average variable cost, and

gross profit per vehicle = price – marginal cost.

Therefore, given gross profit per vehicle and the assumption that AVC=MC, if price and gross profit per vehicle are known, then marginal cost would be known.

However, gross profit is not precisely known. Instead, it is known that gross profit is greater than the amounts mentioned earlier, therefore, it can only be said that marginal cost is less than a certain amount:

MC < price – gross profit per vehicle

Production Characteristics of the Industry

It is not assumed that every manufacturer's marginal cost equals average variable cost. In fact, it is only assumed that one manufacturer's marginal cost equals average variable cost. That manufacturer is General Motors (G.M.) because of the nature of G.M.'s production capacity compared to other automakers as explained next.

The assumption that G.M.'s marginal cost is equal to its average variable cost is based in part on the fact that the automobile industry is very capital intensive. When a firm is highly capital-intensive productivity remains high over large ranges of output since machines can perform repetitive tasks for long periods without losing efficiency. Therefore, if a firm in this industry is not working too close to full capacity, where machinery would become a constraining factor, the marginal cost of the last unit should be very close to the marginal cost on the first unit. Furthermore, since the scale of the operation is so large, any setup costs are distributed over enough units that the setup costs have a negligible effect on average variable cost. This means that the marginal cost of the last unit would be very close to the overall average variable cost.

Distinguishing Production Characteristics of G.M.

Average variable cost is assumed to equal marginal cost for G.M. based on their excess capacity. The need for regular down-time maintenance of their machinery causes most auto manufacturers to operate their production facilities for only two shifts, although Chrysler routinely operates three shifts (Harbour Yearbook). If a firm is operating at the maximum of the two-shift capacity, the marginal cost to produce the next vehicle would be very high because a whole additional shift would be needed to produce the additional unit. Further, a firm that decides to operate three shifts has increased maintenance costs due to the difficulty of performing maintenance while a shift is working or trying to perform maintenance during shorter time intervals (Harbour Yearbook). These factors

result in the marginal cost of additional units requiring a third shift to be much higher than average variable cost.

G.M production levels seldom require a third shift (Habour Reports), and therefore it is unlikely that G.M.'s marginal cost varies significantly from its average variable cost. This may not be true for other manufacturers who operate close to 2-shift capacity and may need to add a third shift to increase vehicle production. Therefore, in this dissertation, constraints can be placed on G.M.'s gross profits but not on the other manufacturers.

Additional Assumptions Needed to Apply the Model

Since exact values for the marginal cost of each manufacturer are not known, the entire RDS model can not be solved for the exact partials (price elasticities). It is possible to construct a limited range of possible elasticities given some assumptions about demand and the cost advantages of certain producers. In particular, the following additional assumptions will be made:

1) Coefficients on demand must be substitutes in consumption
2) Cross price effects are symmetric
3) Own price effects must be greater than cross price effects

4) Restrictions derived from comparing marginal costs between segments and between firms given their respective market shares (as explained below)

The first assumption implies that all coefficients of demand are less than zero, and imply demand is downward sloping, and all cars are substitutes of some degree for each other. The second assumption that cross price coefficients are symmetric guarantees a maximum solution rather than a minimum. Further it stipulates that for substitutes a increase in quantity in one segment will impact price in the other segment the same as an increase in the quantity in the other will impact the price of the first good. This is true as long as the assumption of no income effect holds. The third assumption that own price effects are greater than cross price effects assures that vehicles within the same segment are closer substitutes than vehicles in other segments.

The fourth assumption includes the following restrictions:

1) Following Cournot-Nash behavioral assumptions, the firm with the greater production will have a lower marginal cost than a lower producing competitor.
2) The marginal cost of the last vehicle sold is less than the price of the vehicle.
3) Cross price coefficients have less impact on price than own price coefficients.

To be consistent with what is known about vehicle production costs and gross profits between different vehicle segments, the following restrictions were also imposed:

1) The marginal cost for G.M. to make a large sedan is less than the marginal cost of G.M. to make a SUV or luxury vehicle.
2) The marginal cost for G.M. to make a pickup is less than the marginal cost for G.M. to make a luxury vehicle.
3) The markup for G.M. on small vehicles is less than the markup for G.M. on pickups or luxury vehicles.
4) The markup for G.M. on large sedans is less than the markup on SUVs.
5) The markup for G.M. on pickups is less than the markup on luxury vehicles.

In addition, all coefficients are assumed to be less than –0.00000001. In other words, if vehicle production in any segment during one quarter increased by 10 million units then all vehicle prices would be impacted by at least $1. Given that total vehicle production in one quarter does not exceed 10 million units, this restriction seems reasonable. Finally, all coefficients are assumed to be greater than -1 which means that all coefficients are between -1 and -0.00000001. The restriction that all coefficients are greater than -1 is needed to limit the search area for the global optimization program; it is not binding and has no impact on the model.

First Order Conditions

Applying the first order conditions found in the prior chapter to the defined four firms, five product market, generates the following 20 first order conditions for profit maximization and consistency with the Cournot-Nash equilibrium:

$$
\begin{aligned}
&p_1^i + \frac{\partial p_1}{\partial q_1}\cdot q_1^i + \frac{\partial p_2}{\partial q_1}\cdot q_2^i + \frac{\partial p_3}{\partial q_1}\cdot q_3^i + \frac{\partial p_4}{\partial q_1}\cdot q_4^i + \frac{\partial p_5}{\partial q_1}\cdot q_5^i - MC_1^i - tax_1^i = 0\\
&p_2^i + \frac{\partial p_1}{\partial q_2}\cdot q_1^i + \frac{\partial p_2}{\partial q_2}\cdot q_2^i + \frac{\partial p_3}{\partial q_2}\cdot q_3^i + \frac{\partial p_4}{\partial q_2}\cdot q_4^i + \frac{\partial p_5}{\partial q_2}\cdot q_5^i - MC_2^i - tax_2^i = 0\\
&p_3^i + \frac{\partial p_1}{\partial q_3}\cdot q_1^i + \frac{\partial p_2}{\partial q_3}\cdot q_2^i + \frac{\partial p_3}{\partial q_3}\cdot q_3^i + \frac{\partial p_4}{\partial q_3}\cdot q_4^i + \frac{\partial p_5}{\partial q_3}\cdot q_5^i - MC_3^i - tax_3^i = 0\\
&p_4^i + \frac{\partial p_1}{\partial q_4}\cdot q_1^i + \frac{\partial p_2}{\partial q_4}\cdot q_2^i + \frac{\partial p_3}{\partial q_4}\cdot q_3^i + \frac{\partial p_4}{\partial q_4}\cdot q_4^i + \frac{\partial p_5}{\partial q_4}\cdot q_5^i - MC_4^i - tax_4^i = 0\\
&p_5^i + \frac{\partial p_1}{\partial q_5}\cdot q_1^i + \frac{\partial p_2}{\partial q_5}\cdot q_2^i + \frac{\partial p_3}{\partial q_5}\cdot q_3^i + \frac{\partial p_4}{\partial q_5}\cdot q_4^i + \frac{\partial p_5}{\partial q_5}\cdot q_5^i - MC_5^i - tax_5^i = 0
\end{aligned}
\qquad \textbf{(3)}
$$

For each i^{th} firm, where the partials are the own and cross price coefficients, and the q^i variables represent the number of vehicles sold by the i^{th} firm in market segments 1 through 5. Where p represents the price in each segment, and the MC^i variables represent the marginal cost of the i^{th} producer in market segments 1 through 5.

Determining Coefficient Values that Satisfy the FOCs

Since prices and quantities sold by each firm are known, the first order system of equations can be solved for the own price and cross price coefficients of demand. The only exception is that five price coefficient variables can not be solved since the number of unknown variables is greater than the number of equations. Therefore, the optimization

program will consider the price coefficients as exogenous. The remaining coefficients of demand can be expressed in terms of known variables and the exogenous variables. In particular, each coefficient of demand is solved in terms of the marginal cost of production for each firm in each segment, prices, and the exogenous price coefficients. The first order equations for each quarter to be solved by Mathematica are given in Appendix 2. A key of variables used in the optimization is found in Appendix 3 and Appendix 4 shows the results solved for their coefficients.

Summarizing, if prices, quantity sold by each firm, the marginal cost of the last unit sold by each firm, and the exogenous price coefficients were known, these coefficient equations would reveal the value of the remaining coefficients of demand.

Revealed Demand

While the exogenous cross price coefficient variables are not known, and marginal cost is only known within certain values, the exogenous coefficients on demand are still bound by the first order conditions and the assumptions of the model. This effectively limits the range of values these variables can take, and thus, reveals the coefficients of demand even for these exogenous coefficients. These coefficients can be used to calculate own and cross price elasticities.

Using the constraints and the coefficient equations established in this chapter, a range of values was calculated for each coefficient. This was done using the Frontline Systems global optimization software to find the minimum/maximum value each coefficient on demand could take while satisfying the coefficient equations and the restricting assumptions. The optimization program is shown in Appendix 5 and the associated constraints are shown in Appendix 6. The quarterly results of the optimization program are reported in own price elasticity form in Appendix 7. Summarized results are available in Appendix 8.

Calculation of Own Price Elasticities

The own price elasticities were calculated from the coefficient equations.

Since elasticity, by definition, is the percentage change in quantity divided by the percentage change in price and $\frac{\partial P_x}{\partial Q_x}$ shows the change in price for a one unit change in quantity, quantity is changing by one unit. Therefore, the proportional change in quantity is the change in quantity divided by the total quantity: (1/total sales in segment).

The percentage change in price is calculated as the change in price divided by the current price. Since $\frac{\partial P_x}{\partial Q_x}$ represents the change in price, the proportional change in price is calculated as:

$$\frac{\partial P}{\partial Q} \cdot \frac{1}{price}$$

Own price elasticity is therefore:

$$\frac{\left(\frac{1}{\text{total sales in segment}}\right)}{\left(\frac{\text{coefficient of demand representing the change in price caused by the change in quantity in segment}}{\text{price in segment}}\right)} \quad \textbf{(4)}$$

Calculation of Cross Price Elasticities

The cross price elasticities were calculated from the coefficient equations as explained next. First, the own price coefficient of demand is divided by the cross price coefficient of demand:

$$\frac{\left(\frac{\partial P_y}{\partial Q_x}\right)}{\left(\frac{\partial P_y}{\partial Q_y}\right)}$$

Which simplifies to $\frac{\partial Q_y}{\partial Q_x}$. This is the incremental change in Q_y for an incremental unit change in Q_x. Then, $\frac{\left(\frac{\partial Q_y}{\partial Q_x}\right)}{Q_y}$ is the percentage change in y caused by an incremental change in Q_x. Since, $\frac{\partial P_x}{\partial Q_x}$ is the incremental change in price of x caused by an incremental change in change in quantity of x, then $\frac{\left(\frac{\partial P_x}{\partial Q_x}\right)}{P_x}$ is the percentage change in price of x caused by an incremental change in Q_x.

Therefore, $\frac{\left(\frac{\partial Q_y}{\partial Q_x}\right)}{Q_y} \div \frac{\left(\frac{\partial P_x}{\partial Q_x}\right)}{P_x}$ is the cross price elasticity of y with respect to x.

Results of the Revealed Demand System

Applying these formulas to the results of the minimum/maximum coefficients yielded the elasticities for the last unit sold in each segment. The results indicate the median elasticities for the 32 quarters between 1989 and 1996 are between –1.18 to –4.71 for small vehicles, -0.65 to –2.94 for large vehicles, -0.52 to –2.55 for sport utility vehicles, -0.72 to –4.89 for pickups and –0.54 to –15.10 for luxury vehicles. These elasticities are summarized in Table 1.

Comparison of Elasticity Results to Other Research

Estimates of elasticities developed by other researchers are compared to this paper's results in Table 2.

Table 1: Min/Max Own Price Elasticities by Segment

Segment	Median Elasticities
Small	-1.18 to -4.71
Large	-0.65 to -2.94
SUV	-0.52 to -2.55
Pickup	-0.72 to -4.89
Luxury	-0.54 to -15.10

Table 2: Own Price Elasticity Results Compared to Prior Research

Author	Segment	Elasticity range
BLP	small	-5.66 to -6.43
Cecchinini	European market	-2.63 to –4.56
Goldberg	small	–3.29 to –6.22
Culp*	**small**	**–1.18 to –4.71**
Goldberg	luxury	–1.91 to -3.13
Culp*	**luxury**	**–0.53 to –15.10**
Goldberg	pickups	–2.69 to –5.50
Culp*	**pickups**	**-0.73 to –4.89**
Various authors prior to 1972	all	-0.6 to –1. 2
Hess	all	-0.26 to –1.63
Culp*	**SUV**	**-0.52 to -2.55**
Culp*	**Large**	**-0.65 to -2.94**

* Median results. Results in some quarters may have wider or narrower ranges.

While the results in this paper are consistent with other researchers' results, they tend to have a wider range. This is not unexpected since the other researchers used statistical methods to calculate their range of values and this paper used a mathematical approach. If the assumptions, market structure, and cost estimates are correct, then the results of this paper are mathematically correct, excluding any measurement error. The accuracy of statistical studies depends upon the confidence level set by the researcher, usually 80, 90 or 95 percent. The higher the level of confidence the statistical researcher selects the wider the range. Therefore, while the results in this paper have a wider range, by design these results offer a higher confidence level.

The range of values could be reduced by tightening the restrictions placed on each firm's cost and profit margin per vehicle, but such changes would require more accurate information than was available to this researcher.

Model Failure in Quarter 2

The model was unable to find a solution for the second quarter. This could be a result of problems in the data or incorrectly assuming Cournot-Nash behavior in the model. Problems in the data may include inaccurately reported sales or price information. Incorrectly assuming Cournot-Nash behavior when firms behave in a different manner would result in firms not satisfying the first order conditions used in this paper's model. For example, if firms take into consideration how other firms will react to output changes, this will change each firm's first order condition.

Another way firms might not act in the Cournot-Nash framework is the possibility that at least one firm was not short run profit maximizing. Firms may not profit maximize in the short run to gain market share or exposure. This latter situation might be present in the second quarter of 1989. In this quarter, Chrysler achieved the highest market share of the 32 quarters in the lucrative SUV market with a 30 percent share. Also in this quarter, the alternative producers, mostly Japanese producers were held to a 14 percent share, their lowest market share in this segment during the 32 quarters examined. In the following quarters, Chrysler and the alternative producers returned to their historical averages of 25

percent and 18 percent respectively. It is possible that Chrysler, the smallest of the surviving domestic auto producers, tried some strategic action because it felt particularly vulnerable to the influx of Japanese manufacturing capacity in the U.S. that was occurring during this period. During the 1989 to 1990 period, the Japanese added almost 200,000 units of capacity in the sport utility segment (Harbour Report). This explanation seems consistent with Cournot-Nash behavior observed in other markets. According to this explanation, Chrysler was unable or unwilling to maintain its sub-optimal level of output, and relented back to its lower market share.

In this chapter, the market structure, data requirements, and assumptions of the model were specified generating the profit maximizing first order conditions for firms in the new vehicle market. Next, a range of values for each quarter satisfying the first order conditions were found, generating estimates for own price and cross price elasticity. Finally, these elasticity estimates were compared to other researchers' work. In the next chapter, additional determinants of demand are estimated.

Chapter 4 Estimating Additional Determinants of Demand

In the previous chapter, the coefficients of demand and the resulting elasticities were calculated. In this chapter, the coefficients of demand are used to construct a linearized set of demands as part of an effort to estimate additional determinants of demand. In particular, the set of linear demand curves created in each quarter is compared to the set of demand curves in each successive quarter, to determine how much demand has shifted from one quarter to the next. Then regressions are performed to determine the factors that explain these shifts.

Linearizing Demand

The RDS used in this paper estimates the coefficients of demand for any form of demand equation: linear or non-linear. The true form of the demand equations is unknown, therefore an estimate of the demand curve form must be used. The simplest estimated form is linear. Since the coefficients of demand found in this paper are in inverse demand

form, the linear demand equations will be expressed as follows:

$$
\begin{aligned}
P_1 &= Constant_1 + \frac{\partial p_1}{\partial q_1}\cdot Q_1^T + \frac{\partial p_1}{\partial q_2}\cdot Q_2^T + \frac{\partial p_1}{\partial q_3}\cdot Q_3^T + \frac{\partial p_1}{\partial q_4}\cdot Q_4^T + \frac{\partial p_1}{\partial q_5}\cdot Q_5^T \\
P_2 &= Constant_2 + \frac{\partial p_2}{\partial q_1}\cdot Q_2^T + \frac{\partial p_2}{\partial q_2}\cdot Q_2^T + \frac{\partial p_2}{\partial q_3}\cdot Q_3^T + \frac{\partial p_2}{\partial q_4}\cdot Q_4^T + \frac{\partial p_2}{\partial q_5}\cdot Q_5^T \\
P_3 &= Constant_3 + \frac{\partial p_3}{\partial q_1}\cdot Q_1^T + \frac{\partial p_3}{\partial q_2}\cdot Q_2^T + \frac{\partial p_3}{\partial q_3}\cdot Q_3^T + \frac{\partial p_3}{\partial q_4}\cdot Q_4^T + \frac{\partial p_3}{\partial q_5}\cdot Q_5^T \\
P_4 &= Constant_4 + \frac{\partial p_4}{\partial q_1}\cdot Q_1^T + \frac{\partial p_4}{\partial q_2}\cdot Q_2^T + \frac{\partial p_4}{\partial q_3}\cdot Q_3^T + \frac{\partial p_4}{\partial q_4}\cdot Q_4^T + \frac{\partial p_4}{\partial q_5}\cdot Q_5^T \\
P_5 &= Constant_5 + \frac{\partial p_5}{\partial q_1}\cdot Q_1^T + \frac{\partial p_5}{\partial q_2}\cdot Q_2^T + \frac{\partial p_5}{\partial q_3}\cdot Q_3^T + \frac{\partial p_5}{\partial q_4}\cdot Q_4^T + \frac{\partial p_5}{\partial q_5}\cdot Q_5^T
\end{aligned}
\qquad \textbf{(5)}
$$

where P is the price in each segment; the partials are the coefficients of demand estimated by the RDS and show how price in each segment is influenced by changes in total output in each of the other segments; Q is the total quantity of vehicles sold in each segment; and the constants represent the price intercept of demand.

The demands shown in equation (5) can be rearranged and solved in terms of the unknown constant terms. These constant terms are simply the intercept of each demand curve. Accordingly, when the optimization program generates new values for the unknown coefficients representing the slope of the demand curve, the value of each constant term will change so that the linearized demand curve in each segment still passes through the observed price and quantity.

Equation set (6) shows equation set (5) solved in terms of the constant term or intercept for each segment.

$$
\begin{aligned}
Constant_1 &= P_1 - \frac{\partial p_1}{\partial q_1}\cdot Q_1^T - \frac{\partial p_1}{\partial q_2}\cdot Q_2^T - \frac{\partial p_1}{\partial q_3}\cdot Q_3^T - \frac{\partial p_1}{\partial q_4}\cdot Q_4^T - \frac{\partial p_1}{\partial q_5}\cdot Q_5^T \\
Constant_2 &= P_2 - \frac{\partial p_2}{\partial q_1}\cdot Q_2^T - \frac{\partial p_2}{\partial q_2}\cdot Q_2^T - \frac{\partial p_2}{\partial q_3}\cdot Q_3^T - \frac{\partial p_2}{\partial q_4}\cdot Q_4^T - \frac{\partial p_2}{\partial q_5}\cdot Q_5^T \\
Constant_3 &= P_3 - \frac{\partial p_3}{\partial q_1}\cdot Q_1^T - \frac{\partial p_3}{\partial q_2}\cdot Q_2^T - \frac{\partial p_3}{\partial q_3}\cdot Q_3^T - \frac{\partial p_3}{\partial q_4}\cdot Q_4^T - \frac{\partial p_3}{\partial q_5}\cdot Q_5^T \\
Constant_4 &= P_4 - \frac{\partial p_4}{\partial q_1}\cdot Q_1^T - \frac{\partial p_4}{\partial q_2}\cdot Q_2^T - \frac{\partial p_4}{\partial q_3}\cdot Q_3^T - \frac{\partial p_4}{\partial q_4}\cdot Q_4^T - \frac{\partial p_4}{\partial q_5}\cdot Q_5^T \\
Constant_5 &= P_5 - \frac{\partial p_5}{\partial q_1}\cdot Q_1^T - \frac{\partial p_5}{\partial q_2}\cdot Q_2^T - \frac{\partial p_5}{\partial q_3}\cdot Q_3^T - \frac{\partial p_5}{\partial q_4}\cdot Q_4^T - \frac{\partial p_5}{\partial q_5}\cdot Q_5^T
\end{aligned}
\qquad \textbf{(6)}
$$

The optimization program uses the intercepts in equation set (6) to complete the linearized demands in equation set (5).

Estimating Additional Determinants of Auto Demand with the RDS

While the demand system that was estimated in Chapter 3 is accurate, it does not estimate how several relevant factors may change automobile demand. These factors include vehicle-operating costs, changes in income, and interest rates. To estimate the impact of these factors, an examination of how demand changes from one period to the next will be studied. In particular, the linearized demand curves from each segment will be used to estimate how much demand has shifted from one time period to the following time period.

Determining when Demand has Shifted

To illustrate how the amounts of these demand shifts can be estimated, suppose demand is known in time period x and has a linear form. If all factors that influence demand do not change from time period x to time period y, then as long as firm output does not change, prices will remain the same. Of course if firm output does change, then prices would change according to the linear demand function in response to the new output levels. The new price could be estimated from the prior period's demand curve by substituting the new output levels into period x's demand as follows:

$$p_y^{estimate} = constant_x + a_x \cdot Q_y^1 + b_x \cdot Q_y^2 + c_x \cdot Q_y^3 + d_x \cdot Q_y^4 + e_x \cdot Q_y^5 \qquad \textbf{(7)}$$

where the variables a_x through e_x represent the coefficients of demand from time period x and Q variables represent the quantities produced in each segment for the next period y. In this case, the estimated price would match the observed price because consumer demand had not changed.

Now suppose that both firm output and consumer demand change. The estimated price in time period y would differ from the actual price, indicating some factor of demand had changed. The larger the difference between estimated price and actual price, the more that demand must have changed.

One difficulty with these estimations is that the actual demand curve may not be linear. A linear estimation will be fairly accurate for small changes, and since the factors that

influence demand are unlikely to change dramatically from one time period to the next, a linear approximation is appropriate.

Another difficulty is that the coefficients of demand are not precisely known. Because the coefficients are not precisely known, adjusting them can explain some of the changes in price from one quarter to the next. In most quarters, however, adjusting the coefficients of demand is not enough to explain all of the observed changes in price. It is this unexplained portion that indicates demand has shifted. Therefore, if the coefficients of demand are allowed to change so that the unexplained portion is as small as possible, this indicates the minimum demand shift.

In particular, the optimization program will be used to determine the values of the coefficients that cause the expression in equation (8) to be as close to zero as possible.

$$\textit{Estimated demand shifts} \;=\; P_{t+1}^{estimate} - P_{t+1}^{actual} \qquad \textbf{(8)}$$

The graph in Figure 1 shows this concept in a visual context for a single product market.

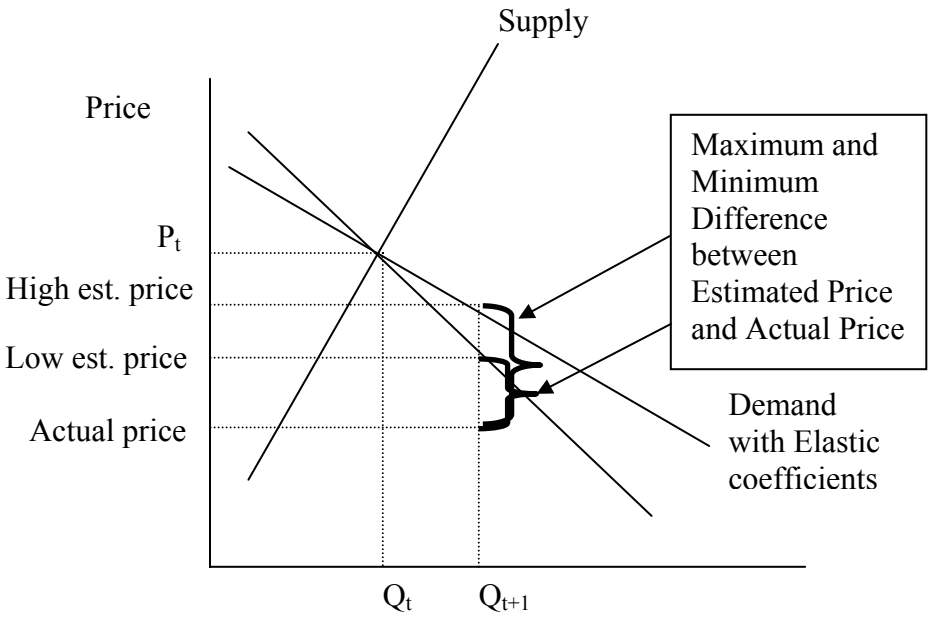

Figure 1: Estimated Demand Shifts

If the estimated price is below the actual price, then it indicates that demand increased, and if estimated price is above the actual price, as it is in Figure 1, it indicates a decrease in demand. The minimum difference between the estimated and actual price, shown by the smaller bracket in Figure 1, indicates the minimum amount that demand has shifted. Table 3 shows the actual price change in each period, and the estimated demand shifts found by the optimization program.

Table 3: Estimate Demand Shifts Compared to Actual Price Changes

Quarter	Estimated shifts in segment 1	Estimated shifts in segment 2	Estimated shifts in segment 3	Estimated shifts in segment 4	Estimated shifts in segment 5	Actual price changes in segment 1	Actual price changes in segment 2	Actual price changes in segment 3	Actual price changes in segment 4	Actual price changes in segment 5
2	1,227	2,173	842	2,078	3,503	(404)	(134)	(714)	(1,115)	(2,964)
3	N/A	N/A	N/A	N/A	N/A	91	486	(514)	686	(972)
4	(1,935)	(1,287)	(2,677)	(2,134)	689	(370)	474	(1,008)	(130)	7,601
5	1,060	1,102	0	1,544	0	323	(497)	1,077	(131)	(2,144)
6	1,158	1,258	1,982	1,368	172	644	378	477	559	(597)
7	(843)	(739)	(0)	(707)	(2,983)	(384)	(58)	(276)	144	(2,128)
8	(467)	(1,387)	0	(936)	0	(92)	(342)	1,023	305	(1,393)
9	(247)	(0)	(55)	(1,792)	(0)	84	849	1,053	(843)	2,265
10	1,201	860	1,249	1,799	4,651	(442)	(812)	(1,851)	(649)	2,238
11	78	(0)	2,514	834	(4,110)	428	871	2,267	1,825	(5,065)
12	(0)	(372)	(0)	(2,004)	(0)	1,823	95	1,492	(989)	4,163
13	(1,116)	1,163	0	872	(0)	(1,721)	1,074	(1,650)	1,756	3,480
14	489	1,646	3,691	3,082	1,029	(73)	(225)	(189)	481	(678)
15	(0)	(645)	(755)	(1,828)	(3,171)	257	124	(970)	(1,997)	(2,356)
16	(0)	(0)	3,417	(0)	1,521	1,152	201	2,992	2,155	3,158
17	(0)	(37)	(0)	(0)	(5,447)	(392)	6	2,607	1,195	(5,891)
18	1,209	3,433	1,565	1,230	3,386	497	494	(2,392)	(1,705)	(12)
19	(242)	(1,741)	(1,237)	(2,120)	2,201	133	(682)	(870)	(1,336)	7,329
20	0	0	841	3,477	0	309	1,204	363	3,770	(387)

Table 3 Continued:

21	613	1,169	0	0	(10,134)	500	533	(222)	(470)	(11,281)
22	0	2,076	1,234	2,675	12,592	(412)	548	690	712	10,913
23	(484)	(1,383)	(896)	(2,389)	(4,253)	(277)	(366)	(449)	(1,647)	(4,576)
24	(0)	(422)	5,066	(0)	0	1,295	(699)	2,610	1,401	311
25	(0)	(0)	(0)	(1,250)	413	(186)	1,053	3,263	(912)	5,715
26	1,537	1,551	3,018	1,869	1,527	803	(88)	(132)	517	(563)
27	(165)	(1,376)	(1,865)	(824)	(0)	136	(714)	(745)	167	2,669
28	(163)	(124)	0	1,609	(0)	(112)	467	(408)	2,249	2,444
29	623	2,394	174	(0)	(1,884)	769	2,186	2,113	(1,407)	(2,277)
30	1,241	1,174	0	2,850	0	270	(650)	(2,212)	1,193	(4,288)
31	(1,108)	(1,860)	2,205	0	(0)	(1,041)	(823)	2,244	2,688	1,331
32	(1,581)	(0)	44	(474)	0	(1,337)	3,744	(87)	(1,208)	1,924

Notice that demand can shift independently of price increases. For example, in the fourth quarter demand is estimated to have dropped by at least $1287 in segment 2, and yet, market price actually rose by $474 in segment 2. This results because this method is actually estimating the shifts in demand; changes in supply do not affect its outcomes. This can be seen in Figure 2.

Observe that if the actual price changes to P_{t+1} and quantity sold is Q_{t+1} then the estimated price is on the original demand curve for this quantity and the difference between the actual price and the estimated price is the shift in demand

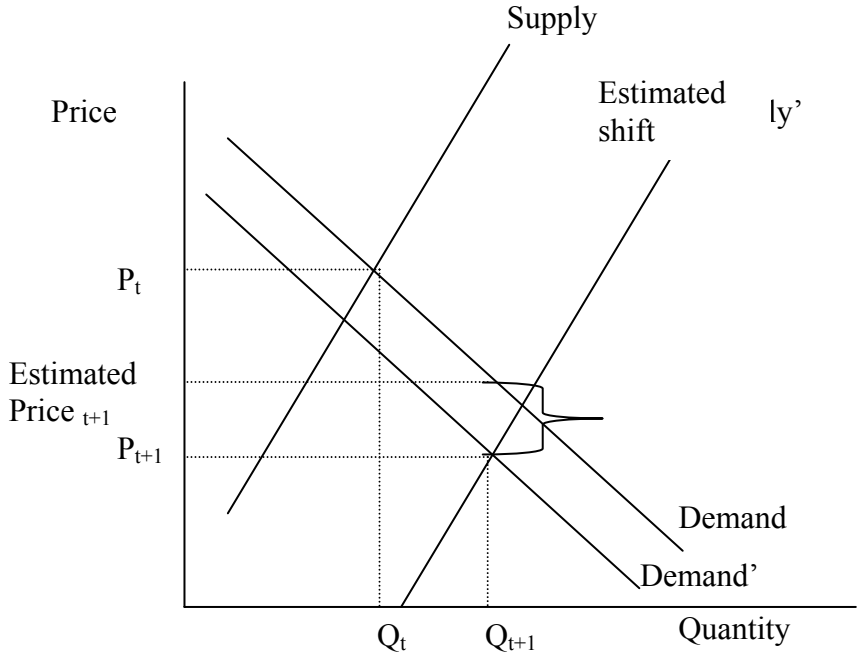

Figure 2: Demand Shift Estimation when Supply Shifts

Factors of Demand Regression

Now that the estimates of demand shifts have been found, the results will be regressed against the factors that shift demand:

Estimated Demand Shifts = f(Factors other than quantity sold in each segment and price)

The regression will indicate how certain factors shift demand in each of the segments.

Deciding which Factors of Demand to Examine

Several factors were considered in deciding which variables to include in the estimate of factors that shift demand. First, the variables should add to the explanatory power of the model. Second, when a choice is made between which variables to include in the model, the variable with the stronger theory establishing the relationship between the dependent variable and independent variable should be preferred over a variable that may only be time-correlated with the dependent variable. For example, the size of SUVs increased during the 1989-1996 period and so did SUV sales (Ward's Automotive), however increased size may not have caused the increased sales. Instead, lower gasoline prices may have encouraged consumers to choose larger vehicles. Therefore, gasoline would be a better variable to include since it has a stronger theoretical link and therefore is less likely to be time correlated than vehicle size.

Finally, the relevant variables should actually change from quarter to quarter because the estimated demand shifts reflect changes in demand from one quarter to the next. Since vehicle characteristics are not likely to change from quarter to quarter, these influences were ultimately ignored. Other factors that were examined and discarded were the role of income and the average hourly workweek. Both of these factors failed to explain the shifts in demand. This was not unexpected since these variables change very little from quarter to quarter.

Factors Included in Model

The final model of factors that shift demand includes the real Federal Funds rate, dummy variables representing quarters 1 and 2, consumer confidence, and the real per gallon price of gasoline. The real Federal Funds rate was calculated using the Federal Funds rate from the New York Federal Reserve and the GDP price deflator. Real price per gallon price of gasoline was calculated from information provided by the California Department of Transportation. Consumer confidence figures were obtained from the Department of Labor.

The dummy variables were included for quarters 1 and 2 because they can account for seasonal changes in demand. Dummy variables for quarters 3 and 4 of each year were not found to be significant.

Results of the Regression

Regressions were performed for each segment with the variables specified above. The independent variables were lagged one quarter. A lag of one period was used because it is unlikely that a change in interest rates, gasoline prices, or consumer confidence would immediately change demand, rather it would take a while for consumers to alter their behavior in response to the new market conditions. While the explanatory power of the model is low, each model is statistically significant for each segment at the 95 percent confidence level except for the SUV and luxury markets, which are significant at an 85 percent confidence level. With a few exceptions the parameter estimates are as expected. That is, vehicle prices fall when the parameter for gasoline, DGAS, rises, vehicle prices increase when the parameter INDEX representing wealth rises, and vehicle prices fall when the parameter REALFED representing the real interest rate increases. The regression results are summarized in Table 4 and full regression results are detailed in Appendix 9, the SAS program for the regressions is found in Appendix 10, and Appendix 11 contains the data set used for the SAS regressions.

Demand Shift Regressions vs. Price Change Regressions

Since the regression results do not explain a large percentage of the variance, statistical methods of improving the results were sought. Among the methods tried were the transformation of the variables and applying the seemingly unrelated regression equations

Table 4: Statistical Results for Estimated Demand Shifts

Segment	Variable	Parameter estimate	Std Error	Lower 95%	Upper 95%	F-Stat of the Model	Prob >F
1	DGAS (1/10 cent)	-0.64	1.38	-3.48	2.20	3.51	0.91
2	DGAS (1/10 cent)	-0.90	1.78	-4.57	2.77	7.36	0.16
3	DGAS (1/10 cent)	-1.99	3.30	-8.79	4.80	1.99	0.12
4	DGAS (1/10 cent)	-1.90	2.62	-7.31	3.50	4.52	0.85
5	DGAS (1/10 cent)	2.62	6.68	-11.15	16.39	2.03	0.93
1	INDEX	3.88	13.89	-24.74	32.50		
2	INDEX	11.98	17.96	-25.01	48.97		
3	INDEX	26.09	33.22	-42.34	94.53		
4	INDEX	19.53	26.43	-34.91	73.98		
5	INDEX	-33.60	67.32	-172.28	105.07		
1	Q1	1201.83	322.06	538.38	1865.28		
2	Q1	1542.62	416.26	685.13	2400.10		
3	Q1	1347.35	770.06	-238.97	2933.68		
4	Q1	2182.95	612.64	920.91	3445.00		
5	Q1	4243.18	1560.45	1028.65	7457.70		
1	Q2	-202.22	329.54	-881.08	476.64		
2	Q2	-1336.42	425.92	-2213.83	-459.02		
3	Q2	-597.32	787.94	-2220.48	1025.85		
4	Q2	-1058.60	626.87	-2349.96	232.76		
5	Q2	-723.79	1596.69	-4012.97	2565.40		
1	REALFED	14.49	74.89	-139.77	168.76		
2	REALFED	-64.95	96.79	-264.34	134.43		
3	REALFED	-60.57	179.06	-429.43	308.28		
4	REALFED	-51.70	142.45	-345.16	241.75		
5	REALFED	-130.77	362.84	-878.22	616.68		

(SURE) method of regression estimation. None of these methods improved the results. While the results of the regression using the estimated shifts as the dependent variable do not explain a large percentage of the variance, are these results better than the results achieved using change in prices as the dependent variable? To answer this question, the same variables used in the original regression were again regressed, but this time against the change in prices instead of estimated demand shifts. With change in price as the dependent variable the probability of the model failing to have any explanatory power is greater than 91 percent in segment 1. Under the regression with the shift values as dependent variables, this probability is much better at only 1.6 percent. The same is true in each segment except for the SUV market, where both models have approximately an 11 percent chance of failing to have any explanatory power. These results are shown in Table 5.

Table 5: Shift vs. Change in Price as the Dependent Variable

	F stat with Shift as Dependent Variable	Prob>F	F stat with Change in Price as Dependent Variable	Prob >F
Segment 1	3.505	0.0161	0.296	0.9108
Segment 2	7.364	0.0003	1.756	0.1587
Segment 3	1.988	0.1169	1.972	0.1179
Segment 4	4.522	0.0048	0.388	0.8526
Segment 5	2.034	0.1098	0.258	0.9317

Since dependent variables with smaller variances can appear to have a better fit where none exists, a comparison between the variances of the estimated shift variables and price change variables was conducted. The comparison found that the variance of the shift variables was greater than the variance of the price change variables, except in segment 5, as is shown in Table 6.

Therefore, the better results achieved using estimated shifts as the dependent variable are not the result of a reduced variance on the part of the shift variables compared to the price variables. Instead, the regressions indicate that the method used to estimate demand shifts from the revealed demand system improved the explanatory power of the model.

Significance of Variable Parameters under the Shift Regressions

The regression results indicate only the dummy quarter variables are significant at the 95 percent confidence level. This is not unexpected for several reasons. First, only 30 observations were included in the regressions, limiting the ability to generate statistically significant results due to limited sample size. Second, since the factors examined that

Table 6: Variance Comparison between Shift and Price Dependent Variable

	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5
Shift Variance	747,943	1,792,564	2,824,151	2,906,854	13,966,178
Price	527,315	902,012	2,420,482	2,062,271	19,638,704

shift demand are unlikely to change significantly from quarter to quarter, the likelihood that other unobserved changes will impact demand increases, obscuring the impact of the variables included in the model.

The regressions could have been performed on total price paid and the absolute levels of demand rather than the change in each of these factors. This would have improved the apparent statistical measures, but it would have introduced a trend error to the model since both prices and demand increased over time. Therefore, the regressions were only performed on the changes in demand and changes in price.

Accuracy and Use of Parameter Estimates

While the parameter estimates for the impact of gasoline prices on vehicle prices could be useful later in this paper, because their low significance levels make their accuracy questionable, other researchers' estimates of the impact of vehicle operating costs on vehicle prices will be used.

This does not mean that the parameter estimates of the impact of vehicle operating costs on vehicle prices, DGAS, found in the above regressions are inaccurate. In fact, the values of DGAS are consistent with the results from other researchers. Table 7 shows the impact of a dollar increase in per mile operating cost on vehicle price calculated using the parameter estimates found in this chapter and compares them to the range of values found

Table 7: Comparison of DGAS Parameter to other Research

	Segment 1	Segment 2	Segment 3	Segment 4
Min value of other research after conversion to inverse demand form*	-9,104	-18,179	-20,064	-10,397
Max value of other research after conversion to inverse demand form*	-23,152	-46,544	-79,649	-43,280
Value estimated using parameters from regression expressed in inverse demand form**	-16,587	-23,367	-51,836	-49,459

*Calculations from the first quarter using other research.

** Parameter values calculated in same manner as conversion of other research

using other researchers' estimates. Chapter 6 describes how these values were obtained. The units in Table 7 are in one dollar increments because this made constructing the model easier. Segment 5's parameter estimate was not included in Table 7 since it showed a slightly positive value. This would indicate that consumer demand increased in response to higher fuel costs. Since that is unlikely, its value was not presented.

Notice that the values found using the parameter estimates fall within the range of values found by other researchers except for segment 4, and even segment 4's estimates are very close to the range of values calculated from other research.

In summary, the results obtained using the revealed demand system and method of estimating demand shifts is consistent with other research. In this chapter, demand in each segment was put into a linear form, estimates were made of the factors that shift demand, and regressions were performed that showed improved results using the demand shifts found applying the RDS. In addition, most of the parameter estimates found were consistent with other research and with economic theory.

Chapter 5 Optimal Firm Behavior under Each Tax

In Chapters 2 and 3, a method of determining the coefficients of demand from observed firm behavior was developed and used to construct linear demand functions. In Chapter 4, estimates of how exogenous factors shifted those demands were determined. In this chapter, an abatement cost function will be specified and used to determine how the LSET and PMET changes each firm's FOC.

The Simulation of the Effect of PMET and LSET

To estimate the effect of the PMET on automobile demand, gasoline prices will be used as a proxy for the PMET. The PMET increases the cost of vehicle travel and consumers should respond to an increase in operating costs caused by the PMET the same way they respond to an increase in operating costs caused by changes in gasoline prices. Estimates of how gasoline prices change demand are calculated from other researchers' studies of how changes in operating costs affect consumer demand to the individual firm. These studies also have the advantage that they show the potential sales gain an individual automaker can achieve by producing vehicles with lower operating costs, rather than showing the impact of changes in operating costs on segment sales.

To estimate the effect of the LSET on automobile demand is less complex since consumers should react to increases in the LSET the same as they would react to

increases in vehicle prices. Therefore, estimating the effect of the LSET on demand should be equivalent to estimating the effect of a per unit tax.

The next step is to simulate how the changes in demand resulting from exogenous taxation will affect firm behavior and thus equilibrium output, pricing, and producer and consumer surplus. A firm will decide to implement new pollution abatement technology to counter the tax-driven changes in demand if two conditions are met: 1) the addition of pollution abatement technology can be linked in the minds of consumers as making a vehicle cheaper to operate and therefore more desirable. 2) The firm expects its profits to increase enough from the increase in demand caused by implementing the new abatement technology to pay for the costs of lowered emissions. The first condition is met, as stated earlier, because consumers are assumed to react to each tax as they have reacted to changes in gasoline prices. The second condition depends on the increase in production costs resulting from producing lower emission vehicles. The increase in production costs will be given by a reasonable function that fits the assumption of increasing implementation costs per additional unit of pollution reduction.

After each firm has independently made its decision regarding how much abatement technology to implement, market conditions reveal how much abatement technology the other firms decided to implement. Now each firm must decide, given the new market conditions, whether it should implement more abatement technology -- each firm still

assuming other firms in the industry will not change again. At a certain point, no firm will have an incentive to change either its output or level of abatement. This is the Cournot-Nash framework applied to the firms' choice of how much abatement technology to implement.

It is assumed each automaker will produce all vehicles within a segment using the same chosen technology rather than applying different designs. In addition the technology chosen will only require simple changes that add cost to each vehicle but need little equipment or capital expenditures to implement. It is also assumed that all firms have access to this abatement technology and therefore each automaker will choose the same level of pollution reduction for each segment.

The firm is assumed to only benefit from the improved price and sales of its vehicles due to the reduction in tax. Although there may be other "good-will" benefits, these benefits will be ignored.

Desired Characteristics of the Abatement Cost Function

Before the new FOCs can be calculated, an abatement cost function has to be specified. This abatement cost function should have the following characteristics:

1) The abatement cost function should be increasing.

2) The abatement cost function should exhibit diminishing returns.
3) Abatement costs should reflect well-established technologies.
4) The abatement should increase the cost of vehicle production on a constant basis.
5) The technology chosen should not significantly impact driving performance.

The first characteristic that the abatement cost function should be increasing simply means that it costs more to implement a large reduction in pollution than it does to make a small decrease in pollution. The second characteristic that the abatement cost function should exhibit diminishing returns is consistent with economic theory. It indicates that to achieve the next unit of pollution reduction will cost more than the previous unit of pollution reduction. This is reasonable, given that to achieve further pollution reduction manufacturers will need to adopt newer, more complex designs or equipment.

The third characteristic that the abatement cost function should reflect well-established technologies is desirable so the abatement function is a feasible reflection of the true abatement cost function firms face. Firms are unlikely to use a technology if it requires extensive time to deploy or if it requires vast new infrastructure in order for consumers to use the technology.

The fourth characteristic that the abatement cost function should increase costs on a constant basis means that producers can make as many vehicles with the lower emissions

characteristics as they are capable of producing for the same per unit cost. This assumption seems reasonable since auto makers are likely to add some components or make design changes that are the same for the first vehicle as they are for the last.

The final characteristic that the abatement technologies not significantly change driving characteristics is important because if driving characteristics of the vehicle changed, then demand for each vehicle would change as well. This would mean that any estimate of demand determined before the change would be irrelevant to the new market. Since this would make any prediction about demand almost impossible, it is assumed that the characteristics of the vehicle are not significantly changed.

Basis of the Abatement Cost Function

To ensure that the abatement cost function does not exceed the cost of existing technology, propane and natural gas powered vehicles were chosen as representative methods of emission reductions and the abatement function adapted to closely fit these available technologies. Since any form of abatement with a greater cost than propane or natural gas for the same level of abatement would not be chosen by firms, these technologies represent the high end of abatement costs. Therefore, the abatement function for each segment will be adjusted not to exceed the cost of this technology. Propane and natural gas were chosen not only because the cost of adopting this technology is well-known but also because they achieve significant pollution reduction without significantly

changing vehicle characteristics[3], new vehicles can be easily converted to their use, and because much of the infrastructure needed to supply this alternative fuel to consumers already exists.

Therefore, propane and natural gas are good indicators of the maximum amount firms will be willing to spend for similar levels of pollution reduction.

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[3] Some might argue that vehicle characteristics do change because they mistakenly believe the fuel storage tanks for propane or natural gas vehicles decrease trunk space, however, this is not the case with new vehicles designed specifically for compressed gas use. The vehicles that compromised trunk space for fuel storage were dual fuel vehicles, which meant they had both a gasoline fuel tank and a compressed gas tank. In addition, since dual fuel vehicles were not designed specifically for compressed fuel use, their engines were not optimized for the use of the compressed gas fuels. Not optimizing the engines results in diminished travel range, fewer miles per gallon, reduced acceleration, and increased emissions because the un-optimized engines do not burn the fuel as efficiently resulting in less power and more unburned particles.

Production Costs of Lower Emission Vehicles by Segment

This paper focuses on carbon monoxide emissions (CO) since the health impacts of CO emissions are well known and these emissions are greater than any other ground level pollutant. Additionally, other pollutants such as nitrogen oxides (NOx) and volatile organic compounds (VOCs) that cause ozone tend to be reduced when CO is reduced.

Vehicles are grouped into three emissions categories as determined by the EPA: Ultra low emission vehicles, standard car emissions under Tier 1, and standard truck emissions under Tier 1. Tier 1 was the required emissions for vehicles by 1994.

Ultra low emission vehicles tend to be in the small car segment and emit 2.1 grams of CO per mile or less. Standard cars under Tier 1 include all vehicles except pickups and SUVs. They are required to emit less than 4.2 grams of CO per mile. Truck emissions include pickups and SUVs and are required to emit less than 5.5 grams of CO per mile.

The reason for the splitting vehicles into three emissions categories is that vehicles of different size and performance are going to require different levels of pollution abatement and consequently different costs. Table 8 was constructed from information provided by the Natural Gas Vehicle Coalition. It indicates the additional cost per vehicle for different

Table 8: Cost of Emissions Reduction from Selected Alternate Fuels

Fuel	Additional production cost per vehicle	Pollution reduction	CO Emissions compared to gasoline engine with 2.1 grams of CO per mile	CO Emissions compared to gasoline engine with 4.2 grams of CO per mile	CO Emissions compared to gasoline engine with 5.5 grams of CO per mile
Propane	$1000-$2000	60%	0.84	1.68	2.20
CNG	$4000-$6000	90%	0.21	0.42	0.55

levels of pollution reduction in each emissions category when propane and compressed natural gas (CNG) fuels are used in place of gasoline engines.

The cost of compressed natural gas vehicles is more than propane because natural gas must be stored at a higher pressure requiring much sturdier storage tanks. The cost of implementing propane and compressed natural gas varies depending on how large the storage capacity must be to deliver similar driving ranges. For smaller vehicles the lower end of each estimate would be most appropriate, while for larger vehicles the higher end of each estimate would most accurately reflect the cost to implement.

For example, Table 8 shows that if a gasoline engine that currently emits 2.1 grams of CO per mile is converted to propane, the vehicle will cost an additional $1000-2000, but emissions will be reduced from 2.1 to only 0.84 grams of CO per mile. When the same

vehicle is converted to CNG, the vehicle will cost an additional $4000-$6000, but emissions will be reduced from 2.1 to only 0.21 grams of CO per mile.

An abatement cost function was selected to be consistent with the mathematical criteria of diminishing returns and increasing cost. In particular, the abatement function was specified to be:

$$\text{emissions per mile} = \frac{\text{abatement constant}}{\text{additional vehicle cost}} \qquad (9)$$

The abatement constant is simply adjusted to represent the different levels of emissions produced by vehicles with different sizes and characteristics. For example, for the same additional amount spent on abatement equipment, larger vehicles will probably produce more emissions per mile than small vehicles. Therefore, the abatement constant is adjusted depending on the emissions characteristics of the current vehicle with a larger constant representing the increased difficulty of emissions reduction.

The abatement function exhibits diminishing returns and it yields results for each category of vehicles that are comparable to the pollution reduction actually achieved by propane and natural gas when the abatement constant is adjusted according to the vehicle category. The values selected for the abatement constant in each segment and the emission levels achieved under different levels of abatement spending are shown in Table 9. For example, it is known from the information presented in Table 8 that a

Table 9: Emission Levels Achieved under Different Levels of Abatement Spending

Additional cost per vehicle	Ultra low emission vehicles Abatement constant set to $840. Grams of CO per mile.	Tier 1 vehicles Abatement constant set to $1680. Grams of CO per mile.	Tier 1 Trucks Abatement constant set to $2200. Grams of CO per mile.
200	4.20	8.40	11.00
400	2.10	4.20	5.50
1000	0.84	1.68	2.20
1500	0.56	1.12	1.47
2000	0.42	0.84	1.10
2500	0.34	0.67	0.88
3000	0.28	0.56	0.73
3500	0.24	0.48	0.63
4000	0.21	0.42	0.55
4500	0.19	0.37	0.49
5000	0.17	0.34	0.44

vehicle that currently emits 2.1 grams of CO per mile can have its emissions reduced to 0.84 grams of CO per mile for $1000-$2000 per vehicle, or reduced to 0.21 for between $4000-6000. The estimated abatement function should be consistent with this information, and the abatement constant in each segment was chosen so that this would be accomplished. As can be seen in Table 9, when the abatement constant in the abatement function show in equation 9 is set to a value of $840, spending $1000 on abatement equipment causes emissions to be 0.84. This matches the $1000-2000 known cost of converting this size vehicle to propane. Table 9 also shows that to reduce emissions to 0.21, the amount of abatement spending is $4000. Again, this matches the cost of emissions reduction achieved when CNG technology is used. As Table 8 shows,

CNG costs $4000-$6000 and emissions are reduced for small vehicles from 2.1 grams of CO per mile to 0.21.

Table 9 also shows, for example, that to reduce emissions to 0.84 it only requires $1000 per ultra low emission vehicle that currently emits 2.1 grams of emissions. But for Tier 1 vehicles, that emit 4.2 grams of emissions, it would require $2000 per vehicle, and for trucks that emit 5.5 grams of CO per mile, it would require more than $2500 per vehicle to come close to the 0.84 grams of emissions achieved for only $1000 with ultra low emission vehicles.

Vehicles in each segment were placed in the emissions category that most closely represents their emissions level as of 1989:

$$\text{Small car emissions per mile} = \frac{\$840 \text{ CO grams per mile}}{\text{additional vehicle cost}}$$

$$\text{Pickup emissions per mile} = \frac{\$2200 \text{ CO grams per mile}}{\text{additional vehicle cost}}$$

$$\text{SUV car emissions per mile} = \frac{\$2200 \text{ CO grams per mile}}{\text{additional vehicle cost}} \qquad \textbf{(10)}$$

$$\text{Luxury car emissions per mile} = \frac{\$1680 \text{ CO grams per mile}}{\text{additional vehicle cost}}$$

$$\text{Large car emissions per mile} = \frac{\$1680 \text{ CO grams per mile}}{\text{additional vehicle cost}}$$

Now that the abatement cost functions have been specified, we have the information necessary to determine the level of emissions that will maximize profits for each firm. Since firms make decisions on the margin, in order to maximize profits each firm will seek to reduce emissions as long as the marginal benefit is greater than or equal to the marginal cost of emissions reduction. Therefore, the marginal cost and marginal benefit to each firm under each tax needs to be calculated.

Optimal Emissions for firms under the PMET

The total cost function is needed to calculate the marginal cost of pollution reduction under the PMET. The first step to derive the total cost function is solving the abatement function in terms of additional cost per vehicle.

Since the abatement function is:

$$\text{emissions} = \frac{1}{\text{additional cost}} \cdot \text{abatement constant} \qquad \textbf{(11)}$$

After solving this equation for additional cost per vehicle the equation becomes:

$$\text{additional cost per vehicle} = \frac{\text{abatement constant}}{\text{emissions}} \qquad \textbf{(12)}$$

Since this is a per vehicle cost, the total cost can be found by multiplying both sides by quantity.

$$\text{quantity} \cdot \text{additional cost per vehicle} = \frac{\text{abatement constant}}{\text{emissions}} \cdot \text{quantity} \quad \textbf{(13)}$$

Or

$$\text{total cost of emissions reduction} = \frac{\text{abatement constant}}{\text{emissions}} \cdot \text{quantity} \quad \textbf{(14)}$$

To find the marginal cost of emissions reduction for the PMET, the derivative of equation (14) with respect to emissions will be performed. This yields:

$$\frac{\partial \text{TC}}{\partial \text{emissions}} = -\frac{\text{abatement constant}}{\text{emissions}^2} \cdot \text{quantity} \quad \textbf{(15)}$$

Or simply:

$$\text{Marginal cost of emissions reduction} = -\frac{\text{abatement constant}}{\text{emissions}^2} \cdot \text{quantity} \quad \textbf{(16)}$$

Now that the marginal cost of emissions is known for the PMET, the marginal benefit of emissions reduction to the firm needs to be calculated.

Since it is assumed there is no "good-will" benefit to the firm for producing lower emission vehicles and that the characteristics of lower emission vehicles are not significantly different, then the benefit to the firm of reducing pollution under the PMET is simply the higher market price and greater number of units the firm can sell.

The change in demand that results from the higher PMET is calculated as $\frac{\partial P}{\partial Gas} \cdot PMET$

where $\frac{\partial P}{\partial Gas}$ is a proxy for the effect of the PMET on the price of vehicles.

Therefore, the marginal benefit to the firm of emissions reduction is:

$$\frac{\partial \mathrm{P}}{\partial \mathrm{Gas}} \cdot \mathrm{PMET} \cdot \text{quantity of vehicles sold} \quad \textbf{(17)}$$

Set marginal cost equal to marginal benefit to find the optimal level of emissions:

$$-\frac{abatement\ constant}{emissions^2} \cdot quantity = \frac{\partial P}{\partial Gas} \cdot PMET \cdot quantity$$

Solving for emissions yields:

$$emissions^2 = \frac{abatement\ constant}{\frac{\partial P}{\partial Gas} \cdot PMET} \quad \textbf{(18)}$$

Simplifying yields the optimal emissions:

$$emissions^* = \left(\frac{abatement\ constant}{\frac{\partial P}{\partial Gas} \cdot PMET} \right)^{\frac{1}{2}} \quad \textbf{(19)}$$

The asterisk designates that this is the optimal amount of emissions under the PMET. Substituting the optimal emissions level into the abatement equation generates the additional cost per unit of achieving the optimal level of pollution reduction.

Using the optimal level of emissions creates the following first order conditions for the PMET:

FOC under PMET

$$
\begin{aligned}
&p_1^i + \frac{\partial p_1}{\partial q_1}\cdot q_1^i + \frac{\partial p_2}{\partial q_1}\cdot q_2^i + \frac{\partial p_3}{\partial q_1}\cdot q_3^i + \frac{\partial p_4}{\partial q_1}\cdot q_4^i + \frac{\partial p_5}{\partial q_1}\cdot q_5^i - MC_1^i - tax_1^i = 0 \\
&p_2^i + \frac{\partial p_1}{\partial q_2}\cdot q_1^i + \frac{\partial p_2}{\partial q_2}\cdot q_2^i + \frac{\partial p_3}{\partial q_2}\cdot q_3^i + \frac{\partial p_4}{\partial q_2}\cdot q_4^i + \frac{\partial p_5}{\partial q_2}\cdot q_5^i - MC_2^i - tax_2^i = 0 \\
&p_3^i + \frac{\partial p_1}{\partial q_3}\cdot q_1^i + \frac{\partial p_2}{\partial q_3}\cdot q_2^i + \frac{\partial p_3}{\partial q_3}\cdot q_3^i + \frac{\partial p_4}{\partial q_3}\cdot q_4^i + \frac{\partial p_5}{\partial q_3}\cdot q_5^i - MC_3^i - tax_3^i = 0 \\
&p_4^i + \frac{\partial p_1}{\partial q_4}\cdot q_1^i + \frac{\partial p_2}{\partial q_4}\cdot q_2^i + \frac{\partial p_3}{\partial q_4}\cdot q_3^i + \frac{\partial p_4}{\partial q_4}\cdot q_4^i + \frac{\partial p_5}{\partial q_4}\cdot q_5^i - MC_4^i - tax_4^i = 0 \\
&p_5^i + \frac{\partial p_1}{\partial q_5}\cdot q_1^i + \frac{\partial p_2}{\partial q_5}\cdot q_2^i + \frac{\partial p_3}{\partial q_5}\cdot q_3^i + \frac{\partial p_4}{\partial q_5}\cdot q_4^i + \frac{\partial p_5}{\partial q_5}\cdot q_5^i - MC_5^i - tax_5^i = 0
\end{aligned}
\qquad \textbf{(20)}
$$

For each i^{th} firm, where the first term is the new price consumers are willing to pay for vehicles given the higher travel costs. How the change in vehicle operating costs affect the prices consumers are willing to pay for vehicles is shown by the inverse demand curves, discussed in the next section. The tax variables represent the additional production cost to each firm at the optimal level of emissions as a result of the abatement technology chosen, and MC is the marginal costs for each firm in each segment.

The next section will examine how the PMET changes demand.

Change in Demand caused by the PMET

The new price consumers are willing to pay is the original demand equation less the change in demand caused by PMET. The change in demand for vehicles caused by the PMET is represented by how consumers have reacted to changes in vehicle operating costs in the past, in particular, to gasoline prices. The change in demand in each segment is represented by the $\frac{\partial P}{\partial Gas}$ variables. These variables show the change in vehicle price in each segment caused by the change in per mile operating costs.

Change in per mile operating costs under the PMET is the amount of the tax per unit of emissions times the emissions per mile, represented by the epm variables in the following equations. Therefore, the linearized demand equations found in Chapter 4 are changed by subtracting $\frac{\partial p_j}{\partial gas} \cdot PMET \cdot epm_j^i$ from each inverse demand equation. This equation shows the change in vehicle prices caused by the PMET. The following are the adjusted

inverse demands for each i[th] firm in each market segment under the PMET.

$$
\begin{aligned}
P_1^i &= Constant_1 + \frac{\partial p_1}{\partial q_1}\cdot Q_1^T + \frac{\partial p_1}{\partial q_2}\cdot Q_2^T + \frac{\partial p_1}{\partial q_3}\cdot Q_3^T + \frac{\partial p_1}{\partial q_4}\cdot Q_4^T + \frac{\partial p_1}{\partial q_5}\cdot Q_5^T - \frac{\partial p_1}{\partial gas}\cdot PMET\cdot epm_1^i \\
P_2^i &= Constant_2 + \frac{\partial p_2}{\partial q_1}\cdot Q_2^T + \frac{\partial p_2}{\partial q_2}\cdot Q_2^T + \frac{\partial p_2}{\partial q_3}\cdot Q_3^T + \frac{\partial p_2}{\partial q_4}\cdot Q_4^T + \frac{\partial p_2}{\partial q_5}\cdot Q_5^T - \frac{\partial p_2}{\partial Gas}\cdot PMET\cdot epm_2^i \\
P_3^i &= Constant_3 + \frac{\partial p_3}{\partial q_1}\cdot Q_1^T + \frac{\partial p_3}{\partial q_2}\cdot Q_2^T + \frac{\partial p_3}{\partial q_3}\cdot Q_3^T + \frac{\partial p_3}{\partial q_4}\cdot Q_4^T + \frac{\partial p_3}{\partial q_5}\cdot Q_5^T - \frac{\partial p_3}{\partial Gas}\cdot PMET\cdot epm_3^i \\
P_4^i &= Constant_4 + \frac{\partial p_4}{\partial q_1}\cdot Q_1^T + \frac{\partial p_4}{\partial q_2}\cdot Q_2^T + \frac{\partial p_4}{\partial q_3}\cdot Q_3^T + \frac{\partial p_4}{\partial q_4}\cdot Q_4^T + \frac{\partial p_4}{\partial q_5}\cdot Q_5^T - \frac{\partial p_4}{\partial Gas}\cdot PMET\cdot epm_4^i \\
P_5^i &= Constant_5 + \frac{\partial p_5}{\partial q_1}\cdot Q_1^T + \frac{\partial p_5}{\partial q_2}\cdot Q_2^T + \frac{\partial p_5}{\partial q_3}\cdot Q_3^T + \frac{\partial p_5}{\partial q_4}\cdot Q_4^T + \frac{\partial p_5}{\partial q_5}\cdot Q_5^T - \frac{\partial p_5}{\partial Gas}\cdot PMET\cdot epm_5^i
\end{aligned}
\qquad \textbf{(21)}
$$

Optimal Emissions for firms under the LSET

Since it is assumed that the incidence of per unit taxes does not change outcomes, the LSET will be placed on each firm rather than on consumers. Each firm benefits from lower emissions because it pays a lower tax on each vehicle it produces. Firms will then select the level of emission reduction that maximizes profits.

The objective for each firm under the LSET is to maximize the following profit equation:

$$\text{Max profit} = \mathrm{P}\cdot\mathrm{Q} - \mathrm{TC}_{\text{manufacturing}} - \mathrm{TC}_{\text{abatement}} - \text{Total taxes} \qquad \textbf{(22)}$$

where P is the vector of prices, Q is the vector of quantities, $\mathrm{TC}_{\text{manufacturing}}$ is the total cost of manufacturing, $\mathrm{TC}_{\text{abatement}}$ is the total cost of abatement and total taxes is the total of LSET taxes paid by the firm.

Since it is assumed access to technology is the same under the LSET as under the PMET, the total cost of abatement function is:

$$\mathrm{TC}_{\text{abatement}} = \frac{\text{abatement constant}}{\text{emissions}} \cdot \mathrm{Q} \tag{23}$$

and the total amount of taxes each firm will pay is:

$$\textit{Total taxes} = \textit{emissions} \cdot \textit{LSET} \cdot \textit{Q} \tag{24}$$

where emissions is the vector of emissions in each segment, and LSET is the tax rate for each unit of emissions.

Each firm will seek to maximize profits by changing the variables under its control. Each firm controls the quantity produced and the emissions of their vehicles. The optimal emissions for each firm can be found by taking the derivative with respect to emissions.

Taking the derivative of the profit equation with respect to emissions yields:

$$\frac{\partial \text{Profits}}{\partial \text{emissions}} = \frac{\partial \mathrm{TC}_{\text{abatement}}}{\partial \text{emissions}} = \frac{\text{abatement constant}}{\text{emissions}^2} \cdot \mathrm{Q} - \mathrm{LSET} \cdot \mathrm{Q} \tag{25}$$

$$\frac{\text{abatement constant}}{\text{emissions}^2} \cdot \mathrm{Q} - \mathrm{LSET} \cdot \mathrm{Q} = 0 \tag{26}$$

$$\mathrm{LSET} \cdot \mathrm{Q} = \frac{\text{abatement constant}}{\text{emissions}^2} \cdot \mathrm{Q} \tag{27}$$

Setting FOC equal to zero and solving for emissions:

$$\text{emissions}^2 = \frac{\text{abatement constant}}{\text{LSET}} \tag{28}$$

$$\text{emissions}^* = \left(\frac{\text{abatement constant}}{\text{LSET}} \right)^{\frac{1}{2}} \tag{29}$$

This is the optimal emissions for each firm under the LSET. Substituting the optimal emissions into the abatement function yields the additional per vehicle cost of these optimal emissions. Since it is known in environmental economic theory that a firm will continue to add abatement equipment until the marginal cost of the abatement equipment equals the tax, the change in per vehicle cost is equal to the per vehicle tax under the LSET. This can be shown to be true in the following proof.

It needs to be shown that:

$$\text{per vehicle tax} = \text{additional vehicle cost} \tag{30}$$

Since,

$$\text{per vehicle tax} = \text{LSET} \cdot \text{emissions per vehicle} \tag{31}$$

and from the abatement function it is known that

$$\text{additional vehicle cost} = \frac{\text{abatement constant}}{\text{emissions per vehicle}} \tag{32}$$

Then, it needs to be shown that:

$$\text{LSET} \cdot \text{emissions per vehicle} = \frac{\text{abatement constant}}{\text{emissions per vehicle}} \tag{33}$$

Multiplying both sides of the equation by emissions per vehicle yields

$$LSET \cdot (emissions\ per\ vehicle)^2 = abatement\ constant \tag{34}$$

Since

$$\text{optimal emissions} = \left(\frac{\text{Abatement constant}}{\text{LSET}} \right)^{\frac{1}{2}} \tag{35}$$

substituting optimal emissions into emissions equation in equation (34) yields

$$LSET \cdot \left(\left(\frac{abatement\ constant}{LSET} \right)^{\frac{1}{2}} \right)^2 = abatement\ constant \tag{36}$$

$$LSET \cdot \frac{abatement\ constant}{LSET} = abatement\ constant \tag{37}$$

or

$$abatement\ constant = abatement\ constant$$

This shows that indeed the per unit tax does equal the additional cost per vehicle for the LSET.

Therefore, each firm's production cost will increase by the amount of the tax and each firm will have to pay an equal amount in taxes for each unit produced. Therefore, the marginal cost of both the tax and the increased production costs are twice the amount of the tax.

The FOC for the LSET are the same as the original FOC for the LSET except the cost of the firm to produce has changed by both the amount of the tax and the increased production costs. This is simply two times the amount of the tax.

FOC under LSET

$$
\begin{aligned}
&p_1^i + \frac{\partial p_1}{\partial q_1}\cdot q_1^i + \frac{\partial p_2}{\partial q_1}\cdot q_2^i + \frac{\partial p_3}{\partial q_1}\cdot q_3^i + \frac{\partial p_4}{\partial q_1}\cdot q_4^i + \frac{\partial p_5}{\partial q_1}\cdot q_5^i - MC_1^i - 2\cdot tax_1^i = 0 \\
&p_2^i + \frac{\partial p_1}{\partial q_2}\cdot q_1^i + \frac{\partial p_2}{\partial q_2}\cdot q_2^i + \frac{\partial p_3}{\partial q_2}\cdot q_3^i + \frac{\partial p_4}{\partial q_2}\cdot q_4^i + \frac{\partial p_5}{\partial q_2}\cdot q_5^i - MC_2^i - 2\cdot tax_2^i = 0 \\
&p_3^i + \frac{\partial p_1}{\partial q_3}\cdot q_1^i + \frac{\partial p_2}{\partial q_3}\cdot q_2^i + \frac{\partial p_3}{\partial q_3}\cdot q_3^i + \frac{\partial p_4}{\partial q_3}\cdot q_4^i + \frac{\partial p_5}{\partial q_3}\cdot q_5^i - MC_3^i - 2\cdot tax_3^i = 0 \\
&p_4^i + \frac{\partial p_1}{\partial q_4}\cdot q_1^i + \frac{\partial p_2}{\partial q_4}\cdot q_2^i + \frac{\partial p_3}{\partial q_4}\cdot q_3^i + \frac{\partial p_4}{\partial q_4}\cdot q_4^i + \frac{\partial p_5}{\partial q_4}\cdot q_5^i - MC_4^i - 2\cdot tax_4^i = 0 \\
&p_5^i + \frac{\partial p_1}{\partial q_5}\cdot q_1^i + \frac{\partial p_2}{\partial q_5}\cdot q_2^i + \frac{\partial p_3}{\partial q_5}\cdot q_3^i + \frac{\partial p_4}{\partial q_5}\cdot q_4^i + \frac{\partial p_5}{\partial q_5}\cdot q_5^i - MC_5^i - 2\cdot tax_5^i = 0
\end{aligned}
\qquad \textbf{(38)}
$$

For each i^{th} firm the tax variables show the additional cost of production and the per vehicle tax producers pay. The inverse demand curves are the same as the ones found in Chapter 4 since vehicle characteristics are unchanged by the LSET.

Therefore, the only change to price that will occur will be caused by changes in the market equilibrium as the result of the increased marginal costs paid by each firm. The following are the inverse demand equations under the LSET.

$$
\begin{aligned}
P_1^i &= Constant_1 + \frac{\partial p_1}{\partial q_1}\cdot Q_1^T + \frac{\partial p_1}{\partial q_2}\cdot Q_2^T + \frac{\partial p_1}{\partial q_3}\cdot Q_3^T + \frac{\partial p_1}{\partial q_4}\cdot Q_4^T + \frac{\partial p_1}{\partial q_5}\cdot Q_5^T \\
P_2^i &= Constant_2 + \frac{\partial p_2}{\partial q_1}\cdot Q_2^T + \frac{\partial p_2}{\partial q_2}\cdot Q_2^T + \frac{\partial p_2}{\partial q_3}\cdot Q_3^T + \frac{\partial p_2}{\partial q_4}\cdot Q_4^T + \frac{\partial p_2}{\partial q_5}\cdot Q_5^T \\
P_3^i &= Constant_3 + \frac{\partial p_3}{\partial q_1}\cdot Q_1^T + \frac{\partial p_3}{\partial q_2}\cdot Q_2^T + \frac{\partial p_3}{\partial q_3}\cdot Q_3^T + \frac{\partial p_3}{\partial q_4}\cdot Q_4^T + \frac{\partial p_3}{\partial q_5}\cdot Q_5^T \\
P_4^i &= Constant_4 + \frac{\partial p_4}{\partial q_1}\cdot Q_1^T + \frac{\partial p_4}{\partial q_2}\cdot Q_2^T + \frac{\partial p_4}{\partial q_3}\cdot Q_3^T + \frac{\partial p_4}{\partial q_4}\cdot Q_4^T + \frac{\partial p_4}{\partial q_5}\cdot Q_5^T \\
P_5^i &= Constant_5 + \frac{\partial p_5}{\partial q_1}\cdot Q_1^T + \frac{\partial p_5}{\partial q_2}\cdot Q_2^T + \frac{\partial p_5}{\partial q_3}\cdot Q_3^T + \frac{\partial p_5}{\partial q_4}\cdot Q_4^T + \frac{\partial p_5}{\partial q_5}\cdot Q_5^T
\end{aligned}
\qquad \textbf{(39)}
$$

In this chapter, an abatement function for each segment was developed. These abatement functions are consistent with economic theory and the cost of propane and natural gas technologies. From these abatement functions, the profit-maximizing level of emissions for firms under each tax was derived. Next, the inverse demands under each tax were found. Finally, using the optimal emissions functions and the new inverse demand curves, new first order conditions were derived for each tax. In the next chapter, the first order equations and inverse demand equations will be used to determine the impact of each tax on social welfare.

Chapter 6 Social Welfare Optimization Comparisons under Each Tax

The first order conditions after each tax was imposed that were found in the previous chapter should result in different prices, levels of production, and levels of abatement technology implemented given different levels of taxation under the PMET and the LSET. From these market results, net emissions reduction under each tax will be determined, relevant consumer and producer surpluses calculated, and comparisons made between the two tax schemes.

Criteria for Evaluating Results

To evaluate each tax, the optimization program will adjust each tax rate until the PMET and the LSET reduce pollution by the same amount. Pollution reduction is set equal to avoid having to adjust for any extra pollution reduction. Since the value of pollution reduction is often debated, this would add another complication and another possible source of error to the model.

While pollution reduction under each tax is the same, the amount of consumer surplus and producer surplus in each market under each tax will differ. The tax that creates more gains from trade in the automotive and travel markets while achieving the same amount of pollution reduction will be judged superior.

Given that the other market conditions are the same for each tax, the optimization program will determine, the largest possible difference in the total gains from trade achieved under one tax compared to the other. In doing this, the optimization program will adjust the tax rates, the coefficients of demand, and any other unknown variable. The program will also adjust each firm's output so that first order conditions are satisfied in addition to other constraints.

If the largest possible difference is always in favor of one tax, then that tax will be judged superior. If the largest possible difference varies depending on certain market conditions, then this paper will attempt to identify those market conditions and, where possible, draw appropriate conclusions.

Calculation of Net Pollution Reduction

Both the PMET and LSET are levied on new cars. This is done so that each tax is placed on potentially the same number of consumers, and it is likely the government would phase in either tax so that fewer consumers would bear the burden of the tax, and thus, lessen political opposition.

As stated earlier, both reducing vehicle miles traveled and lowering emissions per mile achieve pollution reduction; however, consumers who hold on to older, more polluting vehicles offset some of these reductions.

Therefore, pollution reduction is calculated as:

Net emissions reduction =

Amount of emissions from new vehicles with no tax -
Amount of emissions from new vehicles with tax -
Additional emissions caused by consumers who hold on to older vehicles **(40)**

where:

Additional emissions caused by consumers holding onto older vehicles = **(41)**

Decrease in auto sales • emissions caused by the oldest, non - gross polluter vehicles

In estimating the additional emissions caused by consumers holding on to older vehicles, all lost vehicle sales are assumed to result in an old, non-gross polluting vehicle remaining in operation. Even though, it is assumed that each lost new vehicle sale causes an old vehicle to remain in operation, it is assumed that this old vehicle is not a gross polluter because of state and local inspection programs designed to eliminate such gross polluters. Instead, the pollution emitted from vehicles that would have been scrapped will be assumed to be equal to the average in-use emissions for vehicles. In-use emissions are obtained from remote sensing equipment of vehicles in use. The measurements taken vary greatly but the greatest preponderance of observation are between 5 and 10 grams of CO per mile (Wenzel, 1999). Therefore, in this paper it will be assumed that vehicles that stay on the road emit 7.5 grams of CO per mile.

Emission Reduction Mechanisms under the Per Mile Emission Tax

The first tax to be examined is the PMET. The PMET achieves pollution reduction by both encouraging producers to produce lower emission vehicles and by reducing vehicle miles traveled. To calculate the effectiveness of the PMET, a travel demand function needs to be estimated so the PMET's impact on vehicle miles traveled can be determined. Next, the relationship between operating costs and vehicle sales will be explored so the PMET's impact on new vehicle demand can be estimated.

Estimation of Travel Demand with Respect to Operating Costs

The demand for travel depends on many different factors, but of interest to this paper is how the price per mile traveled changes the quantity of vehicle miles traveled. A linear form of travel demand will be assumed of the following form:

$$\text{Quantity of travel demanded} = \text{intercept} + \text{slope} \cdot \text{price} \qquad \textbf{(42)}$$

The slope of travel demand has been the focus of other researchers and their results will be used in this paper. The slope measures how vehicle miles traveled changes with each change in price. If the slope, price, and quantity of travel are known, then the intercept can be calculated and a demand function can be estimated. In this paper, it is assumed that the price of travel is 25 cents per mile and that each vehicle owner travels 12,000 miles each year on average. The price of travel figure is approximately based on the reimbursement rate paid by the U.S. government (Federal Register, 1999) to its employees reflecting the additional cost of each mile traveled.

The price of travel figure is used for vehicles of all sizes because the difference in the cost of maintenance, tire wear, and gasoline and oil used is only 3.2 cents between small sedans and SUVs (AAA, 2000). But as a more practical matter, the elasticities for travel used in this paper from other studies are not broken down by vehicle segment. In addition, the vehicle miles traveled figures are also averaged for all vehicle types. Therefore, using different vehicle operating costs depending on vehicle segment would be problematic because it is unknown from the aggregated studies whether the elasticity of travel demand and vehicle miles traveled is the same for all vehicle segments. Consequently, the value of travel will be estimated using average vehicle miles traveled and average per mile cost, and these will be assumed uniform for each segment.

The average annual vehicle miles traveled per year is based on information collected by the Residential Transportation Energy Consumption Survey published by the Department of Energy (DOE). The DOE survey estimated vehicle miles traveled at 11,400 miles per vehicle in 1994 and vehicle miles driven in the first year in 1994 at 14,300 miles. Auto and tire manufacturers for warranty coverage purposes use a 12,000 mile per year figure. This figure is used not only by these companies, but also by the EPA report when it reports expected vehicle emissions. Because the 12,000 miles per year figure is in common use and close to the 1994 energy consumption figures, it is used for this paper.

Now that price and quantity of travel are defined, the only remaining figure needed to calculate the intercept of travel demand is the slope of travel demand. Heninger and Shah (1998) calculate an elasticity of vehicle miles traveled (VMT) with respect to gasoline prices per mile of –0.192. This means that a 1 percent increase in travel cost causes a 0.192 percent decrease in miles traveled. If the price of travel is $0.25 per mile, then a 4 percent increase in travel causes a one-cent increase in travel cost and a 0.768 percent drop in VMT. This would cause vehicle miles traveled for the average 12,000 miles per year consumer to drop by 92.16 miles. This figure is the slope of travel demand in cents.

Solving the demand equation for the intercept and substituting generates the demand equation:

$$12000 \text{ miles} = \text{intercept} - 92.16 \text{ miles/cent} \cdot 25 \text{ cents} \quad \textbf{(43)}$$

$$\text{intercept} = 14304 \text{ miles} \quad \textbf{(44)}$$

Therefore, travel demand is:

$$\text{Travel demand} = 14{,}304 \text{ miles} - 92.16 \text{ miles/cent} \cdot \text{price of travel in cents} \quad \textbf{(45)}$$

Now that travel demand has been determined, how the PMET changes travel demand will be estimated.

Travel Demand under the PMET

Since the PMET increases the price of travel, it will reduce the number of miles traveled. The size of the reduction also depends on the elasticity of supply. For this paper, it was assumed that supply in the travel market is perfectly elastic. This assumption is not unreasonable because commodity markets tend to have very elastic long run elasticities.

With a perfectly elastic supply, any increase in travel cost is borne entirely by the consumer. This means that the PMET changes demand in the following manner:

$$\text{Travel demand} = 14{,}304 \text{ miles} - 92.16 \text{ miles/cent} \cdot (\text{Price of travel} + \text{PMET} \cdot \text{Emissions per mile}) \text{ in cents} \quad \textbf{(46)}$$

Or

$$\text{Travel demand} = 14304 \text{ miles} - 92.16 \text{ miles/cent} \cdot (\text{Price of travel} + \text{Effective tax per mile}) \text{ in cents} \quad \textbf{(47)}$$

In the optimization program, the effective tax per mile is represented by variables tpma1 through tpma5 since the tax per mile varies between vehicle segments. This shows that any increase in the tax per mile increases the cost of travel by the amount of the tax and reduces vehicle miles traveled (VMT) by consumers accordingly.

Now that the impact of the PMET on travel demand has been found, the next step is to establish how much increases in vehicle operating costs reduce vehicle sales so that the change in new vehicle sales under the PMET can be determined.

Impact of Operating Costs on New Vehicle Demand

Since the PMET increases the cost of travel, an increase in its cost should change vehicle demand in the same way other increases in operating cost have changed demand for vehicles. Several studies have been performed on vehicle operating cost and sales. Most commonly, gasoline prices have been studied. Pritchard and DeBoer (1995) found vehicle sales elasticities with respect to gasoline prices between –0.096 and –0.107 depending on model in their 1986 study. Berndt, Friedlaender, and Shaw-Er Wang Chaing (1990) found elasticity to be between –0.80 and –7.97 for 1983 and in their multi-year study, their work showed an inelastic trend since1959. Finally Arguea, Hsiao, and Taylor (1994) found elasticityto be between –0.211 and –0.208 with respect to vehicle sales and miles per gallon characteristics, depending on the statistical method used.

Since the Pritchard and DeBoer estimates for operating cost elasticity lie between the other studies' estimates, their estimate of 0.107 for elasticity of operating cost to vehicle demand will be used to determine how vehicle prices change when vehicle operating costs increase on a per mile basis.

First the gasoline elasticity must be converted to the impact of a per mile increase in cost on vehicle price, henceforth referred as $\frac{\partial P}{\partial Gas}$.

Since the elasticity of vehicle sales to gasoline prices =

$$\frac{\%\ \text{change in quantity of vehicles sold}}{\%\ \text{change in gasoline prices}} \qquad \textbf{(48)}$$

Given that gasoline prices were around $1 per gallon in 1989; this implies a one cent increase is equivalent to a one percent increase in gasoline prices. In addition, with weighted fuel economy at about 26 miles per gallon in 1989, a one percent increase in gasoline prices would cause per mile vehicle operating cost to increase by 1/26 of a cent. Therefore, a 1/26 of a cent increase in per mile vehicle operating cost would result in a 0.107 percent drop in vehicle sales, based upon the elasticity of gasoline demand found by Pritchard and DeBoer. Consequently, a one cent increase in per mile operating costs ,which is to say a 26 cent/gal price increase, would cause vehicles sales to drop by 2.782 percent. This is an elasticity of vehicle sales to per mile operating cost of 2.782.

The percentage drop in vehicle sales due to per mile operating costs figure multiplied by the total sales in each segment represents the total sales lost per one cent increase in per mile operating cost. However, since the demand equations in this paper are in inverse form, this figure must be divided by the inverse of the slope of inverse demand to

determine the impact on vehicle prices. The result is the change in vehicle prices caused by a change in per mile operating costs, $\frac{\partial P}{\partial Gas}$.

Ideally the value of $\frac{\partial P}{\partial Gas}$ would be calculated at each point with the current estimated slope of the demand curve; unfortunately, allowing these variables to vary exceeds the capacity of the global optimization program. However, since the maximum and minimum slope of the demand curve in each segment is known from Chapter 3 to be between certain values for each quarter, the coefficients of $\frac{\partial P}{\partial Gas}$ calculated using the inverse demand slopes are known to between certain values. These values will be used as constraints and the value of $\frac{\partial P}{\partial Gas}$ will be allowed to change within these constraints in the optimization program.

The values taken by the inverse demand slopes, vehicle sales and $\frac{\partial P}{\partial Gas}$ are shown in Appendix 12 where $\frac{\partial P}{\partial Gas}$ has been converted from cents to dollars.

Now that the influence of vehicle operating costs on sales has been specified, the pollution reduction achieved under the PMET can be estimated.

Pollution Reduction Calculations under PMET

Pollution reduction is calculated as the difference between total emissions before the PMET less total emissions after the PMET has been implemented. Since it is assumed the PMET is on new vehicle sales, how the tax changes the behavior of those consumers who were planning on a new vehicle purchase is the relevant group. How pollution changes for this group will be calculated as follows:

Total emissions without PMET = **(49)**

Existing emissions per mile before the PMET · number of miles traveled
· number of vehicles sold before PMET

Total emissions after PMET = **(50)**

emissions from new vehicles
+ emissions from vehicles that would not be in use but for the PMET

Emissions from new vehicles = **(51)**

number of miles traveled by new vehicles after PMET
· new vehicle emissions · number of new vehicles sold

Total emissions by vehicles that would not have been in use without PMET = **(52)**

number of miles traveled · existing emissions before PMET
· sales lost due to PMET

It is assumed that VMT will not change for older vehicles due to the tax because it is assumed the cost of keeping older vehicles in operation is relatively insignificant and that consumers buy new vehicles for the amenities they offer rather than cost efficiency.

Equation (53) shows the calculation for pollution reduction used in the global optimization program. Current emissions indicate the emissions of new vehicles before either tax is imposed. These values are set to 2.1 grams of CO per mile for small cars which is the ultra low emission vehicle (ULEV) standard for vehicles, 5.5 grams for pickups and SUVs, and 4.2 for all other vehicles in accordance with vehicle emission standards in place by 1992.

Pollution reduction in segment i =

$$\begin{aligned} &\mathrm{cepm_i} \cdot \mathrm{Q_i^{before\ PMET}} \cdot \mathrm{C\ VMT_i} - (\mathrm{VMT_i} \cdot \mathrm{epm_i}) \cdot \mathrm{Q_i^{after\ PMET}} \\ &+ \mathrm{C\ VMT_i} \cdot \mathrm{mepm_i} \cdot \mathrm{lostsales_i} \end{aligned} \qquad \textbf{(53)}$$

For each i^{th} firm, where cepm is the current emissions per vehicle, CVMT is the current vehicle miles traveled before the PMET, VMT is the new vehicle miles traveled, epm is the new emissions per vehicle, mepm is the emissions per mile from the oldest, non-gross polluting vehicles, and lostsales is the difference between sales in the segment before and after the PMET.

Total pollution reduction under PMET =

$$\sum_{i=1}^{5} \text{Pollution reduction in segment i} \quad \textbf{(54)}$$

Total pollution reduction is the sum of the pollution reduction achieved in each segment. Since the global optimization program requires variables to be of reasonably close scale, the pollution reduction figure in the optimization program is divided by one trillion.

Emission Reduction Mechanisms under the Lump Sum Emission Tax

Pollution reduction under the LSET is only achieved when auto makers reduce the emissions characteristics of their vehicles. Since the LSET does not change the cost of travel, vehicle miles traveled (VMT) will not change.

Pollution Reduction Calculations under LSET

Pollution reduction is calculated as the difference between total emissions before the LSET, less total emissions after the LSET for those who would have purchased a vehicle before the tax. This is the same group as was used for the PMET. Equation (59) shows the calculation for pollution reduction used in the global optimization program. Since the LSET does not change vehicle operating costs, vehicle miles traveled are unchanged from before the LSET was imposed.

Total emissions without LSET =

current vehicle miles traveled · new per mile emissions ·
number of new vehicles sold **(55)**

Total emissions after the LSET =

emissions from new vehicles +
emissions from vehicles that would not be in use but for the LSET **(56)**

Emissions from new vehicles =

current vehicle miles traveled · current per mile emissions ·
current number of vehicles sold **(57)**

Emissions from vehicles that would not have been in use but for the LSET = **(58)**

Current miles traveled · current per mile emissions · sales lost due to LSET

Pollution reduction in segment i =

$$\text{cepm}_i \cdot Q_i^{\text{before LSET}} \cdot \text{C VMT}_i - (\text{CVMT}_i \cdot \text{epm}_i) \cdot Q_i^{\text{after LSET}} + \text{C VMT}_i \cdot \text{mepm}_i \cdot \text{lostsales}_i \quad \textbf{(59)}$$

For each i^{th} firm, where cepm is the current emissions per vehicle, CVMT is the current vehicle miles traveled before the LSET, epm is the new emissions per vehicle, mepm is the emissions per mile from the oldest, non-gross polluting vehicles, and lostsales is the difference between sales in the segment before and after the LSET.

$$\text{Total pollution reduction} = \sum_{i=1}^{5} \text{Pollution reduction in segment i} \qquad \textbf{(60)}$$

Total pollution reduction is the sum of the pollution reduction achieved in each segment. The pollution reduction figure in the global optimization program is divided by one trillion since the program requires variables to be of reasonably close scale. Now that pollution reduction under each tax has been calculated, the differences between total surplus under each tax will be calculated.

Social Welfare Calculations

Consumer Surplus

Simple Walrasian surpluses were estimated from the linearized demand equations. However, since symmetric demands were assumed, this implies no income effect. Consequently, the Walrasian surplus measures of social welfare are identical to the compensated variation and equivalent variation measures of social welfare, and are determined in the following manner. Given the estimated demand curve for each of the five markets, the area under the relevant demand curve up to the point of equilibrium is calculated, as shown in Figure 3. Consumer surplus is the area of the triangle, ½ the base times the height. For each market segment, this is

$$\frac{1}{2} \cdot (\text{relevant intercept} - \text{market price}) \cdot \text{relevant quantity}$$

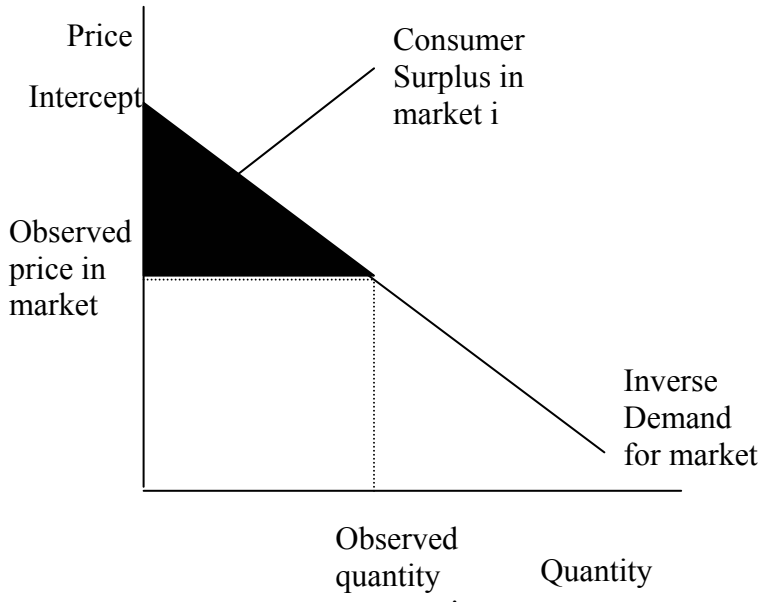

Figure 3: Consumer Surplus Graph

The following formulas show the calculations of consumer surplus before and after each tax. The PMET calculation, equation (63), shows the drop in demand caused by the increase in operating cost.

$$\text{Consumer surplus in segment i before either tax} = \frac{1}{2} \cdot (\text{constant}_i - p_i^{\text{Before tax}}) \cdot Q_i^{\text{Before tax}} \quad \textbf{(61)}$$

$$\text{Consumer surplus in segment i after LSET} = \frac{1}{2} \cdot (\text{constant}_i - p_i^{\text{afterLSET}}) \cdot Q_i^{\text{after LSET}} \quad \textbf{(62)}$$

Consumer surplus in segment i after PMET =

$$\frac{1}{2} \cdot ((\text{constant}_i - \frac{\partial p_i}{\partial \text{gas}} \cdot \text{PMET} \cdot \text{epm}_i) - p_i^{\text{afterPMET}}) \cdot Q_i^{\text{after PMET}} \quad \textbf{(63)}$$

Total surplus under each case in the auto market =

$$\sum_{i=1}^{5} \text{Consumer surplus in segment i under each case} \quad \textbf{(64)}$$

For each i^{th} firm, where the constant variables are the demand intercepts in each segment.

Producer Surplus

Producer surplus is calculated as the difference between the price the producer receives and its marginal cost of production and any abatement cost. Marginal cost is assumed to be constant over the relevant range.

The following equations show the calculation of producer surplus in the auto market for each segment before either tax and under the LSET and the PMET.

Producer Surplus in each segment i after LSET =

$$\begin{aligned} &\left(p_i^{\text{after LSET}} - MC_i^a\right) \cdot q_{i,\text{after LSET}}^a + \left(p_i^{\text{after LSET}} - MC_i^c\right) \cdot q_{i,\text{after LSET}}^c + \\ &\left(p_i^{\text{after LSET}} - MC_i^f\right) \cdot q_{i,\text{after LSET}}^f + \left(p_i^{\text{after LSET}} - MC_i^g\right) \cdot q_{i,\text{after LSET}}^g \end{aligned} \quad \textbf{(65)}$$

Producer Surplus in each segment i before taxes =

$$\left(p_i^{\text{before taxes}} - MC_i^a\right)\cdot q_{i,\text{before taxes}}^a + \left(p_i^{\text{before taxes}} - MC_i^c\right)\cdot q_{i,\text{before taxes}}^c + \left(p_i^{\text{before taxes}} - MC_i^f\right)\cdot q_{i,\text{before taxes}}^f + \left(p_i^{\text{before taxes}} - MC_i^g\right)\cdot q_{i,\text{before taxes}}^g \quad \textbf{(66)}$$

Producer Surplus in each segment i after PMET =

$$\left(p_i^{\text{after PMET}} - MC_i^a\right)\cdot q_{i,\text{afterPMET}}^a + \left(p_i^{\text{after PMET}} - MC_i^c\right)\cdot q_{i,\text{after PMET}}^c + \left(p_i^{\text{after PMET}} - MC_i^f\right)\cdot q_{i,\text{after PMET}}^f + \left(p_i^{\text{after PMET}} - MC_i^g\right)\cdot q_{i,\text{after PMET}}^g \quad \textbf{(67)}$$

Total producer surplus under each case in auto market =

$$\sum_{i=1}^{5} \text{Producer surplus in segment i under each case} \quad \textbf{(68)}$$

Where q^a, q^c, q^f, q^g show the quantities produced by alternate producers, Chrysler, Ford, and G.M. in each segment, respectively.

Surplus in the Travel Sector

Since the supply of travel is assumed to be perfectly elastic, there is no change in producer surplus under the PMET. To estimate consumer surplus in the travel sector, the travel demand function derived earlier in this chapter will be used. Given the travel demand, consumer surplus (CS) before and after the tax can be calculated as follows:

Consumer surplus in travel market before PMET =

$$\frac{1}{2}\cdot(\text{intercept} - \text{price of travel})\cdot VMT_i^{\text{before PMET}}\cdot Q_{i,\text{before PMET}}^T \quad \textbf{(69)}$$

Where VMT_i is the vehicle miles traveled in segment i, and the Q represents the quantity of new vehicles sold in the auto market.

Consumer surplus in travel market after PMET =

$$\frac{1}{2}\cdot(\text{intercept}-\text{price of travel})\cdot VMT_i^{\text{after PMET}}\cdot Q_{i,\text{after PMET}}^{T}+ \frac{1}{2}\cdot(\text{intercept}-\text{price of travel})\cdot VMT_i^{\text{before PMET}}\cdot \text{lostsales}_i \quad \textbf{(70)}$$

Total surplus in travel market after PMET =

$$\sum_{i=1}^{5}\text{Consumer surplus in segment i} \quad \textbf{(71)}$$

where lostsales_i is the sales lost in segment i, and Q_i is new vehicle sales in segment i.

Tax Revenue

Anytime a tax is imposed the gains from trade accrue not only to consumers and producers, but also to the government in the form of tax revenues. Since any tax revenue collected is revenue that could be redistributed to generate at least an equal amount of consumer surplus, tax revenue is included as part of the gains from trade for either tax. In fact, it has been argued that these tax revenues might produce a double dividend. A double dividend is believed to occur when a tax on a negative externality, such as pollution, not only reduces the undesirable activity but also generates tax revenue that can

be used to reduce distortionary taxes in other markets. The case for the double dividend in environmental taxation has been made by Pearce, 1991. Pearce argues that carbon taxes could provide not only an environmental benefit, but allow taxes to be lowered on more elastic markets where welfare losses from taxes are higher. However, flaws in the double dividend approach have been found (Backhaus, 1995), (Schneider and Volkert, 1996), and some have argued that it could be negative (Bovenberg and Mooij, 1994). Therefore, since calculation of the double dividend would be problematic, any potential double dividend effect will be ignored.

Calculation of Tax Revenue under PMET and LSET

The PMET and LSET will each generate tax revenue. The following equations show the calculations used to estimate the amount of tax revenue in each market segment.

$$\text{Tax collection in each } i^{th} \text{ segment under PMET} = \text{number of years tax collected} \cdot tpm_i \cdot VMT_i \cdot (q_i^a + q_i^c + q_i^f + q_i^g) \quad \textbf{(72)}$$

$$\text{Tax collection in each } i^{th} \text{ segment under LSET} = tax_i \cdot q_i^a + tax_i \cdot q_i^c + tax_i \cdot q_i^f + tax_i \cdot q_i^g \quad \textbf{(73)}$$

Total tax revenue after each tax =

$$\sum_{i=1}^{5} \text{tax revenue in segment } i \tag{74}$$

Where q^a, q^c, q^f, q^g show the quantities produced by each firm in each segment, tpm_i is the tax paid per mile by consumers in segment i under the PMET at the optimal emissions level for the firm, tax_i is the tax paid per unit by each firm in segment i under the LSET.

Social Welfare under PMET

To ascertain the social welfare impacts of each tax, total gains from trade under each tax are derived. Total gains from trade before either tax is imposed are simply the sum of the total surplus in each segment and total surplus in the travel market. However, the PMET tax revenues are multiplied by 10 to represent the 10 years of tax revenues that should be collected given that vehicles achieve the EPA's expected useful life of 10 years. For calculation purposes any cost of tax collection is considered to be negligible. Therefore, total gains from trade under the PMET are calculated as:

Total gains from trade under PMET =

$$\begin{aligned} &\text{total surplus in the automobile market} + \\ &\text{tax revenue each year under the PMET} \cdot \text{number of years tax collected} + \\ &\text{total surplus in the travel sector under the PMET} \cdot \text{number of years of vehicle travel} \end{aligned} \tag{75}$$

Social Welfare under LSET

In order to make a relevant comparison of the total gains from trade under the LSET and PMET, total gains from trade under the LSET must include the total surplus in the travel sector. Therefore, gains from trade under the LSET are calculated as:

$$\begin{aligned}&\text{Total gains from trade under LSET} = \\ &\quad \text{total surplus in the automobile market} + \\ &\quad \text{tax revenue each year under the LSET} + \\ &\quad \text{total surplus in the travel sector under the LSET} \cdot \text{number of years of vehicle travel}\end{aligned} \tag{76}$$

Net Difference in Social Welfare under each Tax

The difference between the two surplus calculations in equations (75) and (76) show the advantage one tax has over the other in terms of social welfare when the demand curve, production costs, and level of pollution reduction are the same for each tax. A sample of the optimization program and constraints used in each quarter are shown in Appendix 13 and Appendix 14 respectively.

Optimization Program Calculation of Difference in Social Welfare

In addition to the constraints already mentioned, a few additional constraints were needed. Since upper and lower limits for computer optimization program were needed, upper-bounds of $1500 per gram of CO were placed on the LSET, and 25 cents per mile per gram of CO were placed on the PMET. Bounds of one million units per segment per

quarter were placed on the quantities that each firm could produce. These bounds were non-binding and therefore did not impact the optimization results. Finally, pollution reduction was arbitrarily set at 40 trillion grams of pollution reduction. This is approximately a 20 percent reduction in pollution levels from new vehicles.

In this chapter, travel demand with respect to per mile operating costs was determined. Next, equations for net pollution reduction under the LSET and PMET were specified. Finally, consumer and producer surplus, tax revenue and total social welfare equations under each tax were created for the new automobile and travel markets. In the next chapter the results of the computer program will be presented and analyzed using the equations and constraints defined in Chapter 6.

Chapter 7 Optimization Results and Influencing Factors

In the previous chapter a computer optimization program was specified to determine the change in social welfare caused by the PMET and LSET for the same level of pollution reduction under each tax. In this chapter, how consumer and producer behavior in response to each tax impacts social welfare will be discussed; the results of the optimization program will be examined; and the influence of market conditions on social welfare and pollution reduction will be explored.

Behavioral Changes and Social Welfare under each Tax

Before analyzing the results, a review of how each tax changes firm and consumer behavior, how these changes in behavior impact the level of taxation needed to achieve the desired pollution reduction target, and how the interaction between these two impact social welfare.

Behavioral Changes and Social Welfare under the PMET

Implementing the PMET, pollution reduction is achieved by two methods: reducing vehicle miles traveled once a vehicle is purchased, and indirectly causing producers to make vehicles with lower emissions characteristics.

The first method achieves pollution reduction by increasing the cost of travel for higher emission vehicles. This method does reduce pollution, but since it also increases the cost of travel, fewer miles will be traveled resulting in fewer gains from trade in the travel sector.

Since part of the value consumers get from new vehicles is travel, the increased price of travel reduces the utility consumers gain from new vehicle purchases, causing both demand and prices to fall for new vehicles. Of course, vehicle producers will try to offset the drop in demand by reducing the emissions of their vehicles. Unfortunately for vehicle producers, reducing emissions cannot be done without cost, and consumers are only willing to pay a limited amount for the reduced vehicle operating costs. Therefore, vehicle producers will reduce emissions by adding abatement equipment only as long as the marginal benefit is greater then the marginal cost. Ultimately the firm will reduce emissions but not eliminate them, and thus, consumers will still have to pay some per mile fee. The fee reduces some of the value consumers receive from new vehicles and reduces the number of miles consumers will travel. Therefore, consumer welfare is reduced.

Further, since vehicle manufacturers are now paying an additional cost for abatement equipment on each vehicle made, and demand has dropped, each firm will reduce output and both consumer and producer welfare in the auto market will be reduced. The loss of

new vehicle sales will increase the use of older, higher emission vehicles, thereby increasing overall pollution levels. As a result, the level of the PMET must be increased, so that the reduction in emissions from new vehicles offsets the increase in emissions due to lost sales, until the desired pollution reduction goal is achieved. The increased PMET repeats the mechanisms discussed above resulting in further losses to gains from trade.

Behavioral Changes and Social Welfare under the LSET

Implementing a LSET, pollution reduction is achieved by discouraging the production of high emission vehicles by taxing each vehicle based on its average emissions per mile. If a firm produces a vehicle with higher emissions, it will pay a higher tax per vehicle. Of course, firms will seek to reduce their tax by reducing vehicle emissions using abatement equipment. Unfortunately for the vehicle producers, this can not be done without cost. Therefore, vehicle producers will reduce emissions by adding abatement equipment only as long as the marginal benefit is greater then the marginal cost.

Since the use of abatement equipment increases the marginal cost of manufacturing and some consumers will not be willing to pay for the increased cost resulting from abatement, automakers will not be willing to produce as many vehicles for the same price. This reduces both consumer and producer welfare in the auto market. The reduced output also results in older, higher emission vehicles remaining in use. As a result, the level of the LSET must be increased, so the reduction in emissions from new vehicles

offsets the increase in emissions due to lost sales, until the desired pollution reduction goal is achieved. The increased LSET repeats the mechanisms discussed above resulting in further welfare losses.

Now that the impact of consumer and producer behavior on pollution reduction and social welfare has been discussed, the results of the simulation can be examined.

Simulation Results

Two sets of results from the simulation of social welfare were generated. The first set shows the minimum value of the expression:

$$\text{Total gains from trade under LSET} - \text{Total gains from trade under PMET} \tag{77}$$

Where

$$\begin{aligned}\text{Total gains from trade under the LSET} = \\ &\text{total surplus in the auto market} + \\ &\text{tax revenue collected by the one time LSET} \\ &+ \text{total surplus in the travel sector} \cdot \text{number of years of vehicle travel}\end{aligned} \tag{78}$$

$$\begin{aligned}\text{Total gains from trade under the PMET} = \\ &\text{total surplus in the auto market under the PMET} + \\ &\text{tax revenue collected each year by the PMET} \cdot \text{years tax collected} \\ &+ \text{total surplus in the travel sector under the PMET} \cdot \text{years of vehicle travel}\end{aligned} \tag{79}$$

The optimization program uses expression (77) to find conditions under which the PMET produces more gains from trade than the LSET. A positive value would indicate that the LSET produces more gains from trade than the PMET even under the best conditions. A negative value would indicate, given certain market conditions that the total gains could be higher under the PMET.

The second set of results from the simulation of social welfare show the minimum value of the expression:

$$\text{Total gains from trade under PMET} - \text{Total gains from trade under LSET} \quad \textbf{(80)}$$

The optimization program uses this expression to find conditions under which the LSET produces more gains from trade than the PMET. A positive value would indicate that the PMET produces more gains from trade than the LSET even under the best conditions. A negative value would indicate, given certain market conditions, that the total gains could be higher under the LSET. Table 10 shows the results of both the first set and second set of optimizations in millions of dollars. Complete results are available in Appendix 15. Consumer and producer surplus in each market under each tax when optimized for the LSET are shown in Table 11, and consumer and producer surplus in each market when optimized for the PMET are shown in Table 12.

Table 10: Difference in Gains from Trade under each Tax

Quarter	Set 1: Optimized for the PMET	Set 2: Optimized for the LSET
32	(225)	(2,276)
31	(214)	(5,124)
30	(203)	(3,649)
29	(1,044)	(2,946)
28	168	(2,090)
27	(130)	(2,582)
26	(152)	(1,608)
25	(50)	(2,334)
24	(75)	(3,909)
23	(141)	(3,465)
22	(80)	(6,029)
21	(142)	(4,430)
20	(123)	(3,151)
19	(130)	(3,276)
18	20	(4,594)
17	(2,122)	(5,075)

Quarter	Set 1: Optimized for the PMET	Set 2: Optimized for the LSET
16	13	(6,762)
15	(1,991)	(3,795)
14	(259)	(3,099)
13	(40)	(3,926)
12	(1,524)	(1,688)
11	(1,782)	(6,139)
10	(10)	(3,549)
9	73	(1,160)
8	(2,108)	(7,624)
7	(105)	(3,773)
6	(120)	(2,888)
5	(2,018)	(4,187)
4	109	(1,369)
3	(80)	(2,087)
2	N/A	N/A
1	(92)	(3,234)

Table 11: Gains from Trade under each Tax when Optimized for the LSET

Quarter	CS in auto market LSET	CS in auto market PMET	PS in auto market LSET	PS in auto market PMET	CS in travel market LSET	CS in travel market PMET
1	31,001	28,946	21,440	17,102	27,068	26,071
2	N/A	N/A	N/A	N/A	N/A	N/A
3	20,266	17,885	13,914	10,820	30,455	29,449
4	22,472	20,855	14,119	11,853	24,216	23,460
5	36,577	31,162	28,236	18,408	26,995	25,324
6	19,433	19,093	11,371	11,205	29,533	28,082
7	26,206	23,161	20,902	13,838	27,411	25,922
8	17,192	16,388	9,824	9,202	24,140	22,129
9	20,755	19,447	13,662	11,126	22,042	21,317
10	25,134	20,652	23,043	12,423	26,129	24,936
11	36,027	31,762	32,647	18,544	25,365	23,344
12	28,230	26,920	19,597	15,031	22,566	21,777
13	38,245	34,769	24,685	20,060	22,860	22,160
14	22,713	20,083	15,652	11,745	27,648	26,472
15	32,388	29,051	31,781	16,687	25,377	23,599
16	24,019	21,864	14,344	11,869	24,371	23,377
17	24,694	20,577	21,321	11,623	23,831	22,200
18	31,218	29,643	18,824	16,443	30,537	29,800
19	48,078	47,999	52,060	26,545	27,388	26,309
20	18,400	15,859	14,624	9,178	26,492	25,553
21	25,556	22,337	18,286	12,445	28,161	26,837
22	71,180	67,369	75,897	37,083	32,025	30,069
23	52,543	48,039	34,400	26,484	28,918	27,970
24	58,549	57,273	32,915	32,204	28,189	26,424
25	53,402	49,937	35,664	27,585	27,002	26,081
26	69,985	72,661	86,210	39,410	31,268	30,192
27	28,011	27,454	28,060	15,249	29,177	28,076
28	42,226	41,173	23,110	22,579	27,301	26,478
29	20,451	18,975	11,092	10,341	28,105	26,755
30	23,895	21,269	16,647	11,801	32,611	31,015
31	45,023	42,339	54,608	23,197	29,561	27,618
32	29,285	26,425	17,706	14,670	27,377	26,392

Table 12: Gains from Trade under each Tax when Optimized for the PMET

Quarter	CS in auto market LSET	CS in auto market PMET	PS in auto market LSET	PS in auto market PMET	CS in travel market LSET	CS in travel market PMET
1	19,004	19,311	11,348	11,640	27,068	26,577
2	N/A	N/A	N/A	N/A	N/A	N/A
3	27,800	28,789	16,131	17,056	30,455	29,612
4	29,753	29,858	16,914	17,043	24,216	23,709
5	23,417	24,129	13,216	14,166	26,995	25,304
6	18,160	18,432	10,705	10,778	29,533	28,963
7	19,564	20,098	11,331	11,932	27,411	26,850
8	20,166	21,105	11,067	12,050	24,140	23,516
9	16,723	16,980	9,338	9,972	22,042	20,467
10	14,768	14,995	8,584	8,800	26,129	25,600
11	19,764	20,389	11,290	11,872	25,365	23,840
12	24,775	24,940	13,750	13,827	22,566	21,488
13	19,283	19,515	10,837	10,932	22,860	22,397
14	22,013	22,185	12,620	12,689	27,648	27,141
15	38,209	39,113	21,193	22,083	25,377	24,743
16	36,555	36,847	19,567	19,698	24,371	23,970
17	29,017	30,230	15,467	16,522	23,831	23,253
18	24,949	26,667	13,765	15,051	30,537	30,133
19	33,726	33,922	18,531	18,579	27,388	27,024
20	30,092	30,647	16,598	17,243	26,492	26,165
21	25,504	25,886	13,973	14,307	28,161	27,843
22	36,980	38,794	19,738	21,522	32,025	31,504
23	37,242	38,420	20,118	21,356	28,918	28,378
24	43,163	43,292	23,981	24,010	28,189	27,793
25	25,944	26,240	14,671	14,966	27,002	26,593
26	43,894	44,729	23,607	24,454	31,268	30,809
27	25,197	25,306	13,954	14,046	29,177	28,694
28	28,746	28,939	15,776	16,021	27,301	26,353
29	30,372	30,577	16,508	16,658	28,105	27,670
30	37,031	37,534	20,215	20,781	32,611	32,310
31	40,066	40,307	21,388	21,576	29,561	29,290
32	33,607	33,709	17,885	17,890	27,377	27,012

The first set of results in Table 10 show that when conditions are set favorably to the PMET, the optimization program finds the PMET produces more gains from trade in all but five quarters. In those five quarters, regardless of the own price and cross price elasticities used, the LSET reduces pollution by the same amount as the PMET but always with more gains from trade. For example, in the fourth quarter the 109 figure indicates the PMET produces at best $109 million less in gains from trade than the LSET even when the market conditions are optimized for the PMET. However, in most of the quarters the optimization program found market conditions where the PMET could be preferable to the LSET. For example, in the 32nd quarter when conditions are optimally set to the PMET, the PMET produces up to $225 million more in surplus than the LSET.

The second set of results in Table 10 show that when conditions are set favorably to the LSET, the optimization program finds that the LSET produces more gains from trade than the PMET in every quarter. For example in the first quarter, the –3,234 figure shows that the total gains from trade under the LSET could be as much as $3.234 billion higher than under the PMET for the same level of pollution reduction.

These results show, in all but five quarters, that either tax can be more efficient, given a certain set of market conditions. In the remaining five quarters, the LSET produces more gains from trade in this simulation. These results also show that when conditions are optimized for the LSET, the gap in gains from trade between the LSET and PMET can be

very large, and when the results are optimized for the PMET, the gap in gains from trade between the two is relatively small. In fact, the average difference between the gains from trade is $470 million when optimized for the PMET, but almost $4 billion when optimized for the LSET.

Although it appears that the LSET is preferable to the PMET, this may not be the case. If market conditions are more favorable to the PMET then it will have better results than the LSET except in those five quarters when the LSET was superior regardless of market conditions. All the gap between two indicates is that it is possible that the gains from trade under the LSET will be much larger than gains from trade under the PMET if the true market conditions are closer to those found when optimizing the results for the LSET.

Simulation Results and the Discounting of Future Gains from Trade

While the results in Table 10 do not significantly favor either the LSET or the PMET, these results depend upon the conditions and formulations of the model. Upon further consideration of the formulas used to calculate the gains from trade in the travel sector, it was observed that the future gains from trade and tax revenues were not discounted. Discounting the future gains from trade requires determining the appropriate discount rate and since the proper discount rate is a disputed topic in economics, this paper will seek to avoid this problem by setting the discount rate to its two extremes of zero and

infinity. In Appendix 15, a discount rate of 6 percent was also applied to the problem to demonstrate that the results are not seriously impacted by this commonly used discount rate.

In the original calculations, since no discounting was done, the discount rate was effectively set to zero. Therefore, rather than setting an arbitrary discount rate and evaluating the results with that discount rate, the discount rate will be set to the other extreme, infinity. With a discount rate of infinity, the gains from trade and tax revenues collected past the first year will be ignored.

Therefore, the total gains from trade calculation under the LSET would change from:

$$\begin{aligned}&\text{Total gains from trade under the LSET} = \\ &\quad \text{total surplus in the auto market} + \\ &\quad \text{tax revenue collected by the one time LSET} \\ &\quad + \text{total surplus in the travel sector} \cdot \text{years of vehicle travel}\end{aligned} \tag{81}$$

to:

$$\begin{aligned}&\text{Total gains from trade under the LSET} = \\ &\quad \text{total surplus in the auto market} + \\ &\quad \text{tax revenue collected by the one time LSET} \\ &\quad + \text{total surplus in the travel sector}\end{aligned} \tag{82}$$

The total gains from trade calculation under the PMET would change from:

Total gains from trade under the PMET =

total surplus in the auto market under the PMET +
tax revenue collected each year by the PMET · years tax collected
+ total surplus in the travel sector under the PMET · years of vehicle travel **(83)**

to:

Total gains from trade under the PMET =

total surplus in the auto market under the PMET +
tax revenue collected in the first year by the PMET
+ total surplus in the travel sector in first year under the PMET **(84)**

These new gains from trade calculations simply ignore any gains from trade beyond the first year by removing the multiplication of years of travel and years tax collected.

With these new calculations for gains from trade, the optimization sets were again performed. Summarized results are shown in Table 13; detailed results are show in Appendix 16.

The results in Table 13 show that for every quarter neither tax has a clear advantage with a discount rate of infinity. In addition, the LSET is no longer superior in the five quarters from the earlier optimization. This result was not unexpected since ignoring future periods tends to favor the PMET which creates lost trade in the travel sector while the LSET does not. These results again show that the gap between the gains from trade can be large when market conditions are optimally set in favor of the LSET.

Table 13: Difference in Gains from Trade with Discount Rate of Infinity

Quarter	Set 1: Optimized for the PMET	Set 2: Optimized for the LSET
32	(281)	(6,135)
31	(392)	(8,106)
30	(188)	(3,452)
29	(230)	(2,924)
28	(60)	(2,293)
27	(479)	(2,857)
26	(375)	(1,480)
25	(227)	(1,846)
24	(389)	(2,985)
23	(1,228)	(6,408)
22	(279)	(1,936)
21	(285)	(7,397)
20	(305)	(2,537)
19	(296)	(1,623)
18	(175)	(8,706)
17	(558)	(4,079)

Quarter	Set 1: Optimized for the PMET	Set 2: Optimized for the LSET
16	(496)	(5,267)
15	(456)	(1,013)
14	(400)	(5,368)
13	(533)	(4,673)
12	(384)	(1,174)
11	(694)	(2,925)
10	(246)	(3,557)
9	(242)	(788)
8	(936)	(5,075)
7	(332)	(2,036)
6	(279)	(5,546)
5	(480)	(3,689)
4	(90)	(1,155)
3	(227)	(5,931)
2	N/A	N/A
1	(206)	(1,144)

Obviously an infinite discount rate is not realistic, but it does demonstrate that neither tax has a clear advantage even when the discount rate is set to the extremes of zero or infinity. Therefore, the discount rate does not dramatically change the results in favor of either tax. Instead, other market conditions must play an important role.

PMET and LSET Rates Needed to Achieve Desired Pollution Reduction

While the gains from trade calculations are the most important aspect of any economic analysis, it is sometimes difficult to relate how these figures really impact markets. Therefore, the median and lowest tax rates needed under the simulations to achieve the 40 trillion gram reduction in pollution are shown in Table 14. As stated previously, a 40 trillion gram reduction is approximately a 20 percent reduction in pollution levels. These results are from Appendix 15.

The results in Table 14 show that in order to achieve the same level of pollution reduction, consumers will pay more under the PMET than the LSET over 100,000 miles of travel. Consumers discounting of future payments made under the PMET influence these results, but are not the only factor impacting these results. These rates are the tax rates that achieve the desired pollution reduction and were adjusted for lost vehicle sales, among other factors. For example, these tax rates include the impact of vehicle sales being lost and a greater tax rate being imposed to counter-act the greater number of high emission vehicles remaining on the road.

Table 14: PMET and LSET Tax Rates Needed to Achieve Desired Pollution Levels

	Median tax rate per gram of emissions	Lowest tax rate per gram of emissions
PMET for each mile traveled	0.00666	0.00179
PMET Total Paid after 100,000 miles	666.23	179.42
LSET Total One-time Tax	155.74	93.03

With those caveats in mind, and assuming ten equal payments over ten years time for 100,000 miles of travel, comparing the taxes collected by the LSET and the PMET at the lowest rates for each, imply consumers discount the future at 14 percent. Comparing the median tax rates for each implies a discount rate of 41 percent. These results indicate consumers are likely to highly discount future payments. This makes particular sense to new vehicle purchases because many consumers hold on to a new vehicle for only a couple of years and do not care about any fees paid beyond their term of ownership. Further, they likely estimate that the resale price of their vehicle to any future buyer will not be severely impacted by the PMET. A high discount rate is important because it means consumers will not respond to the PMET as policy makers would intend. That is, the PMET does not cause consumers to demand lower emission vehicles. This explains the social welfare results found in Chapter 6.

The next section examines which specific market conditions cause the differences in the outcomes between the two taxes.

Market Conditions and Social Welfare Comparisons under each Tax

This section examines how market conditions change the social welfare implications of each tax. In particular, consumer sensitivity to vehicle operating costs; own price elasticity of vehicle demand; and cross price elasticity of vehicle demand will be examined.

Market Condition 1: Consumer Sensitivity to Vehicle Operating Costs

The first factor to be examined is the role of $\frac{\partial P}{\partial Gas}$. Upon examination of the $\frac{\partial P}{\partial Gas}$ results of the non-discounted optimization, certain conclusions can be made about market conditions that favor the PMET and the market conditions that favor the LSET. That is, how the PMET changes the demand for vehicles because of their increased operating cost. Table 15 shows the sum of $\frac{\partial P}{\partial Gas}$ in the five segments when optimized for either the PMET or the LSET.

Notice that the set in the second column of Table 15 produced the best results for the LSET. In this set, the sum of $\frac{\partial P}{\partial Gas}$ is very high compared to the sum of $\frac{\partial P}{\partial Gas}$ in the first column. These results indicate that if consumers are very sensitive to vehicle operating costs, the gains from trade under the LSET are greater than the gains from trade under the PMET for a given level of pollution reduction.

Table 15: Sensitivity to Vehicle Operating Costs under each Optimization

Quarter	Sum of dP_dGas PMET optimized	Sum of dP_dGas LSET optimized
32	217,797	220,143
31	301,845	425,147
30	325,537	521,460
29	82,067	283,078
28	95,128	183,352
27	207,172	396,376
26	173,659	231,510
25	181,332	396,706
24	171,610	438,920
23	207,095	455,867
22	192,757	391,676
21	251,060	312,479
20	231,852	424,355
19	217,624	320,392
18	215,128	408,054
17	71,319	303,321
16	181,821	383,112
15	71,867	280,193
14	189,975	358,647
13	177,810	230,640
12	57,912	282,763
11	46,343	276,302
10	150,753	308,999
9	102,384	203,462
8	74,426	238,799
7	155,272	273,335
6	149,095	157,234
5	62,840	269,665
4	150,308	294,456
3	145,517	268,151
2	N/A	N/A
1	158,514	141,431

One might mistakenly believe that if consumers were more sensitive to operating costs, then firms would respond by producing cleaner vehicles to reduce this operating cost, causing more pollution reduction to take place and gains from trade to be high. However, this is not the case. As these results show, and economic theory suggests, welfare losses are greater the more elastic is demand.

In particular, while the firms do respond by producing cleaner vehicles, the gains from trade are not improved because these cleaner vehicles are produced at the expense of the value consumers place on new vehicles. When the per mile emissions tax is placed on consumers, the utility consumers receive from new vehicles is reduced. Utility is reduced because one of the benefits of vehicle ownership, travel, has increased in price to the consumer. Accordingly, consumers will value new vehicles less, reducing consumer surplus and causing vehicle prices to fall. With the lower net price and higher abatement cost, producer surplus is also reduced. In addition, since consumers value high emission vehicles less, firms reduce their output of these vehicles and more sales are lost. The lost sales mean that the PMET must be increased in order to achieve the desired pollution reduction goal. This causes even more gains from trade to be lost. Therefore, even though firms reduce emissions more when $\frac{\partial P}{\partial Gas}$ is high, it is done at the cost of reduced gains from trade. Now that the impact of consumer sensitivity to vehicle operating costs has been examined, the next market condition to consider is new vehicle elasticity.

Market Condition 2: Own Price Elasticity of Demand

From the non-discounted optimizations it appears that own price elasticity and cross price elasticity play a role in the performance of each tax. To be certain, two optimizations were performed from one of the quarters. One optimization was performed with $\frac{\partial P}{\partial Gas}$ held constant at the values found favorable to the PMET, the other with values found favorable to the LSET. Full optimization program results are shown in Appendix 17.

Table 16 presents the elasticities found after optimizing for the LSET and the PMET with $\frac{\partial P}{\partial Gas}$ held constant, the only market condition allowed to change is the elasticity of demand and the taxes necessary to achieve the desired pollution reduction. The optimizations were performed to analyze how elasticity impacted the difference between the gains from trade under each tax. The results show that own price elasticity can be high or low under any of the cases. This indicates that own price elasticity plays a minor role in the difference between the gains from trade under each tax. The next section examines the role of cross-price elasticity on social welfare under each tax.

Market Condition 3: Cross Price Elasticity of Demand

Although own price elasticity appears to play a minor role in the difference between the gains from trade between each tax, cross price elasticity's role appears to be much greater. To illustrate this point, the sum of the cross price elasticities when $\frac{\partial P}{\partial Gas}$ is low and optimized for the LSET is only 5.56, but when optimized for the PMET the sum of

cross price elasticities is 9.49. Furthermore, the sum of the cross price elasticities in Table 16 when $\frac{\partial P}{\partial Gas}$ is high and optimized for the LSET is only 1.95, but when optimized for the PMET the sum of cross price elasticities is 9.32. These figures show that when the sum of cross price elasticities is higher, the PMET performs better in relation to the LSET. These results indicate that cross price elasticity is especially important to pollution reduction under the PMET. The explanation for this outcome is explained in the next section.

Importance of Cross Price Elasticity under the PMET

Cross price elasticity is probably more important under the PMET than under the LSET because when a PMET is imposed it decreases the value consumers place on new vehicles as their operating costs increase. In response, firms reduce the emissions of their vehicles, but only up to the point where the marginal benefit of reducing emissions is equal to the marginal cost of reducing emissions. Inevitably, the consumer has to pay some per mile tax. This reduces the value consumers place on new vehicles under the PMET. In addition, the cost of production will increase as firms implement new abatement equipment. These factors will cause price to increase.

How consumers react to the higher price resulting from the tax is especially important. If the consumer feels vehicles in different segments are not close substitutes, then the consumer may decide to postpone any new vehicle purchase. Not only does this result in

Table 16: Elasticities Holding Sensitivity to Operating Costs Constant

Change in price in market i change in quantity sold in market j	Optimized PMET when dP_dGas is low	Optimized LSET when dP_dGas is low	Optimized PMET when dP_dGas is high	Optimized LSET when dP_dGas is high
Elasticity11	2.14	3.41	3.17	2.23
Elasticity21	2.21	2.09	0.00	0.52
Elasticity31	0.00	0.00	0.07	0.00
Elasticity41	0.00	0.00	2.82	0.38
Elasticity51	0.00	0.30	0.23	0.10
Elasticity12	0.80	0.75	0.00	0.19
Elasticity22	2.16	2.51	1.19	0.91
Elasticity32	0.00	0.00	0.00	0.00
Elasticity42	1.18	0.29	0.64	0.00
Elasticity52	0.13	0.00	0.01	0.00
Elasticity13	0.00	0.00	0.15	0.00
Elasticity23	0.00	0.77	0.00	0.28
Elasticity33	1.52	1.53	0.78	0.88
Elasticity43	0.59	0.00	0.00	0.00
Elasticity53	0.00	0.00	0.00	0.00
Elasticity14	0.00	0.00	3.00	0.40
Elasticity24	3.48	0.85	1.87	0.00
Elasticity34	0.28	0.00	0.00	0.00
Elasticity44	3.40	1.56	3.67	0.96
Elasticity54	0.24	0.10	0.14	0.00
Elasticity15	0.00	0.31	0.23	0.10
Elasticity25	0.36	0.00	0.03	0.00
Elasticity35	0.00	0.00	0.00	0.00
Elasticity45	0.23	0.09	0.13	0.00
Elasticity55	0.76	0.75	0.68	0.54
Lost sales in segment 1 LSET	196,144	70,894	157,226	50,070
Lost sales in segment 2 LSET	(222,786)	144,756	113,470	59,151
Lost sales in segment 3 LSET	129	11,246	6,836	6,982
Lost sales in segment 4 LSET	267,519	43,002	(36,474)	29,537
Lost sales in segment 5LSET	5,771	3,993	2,697	4,613
Lost sales in segment 1 PMET	(390,875)	52,541	(421,078)	23,714

Table 16 Continued:

Lost sales in segment 2 PMET	924,085	165,738	(129,163)	61,249
Lost sales in segment 3 PMET	58,351	21,370	24,980	22,563
Lost sales in segment 4 PMET	(481,616)	28,335	457,139	25,708
Lost sales in segment 5 PMET	(8,156)	2,262	59,472	50,256
dP_dGas in segment 1	9,369	9,369	9,369	9,369
dP_dGas in segment 2	12,488	12,488	12,488	12,488
dP_dGas in segment 3	29,794	29,794	79,938	79,938
dP_dGas in segment 4	7,202	7,202	7,202	7,202
dP_dGas in segment 5	3,987	3,987	160,669	160,669

firms losing sales, which reduces producer and consumer surplus, it also results in older, higher emission vehicles remaining on the road rather than being scrapped. Accordingly, in order to achieve the desired level of pollution reduction, the PMET will have to be increased to encourage further pollution reduction. Of course, the higher tax results in more lost sales and lower producer and consumer welfare. Therefore, if consumers feel vehicles are not close substitutes, the losses under PMET can be high.

On the other hand, if consumers feel the vehicles are close substitutes, then the increased price causes some consumers to switch their consumption decision to vehicles in a different segment. If this occurs then the losses to both consumer and producer surplus are minimized because instead of firms losing sales entirely, the sales are just moved to a different segment. This is especially important under the PMET because with fewer lost sales, the PMET can be lower and the value consumers place on new vehicles is not reduced as significantly.

Impact of Consumers Switching to Operating Cost Sensitive Segments under PMET

After examining the full results of the optimizations for each quarter, it appeared that the PMET performed best when consumers switched to segments very sensitive to operating costs from segments where consumers were less sensitive. To confirm this conclusion, the optimization from one of the quarters was performed with values of $\frac{\partial P}{\partial Gas}$ fixed at its

lowest possible value of $4000. Then the optimization was performed again, but this time the value of $\frac{\partial P}{\partial Gas}$ for the luxury vehicles, segment 5, was changed from $4,000 to its highest possible value of $160,669. The luxury vehicle segment was chosen because the larger uncertainty about its slope creates a wider range of values that $\frac{\partial P}{\partial Gas}$ can take. Table 17 shows how cross price elasticities in the fifth quarter in segment 5 change after $\frac{\partial P}{\partial Gas}$ in segment 5 is changed from $4,000 to $160,669. Full results are shown in Appendix 18.

Table 17 shows that when $\frac{\partial P}{\partial Gas}$ is $4,000 the optimal solution for the PMET has relatively low cross price elasticities with respect to segment 5. When $\frac{\partial P}{\partial Gas}$ is increased to $160,669 the optimal solution shows that consumers generally consider vehicles in segment 5 closer substitutes than before. This increases demand in segment 5 from consumers switching from other segments, helping to offset some of the losses in price firms experience due to greater consumer sensitivity to vehicle operating costs.

These results indicate that if consumers switch to vehicles with high sensitivity to vehicle operating costs when $\frac{\partial P}{\partial Gas}$ is high, the desired amount of pollution reduction can be achieved under the PMET with fewer welfare losses.

Table 17: Optimal Elasticities under Differing Sensitivities to Operating Cost

% Change in Price in Segment i % Change in Quantity in Segment j	Cross Elasticity for segment 5 vehicles when dP_dGas is $4,000	Cross Elasticity for segment 5 vehicles when dP_dGas is $160,669
Elasiticity15	0.14	0.27
Elasiticity25	0.02	0.08
Elasiticity35	0.00	0.00
Elasiticity45	0.00	0.33
Sales lost in segment 5	2,737	2,368
Price in segment 5	$28,360	$26,500
PMET	0.0124368	0.0135002
Difference in gains from trade (in millions)	$783	$3,535

Market Conditions and Pollution Reduction

In the previous section the primary focus was to show how different market conditions impact social welfare. In this section the influence of market conditions on pollution reduction will be examined ignoring social welfare. This will be done to better understand what factors influence the level of pollution reduction, and to demonstrate that certain well-known outcomes still hold in the model used in this paper.

Importance of the Pattern of Vehicle Substitution to Pollution Reduction

The first market condition to be examined for its role in pollution reduction is the pattern of vehicle substitution. While the willingness of consumers to substitute between segments was found to be important for social welfare reasons, it will now be shown that which vehicles consumers decide to purchase instead is important for pollution reduction reasons.

For example, suppose a higher tax on emissions raises the price of a mid-sized sedan that a consumer is considering purchasing. One might believe the consumer would likely switch to a small sized vehicle with lower emissions, but this is not necessarily true. The consumer could decide, given the higher price of the mid-size vehicle, that now a luxury vehicle, sports utility or pickup may offer more utility for the dollar, especially since the price of the small vehicle increased as well. This could cause the consumer to switch to a vehicle whose emission characteristics may or may not be lower than the vehicle the consumer was originally planning to purchase. The effects of switching from low emission vehicles to high emission vehicles can be seen in Appendix 19. Appendix 19 shows a comparison of the optimization program results for the LSET when market conditions are optimal for the LSET and also for when market conditions are optimal for the PMET. When optimized for the LSET, emissions per vehicle under the LSET in every segment are lower than emissions per vehicle when optimized for the PMET. Emissions per vehicle in the results optimized for the LSET are 2.42, 3.42, 3.91, 3.91, and 3.91 for segments 1 through 5 respectively. Emissions per vehicle in the results optimized for the PMET are 2.34, 3.30, 3.78, 3.78 and 3.78 for segments 1 through 5 respectively. Though, total emission reduction is the same in both optimization scenarios.

How can it be possible for emissions per vehicle to be lower for every vehicle segment and yet total emission reduction be the same?

One answer might be that even though new per vehicle emissions were lower, fewer new vehicles were sold thus keeping total emissions high. However, this is not the case in the example shown in Appendix 19 from quarter 27. In fact, total vehicle sales are actually higher for the solution with lower per mile emissions. However, the distribution of sales among vehicle segments did differ. In the optimization of quarter 27 with lower per vehicle emissions, a large number of small vehicle sales were lost while there were sales gains in luxury and pickup vehicles. Consumers switched from lower emission to higher emission vehicles. Therefore, in order for the desired amount of pollution reduction to be achieved, the emission tax has to be increased so that firms will again reduce emissions in each segment.

In the optimization of quarter 27 with higher per vehicle emissions, small vehicle sales actually increased, luxury sales were virtually unchanged and pickup vehicle sales slightly declined. Consumers switched their purchasing decisions from vehicles with higher emissions to vehicles with lower emissions so the same amount of pollution reduction was achieved with a lower tax. This example shows why the pattern of substitution is as important as the magnitude of substitution. The next section shows the importance of operating costs on pollution reduction.

Effect of Consumer Sensitivity to Operating Costs on Pollution Reduction

In this section how consumer sensitivity to operating costs, $\frac{\partial P}{\partial Gas}$, changes the amount of pollution reduction will be examined. Since operating costs are only changed under the PMET, $\frac{\partial P}{\partial Gas}$ is only a factor for the PMET. Therefore, the amount of pollution reduction achieved under the PMET will be examined holding all other factors constant. In particular, the amount of pollution reduction achieved will be maximized and then minimized. The PMET and elasticities of demand will be held constant. Only the number of units each firm decides to produce will be allowed to change so the Cournot-Nash equilibrium in the auto market can be maintained. This will show under what values of $\frac{\partial P}{\partial Gas}$ pollution reduction is minimized and under what values of $\frac{\partial P}{\partial Gas}$ pollution reduction is maximized. Table 18 shows the results of the optimization performed on the 32nd quarter while only allowing firm output to change in response to changes in $\frac{\partial P}{\partial Gas}$.

These findings reveal that more pollution reduction is achieved when $\frac{\partial P}{\partial Gas}$ is high. This result shows that the model used in this paper is consistent with economic theory: if consumers are more sensitive to vehicle operating costs, firms will produce vehicles that reduce these costs so that their vehicles will be more attractive to operating cost conscious consumers. Consequently, more pollution reduction will occur.

Table 18: Pollution Reduction Only Allowing Operating Cost Sensitivity to Change

	Maximum Pollution Reduction when only dP_dGas is Allowed to Change for a Given Tax Rate	Minimum Pollution Reduction when only dP_dGas is Allowed to Change for a Given Tax Rate
dP/dGas1	22,383	827
dP/dGas2	81,246	36,083
dP/dGas3	318,446	25,793
dP/dGas4	85,132	13,330
dP/dGas5	129,317	129,317
Pollution reduction in trillions of grams	131.66	(70.00)

Effect of Elasticity on Pollution Reduction

Next, the effect of vehicle elasticity on pollution reduction will be investigated. Pollution reduction under each tax will be examined holding each tax and all other factors constant except elasticity. Only the number of units that each firm will decide to produce will be allowed to change so the Cournot-Nash equilibrium in the auto market can be maintained. The optimization will show the values of elasticities when pollution reduction is minimized and the values of elasticities when pollution reduction is maximized. The results of the optimization performed on the 32nd quarter are presented in Table 19.

Table 19: Pollution Reduction Only Allowing Elasticities to Change

Change in Price in Market i Change in Quantity Sold in Market j	Minimum Pollution Reduction for a Given Tax under PMET	Maximum Pollution Reduction for a Given Tax under PMET	Minimum Pollution Reduction for a Given Tax under LSET	Maximum Pollution Reduction for a Given Tax under LSET
Elasticity11	22.54	4.35	13.79	8.35
Elasticity21	5.70	2.40	2.71	2.27
Elasticity31	0.00	0.00	0.87	0.25
Elasticity41	1.24	0.37	0.00	0.00
Elasticity51	6.93	0.00	4.63	0.00
Elasticity12	1.08	0.45	0.51	0.43
Elasticity22	1.84	0.77	2.20	0.73
Elasticity32	0.00	0.00	0.00	0.00
Elasticity42	0.19	0.07	0.33	0.24
Elasticity52	2.63	1.11	2.70	1.05
Elasticity13	0.00	0.00	0.35	0.10
Elasticity23	0.00	0.44	0.18	0.11
Elasticity33	2.97	1.36	1.70	1.09
Elasticity43	0.95	0.79	0.00	0.75
Elasticity53	2.38	0.00	1.37	0.89
Elasticity14	0.54	0.16	0.00	0.00
Elasticity24	0.43	0.16	0.77	0.55
Elasticity34	1.04	0.85	0.00	0.81
Elasticity44	1.99	1.83	1.86	3.38
Elasticity54	0.04	0.86	0.00	0.00
Elasticity15	4.66	0.00	3.12	0.00
Elasticity25	9.37	3.94	9.60	3.73
Elasticity35	4.00	0.00	2.30	1.50
Elasticity45	0.06	1.33	0.00	0.00
Elasticity55	13.40	8.86	13.75	8.12
Pollution reduction in trillions of grams	(1.44)	71.10	(10.90)	75.75

Notice that the results in Table 19 for each tax indicate that when pollution reduction is maximized vehicle own price elasticity is lower than when pollution reduction is minimized. This result is explained by two factors. First, even though each firm could potentially increase vehicle price without losing many sales, each firm still has an incentive to reduce emissions so that its tax burden can be reduced. Second, because the increased cost of abatement can be passed on to consumers, fewer vehicle sales are lost. Therefore, fewer old vehicles remain in use and more pollution reduction will occur for a given tax.

In this chapter, the behavioral changes caused by the LSET and the PMET were discussed; the social welfare results were compared for each tax; the influence of market conditions on each tax's effectiveness were found; and finally, how market conditions determined the amount of pollution reduction achieved was ascertained. In the next chapter, general conclusions will be drawn from these results, limitations of the model will be discussed and areas for future research will be explored.

Chapter 8 Summary and Conclusions

In this paper, a new method of estimating demand was developed by assuming certain market structures and firm behaviors, and determining from firm behavior what the elasticity of demand must have been to explain both market price and each firm's output decision. These elasticities were used to construct linear estimates of demand so it could be determined what factors shift auto demand, and to estimate the impact of the LSET and the PMET on market price and output. Next, the PMET's impact on consumer travel was estimated. Then, optimization programs were used to compare the welfare impacts of each tax when the same level of pollution reduction was achieved. Finally, results of the optimization program were examined to determine how market conditions influence each tax's welfare results, particularly how market conditions influence how much pollution reduction is obtained by each tax. In this final chapter, conclusions that can be drawn from the model will be discussed as well as the limitations of the model and areas for future research.

Conclusions based on the Model

One of the important results from this paper is the role that cross price elasticity plays in determining social welfare under each tax. The substitutability of vehicles between segments has been shown to have a strong influence on emission tax performance. Not only is pollution reduction easier to achieve when consumers switch to lower emission

vehicles, but dead-weight loss is also less because consumers are able to switch to vehicles in different segments. This improves the gains from trade because, rather than not buying a new vehicle at all, the consumer merely switches to a different vehicle. Accordingly fewer old, high-emission vehicles remain in operation and a lower emissions tax can be used to achieve the desired level of pollution reduction.

The findings in this paper also show the PMET actually performs better when vehicle prices are not as sensitive to vehicle operating costs because increased operating costs decrease the value consumers place on new cars.

The results found in this paper, while tending to favor the LSET, do not indicate which tax produces more gains from trade in every quarter. However, the results do indicate which market conditions favor each tax. In particular, if consumers are not sensitive to vehicle operating costs and consumers consider vehicles in different segments good substitutes, then the simulation used in this paper shows the PMET tends to be preferable. On the other hand, if consumers are very sensitive to vehicle operating costs and do not consider vehicles in different segments good substitutes, then this simulation shows the LSET to be preferable.

In addition, this paper found the potential welfare losses under the PMET are greater than under the LSET. The PMET depends on three key factors to achieve pollution reduction:

the elasticity of vehicle demand, the elasticity of travel demand, and the sensitivity of consumers to vehicle operating costs. This could explain why the potential losses under the PMET are so much greater in some quarters than under the LSET. Consequently, the effectiveness of the PMET depends on all these indirect and secondary incentives, and since the estimate of each varies, the optimization program found conditions where the PMET was extremely less effective than a LSET.

Summarizing, the problem with the PMET is that it seeks to reduce pollution by increasing the cost of travel; however, reduced travel is not the goal. Ideally the PMET seeks to encourage manufacturers to produce low emission vehicles. If the goal is to encourage firms to produce low emission vehicles, does it make sense to tax the travel market? This seems like a rather indirect way of achieving the desired result. Further, if market conditions are unfavorable, the welfare losses could be much higher under the PMET than the LSET because of both the damage done to the travel market and the reduced value consumers place on new vehicles.

While these results may just be a limitation of the model, this paper also reflects the difficulty of estimating the impact of the PMET. To implement either the PMET or the LSET the policy maker needs to know the own and cross price elasticity of demand. However, implementing the PMET additionally requires knowing both how consumer travel behavior will change, and how sensitive consumers are to vehicle operating costs.

Because the potential welfare losses under the PMET could be much greater than under the LSET, policy makers should be sure market conditions are matched to whichever abatement tax is imposed.

Limitations of the Model

The analysis of the model is limited by the specification of a particular abatement function. Even if the specification of the abatement function is currently correct, it does not show the impact of technological change. It is reasonable to believe that firms would respond to either the PMET or LSET by researching new cost effective ways to reduce emissions. In the case of the PMET, firms might also attempt to reduce vehicle operating cost by methods other than reducing emissions, for example, firms might improve vehicle reliability.

Another limitation of the model is that in estimating firm reactions to the changes in demand caused by each tax, the marginal cost of vehicle production for all future units is assumed to stay the same as the last unit produced before each tax was imposed. This assumption could under or overestimate the actual production costs. In addition, since the model does not place any limits on capacity, the new production levels might exceed the capacity of the firms to produce. Also, the model does not take into account the possibility that new firms might enter the industry and alter the cost of production.

This research is also limited by the use of linearized demand curves. While the revealed demand system used in this paper to estimate elasticities allows demand to take any form, linear or non-linear, the use of linearized demands to estimate new market equilibrium could cause problems. If the true demand relations are not linear, then as the new solutions get further away from the original output levels, the accuracy of the linearized demand curves will be reduced.

Finally, this research is limited by the lack of accurate data regarding the true marginal cost of vehicle production. With better information, the accuracy of the model would be improved and the estimates of demand elasticities would have narrower ranges.

Areas for Future Research

The revealed demand system used in this paper could also be applied to other oligopoly markets and products. It might be particularly useful in monopoly markets since the complexity of the model would be greatly reduced.

In monopoly markets, the revealed demand system method might find use in the public policy field as an indicator of monopoly behavior to deter firm entry. This could be accomplished by comparing the demand estimated by the revealed demand system to results obtained by other reliable methods. If the estimates varied significantly, then the

firm in question might not be seeking to maximize profits but instead seeking some other strategic advantage.

Future research may be able to expand the basic framework of the revealed demand system used in this paper to include more firms and to allow for heterogeneous goods within each segment. This would allow for not only accurate measures of consumer preferences toward the final good but also accurate measures of consumer preferences toward product features.

The results in this paper show the importance of vehicle substitutability between segments. Future research is needed to obtain better estimates of consumer willingness to substitute between vehicles in different segments.

Further, this paper examined two market-oriented policy instruments aimed at the automotive sector, the LSET and the PMET. However, policy makers are also considering market-oriented producer or consumer subsidies, therefore research into these types of market-oriented solutions to the automobile pollution problem are needed.

Finally, this paper shows that the PMET's losses could potentially be much larger than the LSET because the PMET depends upon indirect and secondary incentives to achieve its policy goal. This indirect approach increases the likelihood that somewhere in the

process, firms or consumers will not behave as desired, and the policy goal will either not be achieved or the social welfare losses will be much greater than expected. Although the analysis in this paper is from the environmental field, researchers in all fields should closely examine any policy that attempts to achieve its objectives using an indirect approach.

References

AAA American Automobile Association (2000): “Your Driving Costs Booklet”.

Arguea, Nestor, Cheng Hsiao, G.A. Taylor (1994): "Estimating Consumer Preferences Using Market Data--An Application to US Automobile Demand," Journal of Applied Econometrics, 9, 1-18.

Arguea, Nestor and Cheng Hsiao (1993): "Econometric Issues of Estimating Hedonic Price Functions: With an Application to the U.S. Market for Automobiles," Journal of Econometrics, 56, 243-267.

Backhaus, J. (1995): "Subsidiarity and Ecologically Based Taxation: Aspirations and Options", Sabine Urban, Europe in Progress, Wiesbaden: Gabler, 223-264.

Bajic, Vladimir (1993): "Automobiles and Implicit Markets: An Estimate of a Structural Demand Model for Automobile Characteristics," Applied Economics, 25, 541-551.

Bajic, Vladimir (1988): "Market Shares and Price-Quality Relationships: An Econometric Investigation of the U.S. Automobile Market," Southern Economic Journal, 54, 888-900.

Berndt, Ernest R., Ann F. Friedlaender, Judy Shaw-Er-Wang Chaing (1991): "Interdependent Pricing and Markup Behavior: An Empirical Analysis of GM, Ford and Chrysler," MIT Press, 55.

Berry, Steven, James Levinsohn, Ariel Pakes (1995): "Automobile Prices in Market Equilibrium," Econometrica, 63, 841-890.

Bovenberg, L., R. de Mooij (1994): "Environmental Levies and Distortionary Taxation,” American Economic Review, 84, 4, September, 1085-1089.

Cecchini, Laurence (2000): "Differenciation du produit et concurrence," Revue Economique, 51, 103-117.

Consumer Expenditure Survey, Bureau of Labor Statistics (1989-1996).

Department of Energy (1994): “Residential Transportation Energy Consumption Survey”

Duncan, Roger (1980): "The Effect of Gasoline Prices on Automobile Sales," American Economist, 24, 62-66.

Environmental Protection Agency (1993): “Fact Sheet OMS-4”, EPA 400-F-92-006, January.

Espey, Molly (1997): “Pollution Control and Energy Conservation: Complements or Antagonists? A Study of Gasoline Taxes and Automobile Fuel Economy Standards," Energy Journal, 18, 23-38.

Espey, Molly (1996): "Watching the Fuel Gauge: An International Model of Fuel Economy," Energy Economics, 18, 93-106.

Fairen, Victor (1996): "A Replicator Theory Model of Competition through Imitation in the Automobile Market," Journal of Economic Behavior and Organization, 29, 141-57.

Federal Highway Administration (1988): Highway Statistics 1988, FHWA-PL-98-003 (Washington, DC, September 1989), Table DL-1B. 1994--FHA, Highway Statistics 1994, FHWA-PL-95-042 (Washington, DC, October 1995), Table DL-1B.

Federal Register, March 31, 1999

Fershtman, Chaim, Neil Gandal, Sarit Markovich (1999): "Estimating the Effect of Tax Reform in Differentiated Product Oligopolistic Markets," Journal of Public Economics, 74, 151-70.

Friedlaender, Ann F., Clifford Winston, Kung Wang (1983): "Costs, Technology, and Productivity in the U.S. Automobile Industry," Bell Journal of Economics, 14, 1-20.

Goldberg, P.K. (1995): "Product Differentiation and Oligopoly in International Markets: The Case of the U.S. Automobile Industry," Econometrica, 63, 891-951.

Goldberg, P.K. (1996): "The Effects of the Corporate Average Fuel Efficiency Standards," NBER Working Paper Series, 5673, pp. 45+.

Greene, William H. (2000): “Econometric Analysis: Fourth Edition”, Prentice-Hall.

Harbour Yearbook (1979-1996).

Harrington, Winston (1997): "Fuel Economy and Motor Vehicle Emissions", Journal of Environmental Economics and Management", 33, 240-252.

Harrington, W., Margaret A. Walls, Virginia McConnell (1995): "Shifting Gears: New Directions for Cars and Clean Air." Resources for the Future, Discussion Paper 94-26 REV., 33.

Harrington, W., Virginia McConnell (1993): "Cost-Effectivensess of Remote Sensing of Vehicle Emissions," Resources for the Future, Discussion paper QE93-24, 37.

Heninger, Brian T., Farhed A. Shah (1998): "Control of Stationary and Mobile Source Air Pollution: Reducing Emissions of Hydrocarbons for Ozone Abatement in Connecticut," Land Economics, 74, 497-513.

Hensher, David, Frank Milthorpe, N. Smith (1990): "The Demand for Vehicle Use in the Urban Household Sector," Journal of Transport Economics and Policy, 24, 119-137.

Hess, Alan (1977): "A Comparison of Automobile Demand Equations," Econometrica, 45, 683-701.

Hubbard, Thomas (1997): "Using Inspection and Maintenance Programs to Regulate Vehicle Emissions," Contemporary Economic Policy, 15, 52-62.

Innes, Robert (1996): "Regulating Automobile Pollution under Uncertainty, Competition, and Imperfect Information," Journal of Environmental Economics and Management, 31, 219-39.

Jorgensen, Finn (1990): "Forecasting Car Holding, Scrappage, and New Car Purchase in Norway," Journal of Transport Economics and Policy, May 1990, 139-156.

Khazzoom, J. Daniel (1991): "The Impact of a Gasoline Tax on Auto Exhaust Emissions," Journal of Policy Analysis and Management, 10, 434-54.

Krupnick, Alan J. (1993): "Vehicle Emissions, Urban Smog, and Clean Air Policy," Studies in Industrial Organization, 17, 143-77.

Langlois, Catherine C. (1996): "Do Japanese Automakers Maximize Profits? A Systems Analysis of the Pricing of Automobile Inventories," American Economist, 40, 65-76.

Langlois, Catherine (1989): "Markup Pricing Versus Marginalism: A Controversy Revisited", Journal of Post Keynesian Economics, 12, 127-51.

Levinsohn, James (1988): "Empirics of Taxes on Differentiated Products: The Case of Tariffs in the U.S. Automobile Industry," Trade Policy Issues & Empirical Analysis, National Bureau of Economic Research Conference Report Series Chicago and London, University of Chicago Press.

McCarthy, Patrick (1991): "Market Price and Income Elasticities of New Vehicle Demands," Review of Economics and Statistics, 73, 543-547.

McCarthy, Patrick (1985): "An Econometric Analysis of Automobile Transactions," International Journal of Transport Economics, 12, 71-92.

McConnell, Virginia D. (1986): "Automobile Use and Locational Interdependencies," Journal of Regional Science, 26, 475-98.

Office of Automotive Transportation.

Pearce, D.(1991): "The Role of Carbon Taxes in Adjusting to Global Warming," Economic Journal, 101, 938-948

Pritchard, Tim, Larry DeBoer (1995): "The Effect of Taxes and Insurance Costs on Automobile Registrations in the United States," Public Finance Quarterly, 23, 283-304.

Ramrattan, Lall B. (1991): "The Impact of Imports on Price Competition in the Automobile Industry," American Economist, 35, 60-66.

Rouwendal, J., G. Vries (1999): "Short Term Reactions to Changes in Fuel Prices--A Panel Data Analysis," International Journal of Transport Economics, 26, 331-50.

Schneider, F. and Volkert J.(1996): "Die Realisierung ökologisch-orientierter Wirtschaftspolitik - eine Unmöglichkeit? Überlegungen aus Sicht der Neuen Politischen Ökonomie". Arbeitspapier: 9611, Juli.

Verboven, Frank (1996): "Brand Rivalry, Market Segmentation, and the Pricing of Optimal Engine Power on Automobiles," Journal of Industrial Economics, 47, 399-425.

Ward's Automotive.

Wenzel, Tom (1999): "In-Use Emissions by Vehicle Model", published in the Proceedings of the Ninth Coordinating Research Council On-Road Vehicle Emissions Workshop, San Diego CA, April 20, 1999.

Appendix

Appendix 1: Vehicle segmentation

1989		
Company	**Segment Group**	**Series**
BMW	(G05) Luxury Car	BMW 3 SERIES
BMW	(G05) Luxury Car	BMW 5 SERIES
BMW	(G05) Luxury Car	BMW 6 SERIES
BMW	(G05) Luxury Car	BMW 7 SERIES
Chrysler Corp.	(G02) Small Car	COLT (DODGE)
Chrysler Corp.	(G02) Small Car	COLT (PLYM)
Chrysler Corp.	(G02) Small Car	DAYTONA
Chrysler Corp.	(G02) Small Car	HORIZON
Chrysler Corp.	(G02) Small Car	LASER (PLYM)
Chrysler Corp.	(G02) Small Car	OMNI
Chrysler Corp.	(G02) Small Car	SHADOW
Chrysler Corp.	(G02) Small Car	SUMMIT
Chrysler Corp.	(G02) Small Car	SUNDANCE
Chrysler Corp.	(G02) Small Car	TALON
Chrysler Corp.	(G03) Middle Car	ACCLAIM
Chrysler Corp.	(G03) Middle Car	ARIES
Chrysler Corp.	(G03) Middle Car	CARAVELLE
Chrysler Corp.	(G03) Middle Car	CONQUEST (CHRYSLER)
Chrysler Corp.	(G03) Middle Car	DODGE 600
Chrysler Corp.	(G03) Middle Car	DYNASTY
Chrysler Corp.	(G03) Middle Car	LANCER
Chrysler Corp.	(G03) Middle Car	LEBARON
Chrysler Corp.	(G03) Middle Car	MEDALLION
Chrysler Corp.	(G03) Middle Car	NEW YORKER
Chrysler Corp.	(G03) Middle Car	PHANTOM
Chrysler Corp.	(G03) Middle Car	PREMIER
Chrysler Corp.	(G03) Middle Car	RELIANT
Chrysler Corp.	(G03) Middle Car	SPIRIT
Chrysler Corp.	(G03) Middle Car	VISTA (DODGE)
Chrysler Corp.	(G03) Middle Car	VISTA (PLYM)
Chrysler Corp.	(G04) Large Car	DIPLOMAT
Chrysler Corp.	(G04) Large Car	GRAN FURY
Chrysler Corp.	(G05) Luxury Car	FIFTH AVENUE
Chrysler Corp.	(G05) Luxury Car	IMPERIAL
Chrysler Corp.	(G05) Luxury Car	MASERATI TC
Chrysler Corp.	(G07) Sport Utility	CHEROKEE XJ
Chrysler Corp.	(G07) Sport Utility	GRAND WAGONEER
Chrysler Corp.	(G07) Sport Utility	RAIDER
Chrysler Corp.	(G07) Sport Utility	RAMCHARGER
Chrysler Corp.	(G07) Sport Utility	WAGONEER XJ
Chrysler Corp.	(G07) Sport Utility	WRANGLER
Chrysler Corp.	(G08) Van	CARAVAN
Chrysler Corp.	(G08) Van	RAM VAN
Chrysler Corp.	(G08) Van	TOWN & COUNTRY
Chrysler Corp.	(G08) Van	VOYAGER
Chrysler Corp.	(G09) Pickup	COMANCHE
Chrysler Corp.	(G09) Pickup	DAKOTA
Chrysler Corp.	(G09) Pickup	RAM 50
Chrysler Corp.	(G09) Pickup	RAM PICKUP

Daihatsu	(G02) Small Car	CHARADE
Daihatsu	(G07) Sport Utility	ROCKY
Fiat Group	(G03) Middle Car	MILANO
Fiat Group	(G05) Luxury Car	ALFA SPIDER
Fiat Group	(G05) Luxury Car	FERRARI
Fiat Group	(G05) Luxury Car	GTV6
Fiat Group	(G10) Comm. Chasis	IVECO TRUCK
Ford Motor Co.	(G02) Small Car	ESCORT
Ford Motor Co.	(G02) Small Car	FESTIVA
Ford Motor Co.	(G02) Small Car	TEMPO
Ford Motor Co.	(G02) Small Car	TOPAZ
Ford Motor Co.	(G02) Small Car	TRACER
Ford Motor Co.	(G03) Middle Car	MUSTANG
Ford Motor Co.	(G03) Middle Car	PROBE
Ford Motor Co.	(G03) Middle Car	SABLE
Ford Motor Co.	(G03) Middle Car	TAURUS
Ford Motor Co.	(G04) Large Car	COUGAR
Ford Motor Co.	(G04) Large Car	CROWN VICTORIA
Ford Motor Co.	(G04) Large Car	GRAND MARQUIS
Ford Motor Co.	(G04) Large Car	THUNDERBIRD
Ford Motor Co.	(G05) Luxury Car	CONTINENTAL
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJ6
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJS
Ford Motor Co.	(G05) Luxury Car	MARK
Ford Motor Co.	(G05) Luxury Car	MERKUR SCORPIO
Ford Motor Co.	(G05) Luxury Car	TOWN CAR
Ford Motor Co.	(G05) Luxury Car	VOLVO 200
Ford Motor Co.	(G05) Luxury Car	VOLVO 700
Ford Motor Co.	(G05) Luxury Car	XR4TI
Ford Motor Co.	(G07) Sport Utility	BRONCO
Ford Motor Co.	(G07) Sport Utility	BRONCO II
Ford Motor Co.	(G07) Sport Utility	RANGE ROVER
Ford Motor Co.	(G08) Van	AEROSTAR
Ford Motor Co.	(G08) Van	ECONOLINE
Ford Motor Co.	(G09) Pickup	FORD F SERIES
Ford Motor Co.	(G09) Pickup	RANGER
Fuji	(G02) Small Car	JUSTY
Fuji	(G02) Small Car	LOYALE
Fuji	(G02) Small Car	SUBARU CLASSIC
Fuji	(G03) Middle Car	LEGACY
Fuji	(G03) Middle Car	SUBARU XT
Fuji	(G09) Pickup	BRAT
General Motors	(G02) Small Car	CAVALIER
General Motors	(G02) Small Car	FIERO
General Motors	(G02) Small Car	FIRENZA
General Motors	(G02) Small Car	LEMANS
General Motors	(G02) Small Car	METRO
General Motors	(G02) Small Car	PRIZM
General Motors	(G02) Small Car	SKYHAWK
General Motors	(G02) Small Car	STORM/SPECTRUM
General Motors	(G02) Small Car	SUNBIRD
General Motors	(G03) Middle Car	CALAIS
General Motors	(G03) Middle Car	CAMARO
General Motors	(G03) Middle Car	CELEBRITY
General Motors	(G03) Middle Car	CENTURY

General Motors	(G03) Middle Car	CIERA
General Motors	(G03) Middle Car	CORSICA BERETTA
General Motors	(G03) Middle Car	FIREBIRD
General Motors	(G03) Middle Car	GRAND AM
General Motors	(G03) Middle Car	GRAND PRIX
General Motors	(G03) Middle Car	LUMINA
General Motors	(G03) Middle Car	MONTE CARLO
General Motors	(G03) Middle Car	PONTIAC 6000
General Motors	(G03) Middle Car	REGAL
General Motors	(G03) Middle Car	SKYLARK
General Motors	(G03) Middle Car	SUPREME
General Motors	(G04) Large Car	BONNEVILLE
General Motors	(G04) Large Car	CAPRICE
General Motors	(G04) Large Car	ELECTRA
General Motors	(G04) Large Car	LESABRE
General Motors	(G04) Large Car	OLDS 88
General Motors	(G04) Large Car	SAFARI PONTIAC
General Motors	(G05) Luxury Car	ALLANTE
General Motors	(G05) Luxury Car	CIMARRON
General Motors	(G05) Luxury Car	CORVETTE
General Motors	(G05) Luxury Car	ELDORADO
General Motors	(G05) Luxury Car	FLTWOOD BROUGHAM
General Motors	(G05) Luxury Car	FLTWOOD DEVILLE
General Motors	(G05) Luxury Car	OLDS 98
General Motors	(G05) Luxury Car	REATTA
General Motors	(G05) Luxury Car	RIVIERA
General Motors	(G05) Luxury Car	SAAB 900
General Motors	(G05) Luxury Car	SAAB 9000
General Motors	(G05) Luxury Car	SEVILLE
General Motors	(G05) Luxury Car	TORONADO
General Motors	(G07) Sport Utility	BLAZER
General Motors	(G07) Sport Utility	CHEVY SUBURBAN
General Motors	(G07) Sport Utility	GMC SUBURBAN
General Motors	(G07) Sport Utility	JIMMY
General Motors	(G07) Sport Utility	S BLAZER
General Motors	(G07) Sport Utility	S JIMMY
General Motors	(G07) Sport Utility	TRACKER
General Motors	(G08) Van	ASTRO
General Motors	(G08) Van	CHEVY VAN
General Motors	(G08) Van	LUMINA VAN
General Motors	(G08) Van	SAFARI VAN
General Motors	(G08) Van	SILHOUETTE
General Motors	(G08) Van	TRANS SPORT
General Motors	(G08) Van	VANDURA RALLY
General Motors	(G09) Pickup	CHEVY CK PICKUP
General Motors	(G09) Pickup	S10 PICKUP
General Motors	(G09) Pickup	SIERRA
General Motors	(G09) Pickup	SONOMA
General Motors	(G10) Comm. Chasis	CHEVY P MODEL
General Motors	(G10) Comm. Chasis	FORWARD
General Motors	(G10) Comm. Chasis	GMC P MODEL
General Motors	(G10) Comm. Chasis	TILTMASTER
Honda	(G02) Small Car	CIVIC
Honda	(G02) Small Car	INTEGRA
Honda	(G03) Middle Car	ACCORD

Honda	(G03) Middle Car	INTEGRA
Honda	(G03) Middle Car	PRELUDE
Honda	(G05) Luxury Car	LEGEND
Hyundai	(G02) Small Car	EXCEL
Hyundai	(G03) Middle Car	SONATA
Isuzu	(G02) Small Car	I MARK
Isuzu	(G02) Small Car	IMPULSE
Isuzu	(G07) Sport Utility	AMIGO
Isuzu	(G07) Sport Utility	TROOPER
Isuzu	(G09) Pickup	ISUZU PICKUP
Isuzu	(G10) Comm. Chasis	ISUZU TRUCK
Mazda	(G02) Small Car	MAZDA 323
Mazda	(G02) Small Car	PROTEGE
Mazda	(G03) Middle Car	MAZDA 626
Mazda	(G03) Middle Car	MAZDA MX6
Mazda	(G03) Middle Car	MIATA
Mazda	(G05) Luxury Car	MAZDA 929
Mazda	(G05) Luxury Car	MAZDA RX7
Mazda	(G08) Van	MPV
Mazda	(G09) Pickup	MAZDA PU
Mercedes Benz	(G05) Luxury Car	MERCEDES C CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES E CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES S CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES SL CLASS
Mitsubishi	(G02) Small Car	CORDIA
Mitsubishi	(G02) Small Car	ECLIPSE
Mitsubishi	(G02) Small Car	MIRAGE
Mitsubishi	(G02) Small Car	PRECIS
Mitsubishi	(G03) Middle Car	GALANT
Mitsubishi	(G03) Middle Car	MITSUBISHI SIGMA
Mitsubishi	(G03) Middle Car	MITSUBISHI STARION
Mitsubishi	(G07) Sport Utility	MONTERO
Mitsubishi	(G08) Van	MITSUBISHI VAN
Mitsubishi	(G09) Pickup	MITSUBISHI PICKUP
Mitsubishi	(G10) Comm. Chasis	MITSU FUSO TRUCK
Nissan	(G02) Small Car	PULSAR NX
Nissan	(G02) Small Car	SENTRA
Nissan	(G02) Small Car	STANZA
Nissan	(G03) Middle Car	AXXESS
Nissan	(G03) Middle Car	MAXIMA
Nissan	(G03) Middle Car	NISSAN 240SX
Nissan	(G05) Luxury Car	INFINITI M30
Nissan	(G05) Luxury Car	INFINITI Q45
Nissan	(G05) Luxury Car	NISSAN 300ZX
Nissan	(G07) Sport Utility	PATHFINDER
Nissan	(G08) Van	NISSAN WAGON
Nissan	(G09) Pickup	NISSAN PICKUP
Nissan	(G10) Comm. Chasis	NISSAN DSL TRUCK
Peugeot S.A.	(G03) Middle Car	PEUGEOT 400
Peugeot S.A.	(G05) Luxury Car	PEUGEOT 500
Porsche	(G05) Luxury Car	PORSCHE 911
Porsche	(G05) Luxury Car	PORSCHE 924
Porsche	(G05) Luxury Car	PORSCHE 928
Porsche	(G05) Luxury Car	PORSCHE 944
Rover Cars	(G05) Luxury Car	STERLING 800

Suzuki	(G02) Small Car	SWIFT
Suzuki	(G07) Sport Utility	SAMURAI
Suzuki	(G07) Sport Utility	SIDEKICK
Toyota	(G02) Small Car	COROLLA
Toyota	(G02) Small Car	TERCEL
Toyota	(G03) Middle Car	CAMRY
Toyota	(G03) Middle Car	CELICA
Toyota	(G05) Luxury Car	CRESSIDA
Toyota	(G05) Luxury Car	LEXUS ES250
Toyota	(G05) Luxury Car	LEXUS LS400
Toyota	(G05) Luxury Car	SUPRA
Toyota	(G05) Luxury Car	TOYOTA MR2
Toyota	(G07) Sport Utility	4RUNNER
Toyota	(G07) Sport Utility	LAND CRUISER
Toyota	(G08) Van	TOYOTA VAN
Toyota	(G09) Pickup	TOYOTA PICKUP
Toyota	(G10) Comm. Chasis	HINO TRUCK
Volkswagen	(G02) Small Car	GOLF
Volkswagen	(G02) Small Car	JETTA
Volkswagen	(G02) Small Car	VW FOX
Volkswagen	(G03) Middle Car	AUDI 4000
Volkswagen	(G03) Middle Car	CORRADO
Volkswagen	(G03) Middle Car	QUANTUM
Volkswagen	(G03) Middle Car	SCIROCCO
Volkswagen	(G03) Middle Car	VW CABRIOLET
Volkswagen	(G05) Luxury Car	AUDI 100
Volkswagen	(G05) Luxury Car	AUDI 200
Volkswagen	(G05) Luxury Car	AUDI 5000
Volkswagen	(G05) Luxury Car	AUDI 80
Volkswagen	(G05) Luxury Car	AUDI 90
Volkswagen	(G05) Luxury Car	AUDI COUPE
Volkswagen	(G05) Luxury Car	AUDI V8
Volkswagen	(G08) Van	VANAGON
Zastava	(G02) Small Car	YUGO

1990		
Company	**Segment Group**	**Series**
BMW	(G05) Luxury Car	BMW 3 SERIES
BMW	(G05) Luxury Car	BMW 5 SERIES
BMW	(G05) Luxury Car	BMW 6 SERIES
BMW	(G05) Luxury Car	BMW 7 SERIES
BMW	(G05) Luxury Car	BMW 8 SERIES
Chrysler Corp.	(G02) Small Car	COLT (DODGE)
Chrysler Corp.	(G02) Small Car	COLT (PLYM)
Chrysler Corp.	(G02) Small Car	DAYTONA
Chrysler Corp.	(G02) Small Car	HORIZON
Chrysler Corp.	(G02) Small Car	LASER (PLYM)
Chrysler Corp.	(G02) Small Car	OMNI
Chrysler Corp.	(G02) Small Car	SHADOW
Chrysler Corp.	(G02) Small Car	SUMMIT
Chrysler Corp.	(G02) Small Car	SUNDANCE
Chrysler Corp.	(G02) Small Car	TALON
Chrysler Corp.	(G03) Middle Car	ACCLAIM
Chrysler Corp.	(G03) Middle Car	ARIES
Chrysler Corp.	(G03) Middle Car	CONQUEST (CHRYSLER)

Chrysler Corp.	(G03) Middle Car	DYNASTY
Chrysler Corp.	(G03) Middle Car	LANCER
Chrysler Corp.	(G03) Middle Car	LEBARON
Chrysler Corp.	(G03) Middle Car	MEDALLION
Chrysler Corp.	(G03) Middle Car	MONACO
Chrysler Corp.	(G03) Middle Car	NEW YORKER
Chrysler Corp.	(G03) Middle Car	PHANTOM
Chrysler Corp.	(G03) Middle Car	PREMIER
Chrysler Corp.	(G03) Middle Car	RELIANT
Chrysler Corp.	(G03) Middle Car	SPIRIT
Chrysler Corp.	(G03) Middle Car	VISTA (DODGE)
Chrysler Corp.	(G03) Middle Car	VISTA (PLYM)
Chrysler Corp.	(G05) Luxury Car	FIFTH AVENUE
Chrysler Corp.	(G05) Luxury Car	IMPERIAL
Chrysler Corp.	(G05) Luxury Car	MASERATI TC
Chrysler Corp.	(G05) Luxury Car	STEALTH
Chrysler Corp.	(G07) Sport Utility	CHEROKEE XJ
Chrysler Corp.	(G07) Sport Utility	GRAND WAGONEER
Chrysler Corp.	(G07) Sport Utility	RAIDER
Chrysler Corp.	(G07) Sport Utility	RAMCHARGER
Chrysler Corp.	(G07) Sport Utility	WAGONEER XJ
Chrysler Corp.	(G07) Sport Utility	WRANGLER
Chrysler Corp.	(G08) Van	CARAVAN
Chrysler Corp.	(G08) Van	RAM VAN
Chrysler Corp.	(G08) Van	TOWN & COUNTRY
Chrysler Corp.	(G08) Van	VOYAGER
Chrysler Corp.	(G09) Pickup	COMANCHE
Chrysler Corp.	(G09) Pickup	DAKOTA
Chrysler Corp.	(G09) Pickup	RAM 50
Chrysler Corp.	(G09) Pickup	RAM PICKUP
Daihatsu	(G02) Small Car	CHARADE
Daihatsu	(G07) Sport Utility	ROCKY
Fiat Group	(G03) Middle Car	MILANO
Fiat Group	(G05) Luxury Car	ALFA ROMEO 164
Fiat Group	(G05) Luxury Car	ALFA SPIDER
Fiat Group	(G10) Comm. Chasis	IVECO TRUCK
Ford Motor Co.	(G02) Small Car	CAPRI
Ford Motor Co.	(G02) Small Car	ESCORT
Ford Motor Co.	(G02) Small Car	FESTIVA
Ford Motor Co.	(G02) Small Car	TEMPO
Ford Motor Co.	(G02) Small Car	TOPAZ
Ford Motor Co.	(G02) Small Car	TRACER
Ford Motor Co.	(G03) Middle Car	MUSTANG
Ford Motor Co.	(G03) Middle Car	PROBE
Ford Motor Co.	(G03) Middle Car	SABLE
Ford Motor Co.	(G03) Middle Car	TAURUS
Ford Motor Co.	(G04) Large Car	COUGAR
Ford Motor Co.	(G04) Large Car	CROWN VICTORIA
Ford Motor Co.	(G04) Large Car	GRAND MARQUIS
Ford Motor Co.	(G04) Large Car	THUNDERBIRD
Ford Motor Co.	(G05) Luxury Car	CONTINENTAL
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJ6
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJS
Ford Motor Co.	(G05) Luxury Car	MARK
Ford Motor Co.	(G05) Luxury Car	MERKUR SCORPIO

Ford Motor Co.	(G05) Luxury Car	TOWN CAR
Ford Motor Co.	(G05) Luxury Car	VOLVO 200
Ford Motor Co.	(G05) Luxury Car	VOLVO 700
Ford Motor Co.	(G05) Luxury Car	VOLVO 900
Ford Motor Co.	(G05) Luxury Car	XR4TI
Ford Motor Co.	(G07) Sport Utility	BRONCO
Ford Motor Co.	(G07) Sport Utility	BRONCO II
Ford Motor Co.	(G07) Sport Utility	EXPLORER
Ford Motor Co.	(G07) Sport Utility	RANGE ROVER
Ford Motor Co.	(G08) Van	AEROSTAR
Ford Motor Co.	(G08) Van	ECONOLINE
Ford Motor Co.	(G09) Pickup	FORD F SERIES
Ford Motor Co.	(G09) Pickup	RANGER
Fuji	(G02) Small Car	JUSTY
Fuji	(G02) Small Car	LOYALE
Fuji	(G02) Small Car	SUBARU CLASSIC
Fuji	(G03) Middle Car	LEGACY
Fuji	(G03) Middle Car	SUBARU XT
General Motors	(G02) Small Car	CAVALIER
General Motors	(G02) Small Car	LEMANS
General Motors	(G02) Small Car	METRO
General Motors	(G02) Small Car	PRIZM
General Motors	(G02) Small Car	SATURN S
General Motors	(G02) Small Car	SKYHAWK
General Motors	(G02) Small Car	STORM/SPECTRUM
General Motors	(G02) Small Car	SUNBIRD
General Motors	(G03) Middle Car	CALAIS
General Motors	(G03) Middle Car	CAMARO
General Motors	(G03) Middle Car	CELEBRITY
General Motors	(G03) Middle Car	CENTURY
General Motors	(G03) Middle Car	CIERA
General Motors	(G03) Middle Car	CORSICA BERETTA
General Motors	(G03) Middle Car	FIREBIRD
General Motors	(G03) Middle Car	GRAND AM
General Motors	(G03) Middle Car	GRAND PRIX
General Motors	(G03) Middle Car	LUMINA
General Motors	(G03) Middle Car	PONTIAC 6000
General Motors	(G03) Middle Car	REGAL
General Motors	(G03) Middle Car	SKYLARK
General Motors	(G03) Middle Car	SUPREME
General Motors	(G04) Large Car	BONNEVILLE
General Motors	(G04) Large Car	CAPRICE
General Motors	(G04) Large Car	CUSTOM CRUISER
General Motors	(G04) Large Car	LESABRE
General Motors	(G04) Large Car	OLDS 88
General Motors	(G05) Luxury Car	ALLANTE
General Motors	(G05) Luxury Car	CORVETTE
General Motors	(G05) Luxury Car	ELDORADO
General Motors	(G05) Luxury Car	ELECTRA
General Motors	(G05) Luxury Car	FLTWOOD BROUGHAM
General Motors	(G05) Luxury Car	FLTWOOD DEVILLE
General Motors	(G05) Luxury Car	OLDS 98
General Motors	(G05) Luxury Car	REATTA
General Motors	(G05) Luxury Car	RIVIERA
General Motors	(G05) Luxury Car	SAAB 900

General Motors	(G05) Luxury Car	SAAB 9000
General Motors	(G05) Luxury Car	SEVILLE
General Motors	(G05) Luxury Car	TORONADO
General Motors	(G07) Sport Utility	BLAZER
General Motors	(G07) Sport Utility	BRAVADA
General Motors	(G07) Sport Utility	CHEVY SUBURBAN
General Motors	(G07) Sport Utility	GMC SUBURBAN
General Motors	(G07) Sport Utility	JIMMY
General Motors	(G07) Sport Utility	S BLAZER
General Motors	(G07) Sport Utility	S JIMMY
General Motors	(G07) Sport Utility	TRACKER
General Motors	(G08) Van	ASTRO
General Motors	(G08) Van	CHEVY VAN
General Motors	(G08) Van	LUMINA VAN
General Motors	(G08) Van	SAFARI VAN
General Motors	(G08) Van	SILHOUETTE
General Motors	(G08) Van	TRANS SPORT
General Motors	(G08) Van	VANDURA RALLY
General Motors	(G09) Pickup	CHEVY CK PICKUP
General Motors	(G09) Pickup	S10 PICKUP
General Motors	(G09) Pickup	SIERRA
General Motors	(G09) Pickup	SONOMA
General Motors	(G10) Comm. Chasis	CHEVY P MODEL
General Motors	(G10) Comm. Chasis	FORWARD
General Motors	(G10) Comm. Chasis	GMC P MODEL
General Motors	(G10) Comm. Chasis	TILTMASTER
Honda	(G02) Small Car	CIVIC
Honda	(G02) Small Car	INTEGRA
Honda	(G03) Middle Car	ACCORD
Honda	(G03) Middle Car	PRELUDE
Honda	(G05) Luxury Car	ACURA NSX
Honda	(G05) Luxury Car	LEGEND
Hyundai	(G02) Small Car	EXCEL
Hyundai	(G02) Small Car	SCOUPE
Hyundai	(G03) Middle Car	SONATA
Isuzu	(G02) Small Car	I MARK
Isuzu	(G02) Small Car	IMPULSE
Isuzu	(G02) Small Car	ISUZU STYLUS
Isuzu	(G07) Sport Utility	AMIGO
Isuzu	(G07) Sport Utility	RODEO
Isuzu	(G07) Sport Utility	TROOPER
Isuzu	(G09) Pickup	ISUZU PICKUP
Isuzu	(G10) Comm. Chasis	ISUZU TRUCK
Mazda	(G02) Small Car	MAZDA 323
Mazda	(G02) Small Car	PROTEGE
Mazda	(G03) Middle Car	MAZDA 626
Mazda	(G03) Middle Car	MAZDA MX6
Mazda	(G03) Middle Car	MIATA
Mazda	(G05) Luxury Car	MAZDA 929
Mazda	(G05) Luxury Car	MAZDA RX7
Mazda	(G07) Sport Utility	NAVAJO
Mazda	(G08) Van	MPV
Mazda	(G09) Pickup	MAZDA PU
Mercedes Benz	(G05) Luxury Car	MERCEDES C CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES E CLASS

Mercedes Benz	(G05) Luxury Car	MERCEDES S CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES SL CLASS
Mitsubishi	(G02) Small Car	ECLIPSE
Mitsubishi	(G02) Small Car	MIRAGE
Mitsubishi	(G02) Small Car	PRECIS
Mitsubishi	(G03) Middle Car	GALANT
Mitsubishi	(G03) Middle Car	MITSUBISHI SIGMA
Mitsubishi	(G03) Middle Car	MITSUBISHI STARION
Mitsubishi	(G05) Luxury Car	MITSUBISHI 3000 GT
Mitsubishi	(G07) Sport Utility	MONTERO
Mitsubishi	(G08) Van	MITSUBISHI VAN
Mitsubishi	(G09) Pickup	MITSUBISHI PICKUP
Mitsubishi	(G10) Comm. Chasis	MITSU FUSO TRUCK
Nissan	(G02) Small Car	PULSAR NX
Nissan	(G02) Small Car	SENTRA
Nissan	(G02) Small Car	STANZA
Nissan	(G03) Middle Car	AXXESS
Nissan	(G03) Middle Car	MAXIMA
Nissan	(G03) Middle Car	NISSAN 240SX
Nissan	(G05) Luxury Car	INFINITI G20
Nissan	(G05) Luxury Car	INFINITI M30
Nissan	(G05) Luxury Car	INFINITI Q45
Nissan	(G05) Luxury Car	NISSAN 300ZX
Nissan	(G07) Sport Utility	PATHFINDER
Nissan	(G08) Van	NISSAN WAGON
Nissan	(G09) Pickup	NISSAN PICKUP
Nissan	(G10) Comm. Chasis	NISSAN DSL TRUCK
Peugeot S.A.	(G03) Middle Car	PEUGEOT 400
Peugeot S.A.	(G05) Luxury Car	PEUGEOT 500
Porsche	(G05) Luxury Car	PORSCHE 911
Porsche	(G05) Luxury Car	PORSCHE 928
Porsche	(G05) Luxury Car	PORSCHE 944
Rover Cars	(G05) Luxury Car	STERLING 800
Suzuki	(G02) Small Car	SWIFT
Suzuki	(G07) Sport Utility	SAMURAI
Suzuki	(G07) Sport Utility	SIDEKICK
Toyota	(G02) Small Car	COROLLA
Toyota	(G02) Small Car	TERCEL
Toyota	(G03) Middle Car	CAMRY
Toyota	(G03) Middle Car	CELICA
Toyota	(G05) Luxury Car	CRESSIDA
Toyota	(G05) Luxury Car	LEXUS ES250
Toyota	(G05) Luxury Car	LEXUS LS400
Toyota	(G05) Luxury Car	SUPRA
Toyota	(G05) Luxury Car	TOYOTA MR2
Toyota	(G07) Sport Utility	4RUNNER
Toyota	(G07) Sport Utility	LAND CRUISER
Toyota	(G08) Van	PREVIA
Toyota	(G08) Van	TOYOTA VAN
Toyota	(G09) Pickup	TOYOTA PICKUP
Toyota	(G10) Comm. Chasis	HINO TRUCK
Volkswagen	(G02) Small Car	GOLF
Volkswagen	(G02) Small Car	JETTA
Volkswagen	(G02) Small Car	VW FOX
Volkswagen	(G03) Middle Car	CORRADO

Volkswagen	(G03) Middle Car	PASSAT
Volkswagen	(G03) Middle Car	QUANTUM
Volkswagen	(G03) Middle Car	SCIROCCO
Volkswagen	(G03) Middle Car	VW CABRIOLET
Volkswagen	(G05) Luxury Car	AUDI 100
Volkswagen	(G05) Luxury Car	AUDI 200
Volkswagen	(G05) Luxury Car	AUDI 5000
Volkswagen	(G05) Luxury Car	AUDI 80
Volkswagen	(G05) Luxury Car	AUDI 90
Volkswagen	(G05) Luxury Car	AUDI COUPE
Volkswagen	(G05) Luxury Car	AUDI V8
Volkswagen	(G08) Van	VANAGON
Zastava	(G02) Small Car	YUGO

1991		
Company	**Segment Group**	**Series**
BMW	(G05) Luxury Car	BMW 3 SERIES
BMW	(G05) Luxury Car	BMW 5 SERIES
BMW	(G05) Luxury Car	BMW 6 SERIES
BMW	(G05) Luxury Car	BMW 7 SERIES
BMW	(G05) Luxury Car	BMW 8 SERIES
Chrysler Corp.	(G02) Small Car	COLT (DODGE)
Chrysler Corp.	(G02) Small Car	COLT (PLYM)
Chrysler Corp.	(G02) Small Car	DAYTONA
Chrysler Corp.	(G02) Small Car	HORIZON
Chrysler Corp.	(G02) Small Car	LASER (PLYM)
Chrysler Corp.	(G02) Small Car	OMNI
Chrysler Corp.	(G02) Small Car	SHADOW
Chrysler Corp.	(G02) Small Car	SUMMIT
Chrysler Corp.	(G02) Small Car	SUNDANCE
Chrysler Corp.	(G02) Small Car	TALON
Chrysler Corp.	(G03) Middle Car	ACCLAIM
Chrysler Corp.	(G03) Middle Car	DYNASTY
Chrysler Corp.	(G03) Middle Car	LEBARON
Chrysler Corp.	(G03) Middle Car	MONACO
Chrysler Corp.	(G03) Middle Car	NEW YORKER
Chrysler Corp.	(G03) Middle Car	PREMIER
Chrysler Corp.	(G03) Middle Car	SPIRIT
Chrysler Corp.	(G03) Middle Car	SUMMIT
Chrysler Corp.	(G03) Middle Car	VISTA (DODGE)
Chrysler Corp.	(G03) Middle Car	VISTA (PLYM)
Chrysler Corp.	(G05) Luxury Car	FIFTH AVENUE
Chrysler Corp.	(G05) Luxury Car	IMPERIAL
Chrysler Corp.	(G05) Luxury Car	MASERATI TC
Chrysler Corp.	(G05) Luxury Car	STEALTH
Chrysler Corp.	(G07) Sport Utility	CHEROKEE XJ
Chrysler Corp.	(G07) Sport Utility	GRAND WAGONEER
Chrysler Corp.	(G07) Sport Utility	RAMCHARGER
Chrysler Corp.	(G07) Sport Utility	WRANGLER
Chrysler Corp.	(G08) Van	CARAVAN
Chrysler Corp.	(G08) Van	RAM VAN
Chrysler Corp.	(G08) Van	TOWN & COUNTRY
Chrysler Corp.	(G08) Van	VOYAGER
Chrysler Corp.	(G09) Pickup	COMANCHE
Chrysler Corp.	(G09) Pickup	DAKOTA

Chrysler Corp.	(G09) Pickup	RAM 50
Chrysler Corp.	(G09) Pickup	RAM PICKUP
Daihatsu	(G02) Small Car	CHARADE
Daihatsu	(G07) Sport Utility	ROCKY
Fiat Group	(G03) Middle Car	MILANO
Fiat Group	(G05) Luxury Car	ALFA ROMEO 164
Fiat Group	(G05) Luxury Car	ALFA SPIDER
Ford Motor Co.	(G02) Small Car	CAPRI
Ford Motor Co.	(G02) Small Car	ESCORT
Ford Motor Co.	(G02) Small Car	FESTIVA
Ford Motor Co.	(G02) Small Car	PROBE
Ford Motor Co.	(G02) Small Car	TEMPO
Ford Motor Co.	(G02) Small Car	TOPAZ
Ford Motor Co.	(G02) Small Car	TRACER
Ford Motor Co.	(G03) Middle Car	MUSTANG
Ford Motor Co.	(G03) Middle Car	SABLE
Ford Motor Co.	(G03) Middle Car	TAURUS
Ford Motor Co.	(G04) Large Car	COUGAR
Ford Motor Co.	(G04) Large Car	CROWN VICTORIA
Ford Motor Co.	(G04) Large Car	GRAND MARQUIS
Ford Motor Co.	(G04) Large Car	THUNDERBIRD
Ford Motor Co.	(G05) Luxury Car	CONTINENTAL
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJ6
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJS
Ford Motor Co.	(G05) Luxury Car	MARK
Ford Motor Co.	(G05) Luxury Car	TOWN CAR
Ford Motor Co.	(G05) Luxury Car	VOLVO 200
Ford Motor Co.	(G05) Luxury Car	VOLVO 700
Ford Motor Co.	(G05) Luxury Car	VOLVO 900
Ford Motor Co.	(G07) Sport Utility	BRONCO
Ford Motor Co.	(G07) Sport Utility	EXPLORER
Ford Motor Co.	(G07) Sport Utility	RANGE ROVER
Ford Motor Co.	(G08) Van	AEROSTAR
Ford Motor Co.	(G08) Van	ECONOLINE
Ford Motor Co.	(G09) Pickup	FORD F SERIES
Ford Motor Co.	(G09) Pickup	RANGER
Fuji	(G02) Small Car	JUSTY
Fuji	(G02) Small Car	LOYALE
Fuji	(G03) Middle Car	LEGACY
Fuji	(G03) Middle Car	SUBARU XT
Fuji	(G05) Luxury Car	SVX
General Motors	(G02) Small Car	CAVALIER
General Motors	(G02) Small Car	LEMANS
General Motors	(G02) Small Car	METRO
General Motors	(G02) Small Car	PRIZM
General Motors	(G02) Small Car	SATURN S
General Motors	(G02) Small Car	STORM/SPECTRUM
General Motors	(G02) Small Car	SUNBIRD
General Motors	(G03) Middle Car	ACHIEVA
General Motors	(G03) Middle Car	CALAIS
General Motors	(G03) Middle Car	CAMARO
General Motors	(G03) Middle Car	CELEBRITY
General Motors	(G03) Middle Car	CENTURY
General Motors	(G03) Middle Car	CIERA
General Motors	(G03) Middle Car	CORSICA BERETTA

General Motors	(G03) Middle Car	FIREBIRD
General Motors	(G03) Middle Car	GRAND AM
General Motors	(G03) Middle Car	GRAND PRIX
General Motors	(G03) Middle Car	LUMINA
General Motors	(G03) Middle Car	PONTIAC 6000
General Motors	(G03) Middle Car	REGAL
General Motors	(G03) Middle Car	SAAB 900
General Motors	(G03) Middle Car	SKYLARK
General Motors	(G03) Middle Car	SUPREME
General Motors	(G04) Large Car	BONNEVILLE
General Motors	(G04) Large Car	CAPRICE
General Motors	(G04) Large Car	LESABRE
General Motors	(G04) Large Car	OLDS 88
General Motors	(G05) Luxury Car	ALLANTE
General Motors	(G05) Luxury Car	CORVETTE
General Motors	(G05) Luxury Car	CUSTOM CRUISER
General Motors	(G05) Luxury Car	ELDORADO
General Motors	(G05) Luxury Car	ELECTRA
General Motors	(G05) Luxury Car	FLTWOOD BROUGHAM
General Motors	(G05) Luxury Car	FLTWOOD DEVILLE
General Motors	(G05) Luxury Car	OLDS 98
General Motors	(G05) Luxury Car	PARK AVE
General Motors	(G05) Luxury Car	REATTA
General Motors	(G05) Luxury Car	RIVIERA
General Motors	(G05) Luxury Car	ROADMASTER
General Motors	(G05) Luxury Car	SAAB 9000
General Motors	(G05) Luxury Car	SEVILLE
General Motors	(G05) Luxury Car	TORONADO
General Motors	(G07) Sport Utility	BLAZER
General Motors	(G07) Sport Utility	BRAVADA
General Motors	(G07) Sport Utility	CHEVY SUBURBAN
General Motors	(G07) Sport Utility	GMC SUBURBAN
General Motors	(G07) Sport Utility	JIMMY
General Motors	(G07) Sport Utility	S BLAZER
General Motors	(G07) Sport Utility	S JIMMY
General Motors	(G07) Sport Utility	TRACKER
General Motors	(G07) Sport Utility	YUKON
General Motors	(G08) Van	ASTRO
General Motors	(G08) Van	CHEVY VAN
General Motors	(G08) Van	LUMINA VAN
General Motors	(G08) Van	SAFARI VAN
General Motors	(G08) Van	SILHOUETTE
General Motors	(G08) Van	TRANS SPORT
General Motors	(G08) Van	VANDURA RALLY
General Motors	(G09) Pickup	CHEVY CK PICKUP
General Motors	(G09) Pickup	S10 PICKUP
General Motors	(G09) Pickup	SIERRA
General Motors	(G09) Pickup	SONOMA
General Motors	(G10) Comm. Chasis	CHEVY P MODEL
General Motors	(G10) Comm. Chasis	FORWARD
General Motors	(G10) Comm. Chasis	GMC P MODEL
General Motors	(G10) Comm. Chasis	TILTMASTER
Honda	(G02) Small Car	CIVIC
Honda	(G02) Small Car	INTEGRA
Honda	(G03) Middle Car	ACCORD

Honda	(G03) Middle Car	CIVIC
Honda	(G03) Middle Car	PRELUDE
Honda	(G05) Luxury Car	ACURA NSX
Honda	(G05) Luxury Car	LEGEND
Honda	(G05) Luxury Car	VIGOR
Hyundai	(G02) Small Car	ELANTRA
Hyundai	(G02) Small Car	EXCEL
Hyundai	(G02) Small Car	SCOUPE
Hyundai	(G03) Middle Car	SONATA
Isuzu	(G02) Small Car	I MARK
Isuzu	(G02) Small Car	IMPULSE
Isuzu	(G02) Small Car	ISUZU STYLUS
Isuzu	(G07) Sport Utility	AMIGO
Isuzu	(G07) Sport Utility	RODEO
Isuzu	(G07) Sport Utility	TROOPER
Isuzu	(G09) Pickup	ISUZU PICKUP
Isuzu	(G10) Comm. Chasis	ISUZU TRUCK
Mazda	(G02) Small Car	MAZDA 323
Mazda	(G02) Small Car	MIATA
Mazda	(G02) Small Car	MX3
Mazda	(G02) Small Car	PROTEGE
Mazda	(G03) Middle Car	MAZDA 626
Mazda	(G03) Middle Car	MAZDA MX6
Mazda	(G05) Luxury Car	MAZDA 929
Mazda	(G05) Luxury Car	MAZDA RX7
Mazda	(G07) Sport Utility	NAVAJO
Mazda	(G08) Van	MPV
Mazda	(G09) Pickup	MAZDA PU
Mercedes Benz	(G05) Luxury Car	MERCEDES C CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES E CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES S CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES SL CLASS
Mitsubishi	(G02) Small Car	ECLIPSE
Mitsubishi	(G02) Small Car	MIRAGE
Mitsubishi	(G02) Small Car	PRECIS
Mitsubishi	(G03) Middle Car	EXPO
Mitsubishi	(G03) Middle Car	GALANT
Mitsubishi	(G03) Middle Car	MITSUBISHI SIGMA
Mitsubishi	(G05) Luxury Car	DIAMANTE
Mitsubishi	(G05) Luxury Car	MITSUBISHI 3000 GT
Mitsubishi	(G07) Sport Utility	MONTERO
Mitsubishi	(G08) Van	MITSUBISHI VAN
Mitsubishi	(G09) Pickup	MITSUBISHI PICKUP
Mitsubishi	(G10) Comm. Chasis	MITSU FUSO TRUCK
Nissan	(G02) Small Car	NISSAN NX
Nissan	(G02) Small Car	PULSAR NX
Nissan	(G02) Small Car	SENTRA
Nissan	(G02) Small Car	STANZA
Nissan	(G03) Middle Car	AXXESS
Nissan	(G03) Middle Car	INFINITI G20
Nissan	(G03) Middle Car	MAXIMA
Nissan	(G03) Middle Car	NISSAN 240SX
Nissan	(G05) Luxury Car	INFINITI M30
Nissan	(G05) Luxury Car	INFINITI Q45
Nissan	(G05) Luxury Car	NISSAN 300ZX

Nissan	(G07) Sport Utility	PATHFINDER
Nissan	(G08) Van	NISSAN WAGON
Nissan	(G09) Pickup	NISSAN PICKUP
Nissan	(G10) Comm. Chasis	NISSAN DSL TRUCK
Peugeot S.A.	(G03) Middle Car	PEUGEOT 400
Peugeot S.A.	(G05) Luxury Car	PEUGEOT 500
Porsche	(G05) Luxury Car	PORSCHE 911
Porsche	(G05) Luxury Car	PORSCHE 928
Porsche	(G05) Luxury Car	PORSCHE 944
Rover Cars	(G05) Luxury Car	STERLING 827
Suzuki	(G02) Small Car	SWIFT
Suzuki	(G07) Sport Utility	SAMURAI
Suzuki	(G07) Sport Utility	SIDEKICK
Toyota	(G02) Small Car	COROLLA
Toyota	(G02) Small Car	PASEO
Toyota	(G02) Small Car	TERCEL
Toyota	(G03) Middle Car	CAMRY
Toyota	(G03) Middle Car	CELICA
Toyota	(G03) Middle Car	TOYOTA MR2
Toyota	(G05) Luxury Car	CRESSIDA
Toyota	(G05) Luxury Car	LEXUS ES250
Toyota	(G05) Luxury Car	LEXUS ES300
Toyota	(G05) Luxury Car	LEXUS LS400
Toyota	(G05) Luxury Car	LEXUS SC300
Toyota	(G05) Luxury Car	LEXUS SC400
Toyota	(G05) Luxury Car	SUPRA
Toyota	(G07) Sport Utility	4RUNNER
Toyota	(G07) Sport Utility	LAND CRUISER
Toyota	(G08) Van	PREVIA
Toyota	(G09) Pickup	TOYOTA PICKUP
Toyota	(G10) Comm. Chasis	HINO TRUCK
Volkswagen	(G02) Small Car	GOLF
Volkswagen	(G02) Small Car	JETTA
Volkswagen	(G02) Small Car	VW FOX
Volkswagen	(G03) Middle Car	CORRADO
Volkswagen	(G03) Middle Car	PASSAT
Volkswagen	(G03) Middle Car	QUANTUM
Volkswagen	(G03) Middle Car	VW CABRIOLET
Volkswagen	(G05) Luxury Car	AUDI 100
Volkswagen	(G05) Luxury Car	AUDI 200
Volkswagen	(G05) Luxury Car	AUDI 80
Volkswagen	(G05) Luxury Car	AUDI 90
Volkswagen	(G05) Luxury Car	AUDI COUPE
Volkswagen	(G05) Luxury Car	AUDI V8
Volkswagen	(G08) Van	VANAGON
Zastava	(G02) Small Car	YUGO

1992		
Company	**Segment Group**	**Series**
BMW	(G05) Luxury Car	BMW 3 SERIES
BMW	(G05) Luxury Car	BMW 5 SERIES
BMW	(G05) Luxury Car	BMW 6 SERIES
BMW	(G05) Luxury Car	BMW 7 SERIES
BMW	(G05) Luxury Car	BMW 8 SERIES
Chrysler Corp.	(G02) Small Car	COLT (DODGE)

Chrysler Corp.	(G02) Small Car	COLT (PLYM)
Chrysler Corp.	(G02) Small Car	DAYTONA
Chrysler Corp.	(G02) Small Car	LASER (PLYM)
Chrysler Corp.	(G02) Small Car	SHADOW
Chrysler Corp.	(G02) Small Car	SUMMIT
Chrysler Corp.	(G02) Small Car	SUNDANCE
Chrysler Corp.	(G02) Small Car	TALON
Chrysler Corp.	(G03) Middle Car	ACCLAIM
Chrysler Corp.	(G03) Middle Car	DYNASTY
Chrysler Corp.	(G03) Middle Car	LEBARON
Chrysler Corp.	(G03) Middle Car	MONACO
Chrysler Corp.	(G03) Middle Car	NEW YORKER
Chrysler Corp.	(G03) Middle Car	PREMIER
Chrysler Corp.	(G03) Middle Car	SPIRIT
Chrysler Corp.	(G03) Middle Car	SUMMIT
Chrysler Corp.	(G03) Middle Car	VISTA (DODGE)
Chrysler Corp.	(G03) Middle Car	VISTA (PLYM)
Chrysler Corp.	(G04) Large Car	CONCORDE
Chrysler Corp.	(G04) Large Car	INTREPID
Chrysler Corp.	(G04) Large Car	VISION
Chrysler Corp.	(G05) Luxury Car	FIFTH AVENUE
Chrysler Corp.	(G05) Luxury Car	IMPERIAL
Chrysler Corp.	(G05) Luxury Car	STEALTH
Chrysler Corp.	(G05) Luxury Car	VIPER
Chrysler Corp.	(G07) Sport Utility	CHEROKEE XJ
Chrysler Corp.	(G07) Sport Utility	GR WAGONEER ZJ
Chrysler Corp.	(G07) Sport Utility	GRAND CHEROKEE
Chrysler Corp.	(G07) Sport Utility	RAMCHARGER
Chrysler Corp.	(G07) Sport Utility	WRANGLER
Chrysler Corp.	(G08) Van	CARAVAN
Chrysler Corp.	(G08) Van	RAM VAN
Chrysler Corp.	(G08) Van	TOWN & COUNTRY
Chrysler Corp.	(G08) Van	VOYAGER
Chrysler Corp.	(G09) Pickup	COMANCHE
Chrysler Corp.	(G09) Pickup	DAKOTA
Chrysler Corp.	(G09) Pickup	RAM 50
Chrysler Corp.	(G09) Pickup	RAM PICKUP
Daihatsu	(G02) Small Car	CHARADE
Daihatsu	(G07) Sport Utility	ROCKY
Fiat Group	(G03) Middle Car	MILANO
Fiat Group	(G05) Luxury Car	ALFA ROMEO 164
Fiat Group	(G05) Luxury Car	ALFA SPIDER
Ford Motor Co.	(G02) Small Car	CAPRI
Ford Motor Co.	(G02) Small Car	ESCORT
Ford Motor Co.	(G02) Small Car	FESTIVA
Ford Motor Co.	(G02) Small Car	PROBE
Ford Motor Co.	(G02) Small Car	TEMPO
Ford Motor Co.	(G02) Small Car	TOPAZ
Ford Motor Co.	(G02) Small Car	TRACER
Ford Motor Co.	(G03) Middle Car	MUSTANG
Ford Motor Co.	(G03) Middle Car	PROBE
Ford Motor Co.	(G03) Middle Car	SABLE
Ford Motor Co.	(G03) Middle Car	TAURUS
Ford Motor Co.	(G04) Large Car	COUGAR
Ford Motor Co.	(G04) Large Car	CROWN VICTORIA

Ford Motor Co.	(G04) Large Car	GRAND MARQUIS
Ford Motor Co.	(G04) Large Car	THUNDERBIRD
Ford Motor Co.	(G05) Luxury Car	CONTINENTAL
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJ6
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJS
Ford Motor Co.	(G05) Luxury Car	MARK
Ford Motor Co.	(G05) Luxury Car	TOWN CAR
Ford Motor Co.	(G05) Luxury Car	VOLVO 200
Ford Motor Co.	(G05) Luxury Car	VOLVO 700
Ford Motor Co.	(G05) Luxury Car	VOLVO 800
Ford Motor Co.	(G05) Luxury Car	VOLVO 900
Ford Motor Co.	(G07) Sport Utility	BRONCO
Ford Motor Co.	(G07) Sport Utility	DEFENDER
Ford Motor Co.	(G07) Sport Utility	EXPLORER
Ford Motor Co.	(G07) Sport Utility	RANGE ROVER
Ford Motor Co.	(G08) Van	AEROSTAR
Ford Motor Co.	(G08) Van	ECONOLINE
Ford Motor Co.	(G08) Van	VILLAGER
Ford Motor Co.	(G09) Pickup	FORD F SERIES
Ford Motor Co.	(G09) Pickup	RANGER
Fuji	(G02) Small Car	JUSTY
Fuji	(G02) Small Car	LOYALE
Fuji	(G03) Middle Car	LEGACY
Fuji	(G05) Luxury Car	SVX
General Motors	(G02) Small Car	CAVALIER
General Motors	(G02) Small Car	LEMANS
General Motors	(G02) Small Car	METRO
General Motors	(G02) Small Car	PRIZM
General Motors	(G02) Small Car	SATURN S
General Motors	(G02) Small Car	STORM/SPECTRUM
General Motors	(G02) Small Car	SUNBIRD
General Motors	(G03) Middle Car	ACHIEVA
General Motors	(G03) Middle Car	CALAIS
General Motors	(G03) Middle Car	CAMARO
General Motors	(G03) Middle Car	CELEBRITY
General Motors	(G03) Middle Car	CENTURY
General Motors	(G03) Middle Car	CIERA
General Motors	(G03) Middle Car	CORSICA BERETTA
General Motors	(G03) Middle Car	FIREBIRD
General Motors	(G03) Middle Car	GRAND AM
General Motors	(G03) Middle Car	GRAND PRIX
General Motors	(G03) Middle Car	LUMINA
General Motors	(G03) Middle Car	PONTIAC 6000
General Motors	(G03) Middle Car	REGAL
General Motors	(G03) Middle Car	SAAB 900
General Motors	(G03) Middle Car	SKYLARK
General Motors	(G03) Middle Car	SUPREME
General Motors	(G04) Large Car	BONNEVILLE
General Motors	(G04) Large Car	CAPRICE
General Motors	(G04) Large Car	LESABRE
General Motors	(G04) Large Car	OLDS 88
General Motors	(G05) Luxury Car	ALLANTE
General Motors	(G05) Luxury Car	CORVETTE
General Motors	(G05) Luxury Car	CUSTOM CRUISER
General Motors	(G05) Luxury Car	ELDORADO

General Motors	(G05) Luxury Car	FLTWOOD BROUGHAM
General Motors	(G05) Luxury Car	FLTWOOD DEVILLE
General Motors	(G05) Luxury Car	OLDS 98
General Motors	(G05) Luxury Car	PARK AVE
General Motors	(G05) Luxury Car	REATTA
General Motors	(G05) Luxury Car	RIVIERA
General Motors	(G05) Luxury Car	ROADMASTER
General Motors	(G05) Luxury Car	SAAB 9000
General Motors	(G05) Luxury Car	SEVILLE
General Motors	(G05) Luxury Car	TORONADO
General Motors	(G07) Sport Utility	BLAZER
General Motors	(G07) Sport Utility	BRAVADA
General Motors	(G07) Sport Utility	CHEVY SUBURBAN
General Motors	(G07) Sport Utility	GMC SUBURBAN
General Motors	(G07) Sport Utility	JIMMY
General Motors	(G07) Sport Utility	S BLAZER
General Motors	(G07) Sport Utility	S JIMMY
General Motors	(G07) Sport Utility	TRACKER
General Motors	(G07) Sport Utility	YUKON
General Motors	(G08) Van	ASTRO
General Motors	(G08) Van	CHEVY VAN
General Motors	(G08) Van	LUMINA VAN
General Motors	(G08) Van	SAFARI VAN
General Motors	(G08) Van	SILHOUETTE
General Motors	(G08) Van	TRANS SPORT
General Motors	(G08) Van	VANDURA RALLY
General Motors	(G09) Pickup	CHEVY CK PICKUP
General Motors	(G09) Pickup	S10 PICKUP
General Motors	(G09) Pickup	SIERRA
General Motors	(G09) Pickup	SONOMA
General Motors	(G10) Comm. Chasis	CHEVY P MODEL
General Motors	(G10) Comm. Chasis	FORWARD
General Motors	(G10) Comm. Chasis	GMC P MODEL
General Motors	(G10) Comm. Chasis	TILTMASTER
Honda	(G02) Small Car	CIVIC
Honda	(G02) Small Car	INTEGRA
Honda	(G03) Middle Car	ACCORD
Honda	(G03) Middle Car	CIVIC
Honda	(G03) Middle Car	PRELUDE
Honda	(G05) Luxury Car	ACURA NSX
Honda	(G05) Luxury Car	LEGEND
Honda	(G05) Luxury Car	VIGOR
Hyundai	(G02) Small Car	ELANTRA
Hyundai	(G02) Small Car	EXCEL
Hyundai	(G02) Small Car	SCOUPE
Hyundai	(G03) Middle Car	SONATA
Isuzu	(G02) Small Car	I MARK
Isuzu	(G02) Small Car	IMPULSE
Isuzu	(G02) Small Car	ISUZU STYLUS
Isuzu	(G07) Sport Utility	AMIGO
Isuzu	(G07) Sport Utility	RODEO
Isuzu	(G07) Sport Utility	TROOPER
Isuzu	(G09) Pickup	ISUZU PICKUP
Isuzu	(G10) Comm. Chasis	ISUZU TRUCK
Mazda	(G02) Small Car	MAZDA 323

Mazda	(G02) Small Car	MIATA
Mazda	(G02) Small Car	MX3
Mazda	(G02) Small Car	PROTEGE
Mazda	(G03) Middle Car	MAZDA 626
Mazda	(G03) Middle Car	MAZDA MX6
Mazda	(G05) Luxury Car	MAZDA 929
Mazda	(G05) Luxury Car	MAZDA RX7
Mazda	(G07) Sport Utility	NAVAJO
Mazda	(G08) Van	MPV
Mazda	(G09) Pickup	MAZDA PU
Mercedes Benz	(G05) Luxury Car	MERCEDES C CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES E CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES S CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES SL CLASS
Mitsubishi	(G02) Small Car	ECLIPSE
Mitsubishi	(G02) Small Car	MIRAGE
Mitsubishi	(G02) Small Car	PRECIS
Mitsubishi	(G03) Middle Car	EXPO
Mitsubishi	(G03) Middle Car	GALANT
Mitsubishi	(G03) Middle Car	MITSUBISHI SIGMA
Mitsubishi	(G05) Luxury Car	DIAMANTE
Mitsubishi	(G05) Luxury Car	MITSUBISHI 3000 GT
Mitsubishi	(G07) Sport Utility	MONTERO
Mitsubishi	(G08) Van	MITSUBISHI VAN
Mitsubishi	(G09) Pickup	MITSUBISHI PICKUP
Mitsubishi	(G10) Comm. Chasis	MITSU FUSO TRUCK
Nissan	(G02) Small Car	NISSAN NX
Nissan	(G02) Small Car	SENTRA
Nissan	(G02) Small Car	STANZA
Nissan	(G03) Middle Car	ALTIMA
Nissan	(G03) Middle Car	INFINITI G20
Nissan	(G03) Middle Car	MAXIMA
Nissan	(G03) Middle Car	NISSAN 240SX
Nissan	(G05) Luxury Car	INFINITI J30
Nissan	(G05) Luxury Car	INFINITI M30
Nissan	(G05) Luxury Car	INFINITI Q45
Nissan	(G05) Luxury Car	NISSAN 300ZX
Nissan	(G07) Sport Utility	PATHFINDER
Nissan	(G08) Van	QUEST
Nissan	(G09) Pickup	NISSAN PICKUP
Nissan	(G10) Comm. Chasis	NISSAN DSL TRUCK
Peugeot S.A.	(G03) Middle Car	PEUGEOT 400
Peugeot S.A.	(G05) Luxury Car	PEUGEOT 500
Porsche	(G05) Luxury Car	PORSCHE 911
Porsche	(G05) Luxury Car	PORSCHE 928
Porsche	(G05) Luxury Car	PORSCHE 944
Porsche	(G05) Luxury Car	PORSCHE 968
Suzuki	(G02) Small Car	SWIFT
Suzuki	(G07) Sport Utility	SAMURAI
Suzuki	(G07) Sport Utility	SIDEKICK
Toyota	(G02) Small Car	COROLLA
Toyota	(G02) Small Car	PASEO
Toyota	(G02) Small Car	TERCEL
Toyota	(G03) Middle Car	CAMRY
Toyota	(G03) Middle Car	CELICA

Toyota	(G03) Middle Car	TOYOTA MR2
Toyota	(G05) Luxury Car	CRESSIDA
Toyota	(G05) Luxury Car	LEXUS ES300
Toyota	(G05) Luxury Car	LEXUS LS400
Toyota	(G05) Luxury Car	LEXUS SC300
Toyota	(G05) Luxury Car	LEXUS SC400
Toyota	(G05) Luxury Car	SUPRA
Toyota	(G07) Sport Utility	4RUNNER
Toyota	(G07) Sport Utility	LAND CRUISER
Toyota	(G08) Van	PREVIA
Toyota	(G09) Pickup	TOYOTA PICKUP
Toyota	(G09) Pickup	TOYOTA T100
Toyota	(G10) Comm. Chasis	HINO TRUCK
Volkswagen	(G02) Small Car	GOLF
Volkswagen	(G02) Small Car	JETTA
Volkswagen	(G02) Small Car	VW FOX
Volkswagen	(G03) Middle Car	CORRADO
Volkswagen	(G03) Middle Car	PASSAT
Volkswagen	(G03) Middle Car	VW CABRIOLET
Volkswagen	(G05) Luxury Car	AUDI 100
Volkswagen	(G05) Luxury Car	AUDI 200
Volkswagen	(G05) Luxury Car	AUDI 80
Volkswagen	(G05) Luxury Car	AUDI 90
Volkswagen	(G05) Luxury Car	AUDI COUPE
Volkswagen	(G05) Luxury Car	AUDI S4
Volkswagen	(G05) Luxury Car	AUDI V8
Volkswagen	(G08) Van	EUROVAN
Volkswagen	(G08) Van	VANAGON
Zastava	(G02) Small Car	YUGO

1993		
Company	**Segment Group**	**Series**
BMW	(G05) Luxury Car	BMW 3 SERIES
BMW	(G05) Luxury Car	BMW 5 SERIES
BMW	(G05) Luxury Car	BMW 6 SERIES
BMW	(G05) Luxury Car	BMW 7 SERIES
BMW	(G05) Luxury Car	BMW 8 SERIES
Chrysler Corp.	(G02) Small Car	COLT (DODGE)
Chrysler Corp.	(G02) Small Car	COLT (PLYM)
Chrysler Corp.	(G02) Small Car	DAYTONA
Chrysler Corp.	(G02) Small Car	LASER (PLYM)
Chrysler Corp.	(G02) Small Car	SHADOW
Chrysler Corp.	(G02) Small Car	SUMMIT
Chrysler Corp.	(G02) Small Car	SUNDANCE
Chrysler Corp.	(G02) Small Car	TALON
Chrysler Corp.	(G03) Middle Car	ACCLAIM
Chrysler Corp.	(G03) Middle Car	DYNASTY
Chrysler Corp.	(G03) Middle Car	LEBARON
Chrysler Corp.	(G03) Middle Car	NEW YORKER
Chrysler Corp.	(G03) Middle Car	SPIRIT
Chrysler Corp.	(G03) Middle Car	SUMMIT
Chrysler Corp.	(G03) Middle Car	VISTA (PLYM)
Chrysler Corp.	(G04) Large Car	CONCORDE
Chrysler Corp.	(G04) Large Car	INTREPID
Chrysler Corp.	(G04) Large Car	VISION

Chrysler Corp.	(G05) Luxury Car	CHRYSLER LHS
Chrysler Corp.	(G05) Luxury Car	FIFTH AVENUE
Chrysler Corp.	(G05) Luxury Car	IMPERIAL
Chrysler Corp.	(G05) Luxury Car	NEW YORKER
Chrysler Corp.	(G05) Luxury Car	STEALTH
Chrysler Corp.	(G05) Luxury Car	VIPER
Chrysler Corp.	(G07) Sport Utility	CHEROKEE XJ
Chrysler Corp.	(G07) Sport Utility	GR WAGONEER ZJ
Chrysler Corp.	(G07) Sport Utility	GRAND CHEROKEE
Chrysler Corp.	(G07) Sport Utility	RAMCHARGER
Chrysler Corp.	(G07) Sport Utility	WRANGLER
Chrysler Corp.	(G08) Van	CARAVAN
Chrysler Corp.	(G08) Van	RAM VAN
Chrysler Corp.	(G08) Van	TOWN & COUNTRY
Chrysler Corp.	(G08) Van	VOYAGER
Chrysler Corp.	(G09) Pickup	DAKOTA
Chrysler Corp.	(G09) Pickup	RAM 50
Chrysler Corp.	(G09) Pickup	RAM PICKUP
Fiat Group	(G03) Middle Car	MILANO
Fiat Group	(G05) Luxury Car	ALFA ROMEO 164
Fiat Group	(G05) Luxury Car	ALFA SPIDER
Ford Motor Co.	(G02) Small Car	CAPRI
Ford Motor Co.	(G02) Small Car	ESCORT
Ford Motor Co.	(G02) Small Car	FESTIVA
Ford Motor Co.	(G02) Small Car	TEMPO
Ford Motor Co.	(G02) Small Car	TOPAZ
Ford Motor Co.	(G02) Small Car	TRACER
Ford Motor Co.	(G03) Middle Car	MUSTANG
Ford Motor Co.	(G03) Middle Car	PROBE
Ford Motor Co.	(G03) Middle Car	SABLE
Ford Motor Co.	(G03) Middle Car	TAURUS
Ford Motor Co.	(G04) Large Car	COUGAR
Ford Motor Co.	(G04) Large Car	CROWN VICTORIA
Ford Motor Co.	(G04) Large Car	GRAND MARQUIS
Ford Motor Co.	(G04) Large Car	THUNDERBIRD
Ford Motor Co.	(G05) Luxury Car	CONTINENTAL
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJ6
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJS
Ford Motor Co.	(G05) Luxury Car	MARK
Ford Motor Co.	(G05) Luxury Car	TOWN CAR
Ford Motor Co.	(G05) Luxury Car	VOLVO 200
Ford Motor Co.	(G05) Luxury Car	VOLVO 700
Ford Motor Co.	(G05) Luxury Car	VOLVO 800
Ford Motor Co.	(G05) Luxury Car	VOLVO 900
Ford Motor Co.	(G07) Sport Utility	BRONCO
Ford Motor Co.	(G07) Sport Utility	DEFENDER
Ford Motor Co.	(G07) Sport Utility	EXPLORER
Ford Motor Co.	(G07) Sport Utility	RANGE ROVER
Ford Motor Co.	(G08) Van	AEROSTAR
Ford Motor Co.	(G08) Van	ECONOLINE
Ford Motor Co.	(G08) Van	VILLAGER
Ford Motor Co.	(G09) Pickup	FORD F SERIES
Ford Motor Co.	(G09) Pickup	RANGER
Fuji	(G02) Small Car	IMPREZA
Fuji	(G02) Small Car	JUSTY

Fuji	(G02) Small Car	LOYALE
Fuji	(G03) Middle Car	LEGACY
Fuji	(G05) Luxury Car	SVX
General Motors	(G02) Small Car	CAVALIER
General Motors	(G02) Small Car	LEMANS
General Motors	(G02) Small Car	METRO
General Motors	(G02) Small Car	PRIZM
General Motors	(G02) Small Car	SATURN S
General Motors	(G02) Small Car	STORM/SPECTRUM
General Motors	(G02) Small Car	SUNBIRD
General Motors	(G03) Middle Car	ACHIEVA
General Motors	(G03) Middle Car	CALAIS
General Motors	(G03) Middle Car	CAMARO
General Motors	(G03) Middle Car	CENTURY
General Motors	(G03) Middle Car	CIERA
General Motors	(G03) Middle Car	CORSICA BERETTA
General Motors	(G03) Middle Car	FIREBIRD
General Motors	(G03) Middle Car	GRAND AM
General Motors	(G03) Middle Car	GRAND PRIX
General Motors	(G03) Middle Car	LUMINA
General Motors	(G03) Middle Car	REGAL
General Motors	(G03) Middle Car	SAAB 900
General Motors	(G03) Middle Car	SKYLARK
General Motors	(G03) Middle Car	SUPREME
General Motors	(G04) Large Car	BONNEVILLE
General Motors	(G04) Large Car	CAPRICE
General Motors	(G04) Large Car	LESABRE
General Motors	(G04) Large Car	OLDS 88
General Motors	(G05) Luxury Car	ALLANTE
General Motors	(G05) Luxury Car	CORVETTE
General Motors	(G05) Luxury Car	CUSTOM CRUISER
General Motors	(G05) Luxury Car	ELDORADO
General Motors	(G05) Luxury Car	FLTWOOD BROUGHAM
General Motors	(G05) Luxury Car	FLTWOOD DEVILLE
General Motors	(G05) Luxury Car	OLDS 98
General Motors	(G05) Luxury Car	PARK AVE
General Motors	(G05) Luxury Car	RIVIERA
General Motors	(G05) Luxury Car	ROADMASTER
General Motors	(G05) Luxury Car	SAAB 900
General Motors	(G05) Luxury Car	SAAB 9000
General Motors	(G05) Luxury Car	SEVILLE
General Motors	(G05) Luxury Car	TORONADO
General Motors	(G07) Sport Utility	BLAZER
General Motors	(G07) Sport Utility	BRAVADA
General Motors	(G07) Sport Utility	CHEVY SUBURBAN
General Motors	(G07) Sport Utility	GMC SUBURBAN
General Motors	(G07) Sport Utility	JIMMY
General Motors	(G07) Sport Utility	S BLAZER
General Motors	(G07) Sport Utility	S JIMMY
General Motors	(G07) Sport Utility	TRACKER
General Motors	(G07) Sport Utility	YUKON
General Motors	(G08) Van	ASTRO
General Motors	(G08) Van	CHEVY VAN
General Motors	(G08) Van	LUMINA VAN
General Motors	(G08) Van	SAFARI VAN

General Motors	(G08) Van	SILHOUETTE
General Motors	(G08) Van	TRANS SPORT
General Motors	(G08) Van	VANDURA RALLY
General Motors	(G09) Pickup	CHEVY CK PICKUP
General Motors	(G09) Pickup	S10 PICKUP
General Motors	(G09) Pickup	SIERRA
General Motors	(G09) Pickup	SONOMA
General Motors	(G10) Comm. Chasis	CHEVY P MODEL
General Motors	(G10) Comm. Chasis	FORWARD
General Motors	(G10) Comm. Chasis	GMC P MODEL
General Motors	(G10) Comm. Chasis	TILTMASTER
Honda	(G02) Small Car	CIVIC
Honda	(G02) Small Car	DEL SOL
Honda	(G02) Small Car	INTEGRA
Honda	(G03) Middle Car	ACCORD
Honda	(G03) Middle Car	CIVIC
Honda	(G03) Middle Car	INTEGRA
Honda	(G03) Middle Car	PRELUDE
Honda	(G05) Luxury Car	ACURA NSX
Honda	(G05) Luxury Car	LEGEND
Honda	(G05) Luxury Car	VIGOR
Honda	(G07) Sport Utility	PASSPORT
Hyundai	(G02) Small Car	ELANTRA
Hyundai	(G02) Small Car	EXCEL
Hyundai	(G02) Small Car	SCOUPE
Hyundai	(G03) Middle Car	SONATA
Isuzu	(G02) Small Car	IMPULSE
Isuzu	(G02) Small Car	ISUZU STYLUS
Isuzu	(G07) Sport Utility	AMIGO
Isuzu	(G07) Sport Utility	RODEO
Isuzu	(G07) Sport Utility	TROOPER
Isuzu	(G09) Pickup	ISUZU PICKUP
Isuzu	(G10) Comm. Chasis	ISUZU TRUCK
Kia Motors	(G02) Small Car	SEPHIA
Mazda	(G02) Small Car	MAZDA 323
Mazda	(G02) Small Car	MIATA
Mazda	(G02) Small Car	MX3
Mazda	(G02) Small Car	PROTEGE
Mazda	(G03) Middle Car	MAZDA 626
Mazda	(G03) Middle Car	MAZDA MX6
Mazda	(G03) Middle Car	MIATA
Mazda	(G05) Luxury Car	MAZDA 929
Mazda	(G05) Luxury Car	MAZDA RX7
Mazda	(G07) Sport Utility	NAVAJO
Mazda	(G08) Van	MPV
Mazda	(G09) Pickup	MAZDA PU
Mercedes Benz	(G05) Luxury Car	MERCEDES C CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES E CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES S CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES SL CLASS
Mitsubishi	(G02) Small Car	ECLIPSE
Mitsubishi	(G02) Small Car	MIRAGE
Mitsubishi	(G02) Small Car	PRECIS
Mitsubishi	(G03) Middle Car	EXPO
Mitsubishi	(G03) Middle Car	GALANT

Mitsubishi	(G03) Middle Car	MITSUBISHI SIGMA
Mitsubishi	(G05) Luxury Car	DIAMANTE
Mitsubishi	(G05) Luxury Car	MITSUBISHI 3000 GT
Mitsubishi	(G07) Sport Utility	MONTERO
Mitsubishi	(G08) Van	MITSUBISHI VAN
Mitsubishi	(G09) Pickup	MITSUBISHI PICKUP
Mitsubishi	(G10) Comm. Chasis	MITSU FUSO TRUCK
Nissan	(G02) Small Car	NISSAN NX
Nissan	(G02) Small Car	SENTRA
Nissan	(G02) Small Car	STANZA
Nissan	(G03) Middle Car	ALTIMA
Nissan	(G03) Middle Car	INFINITI G20
Nissan	(G03) Middle Car	MAXIMA
Nissan	(G03) Middle Car	NISSAN 240SX
Nissan	(G05) Luxury Car	INFINITI G20
Nissan	(G05) Luxury Car	INFINITI J30
Nissan	(G05) Luxury Car	INFINITI M30
Nissan	(G05) Luxury Car	INFINITI Q45
Nissan	(G05) Luxury Car	NISSAN 300ZX
Nissan	(G07) Sport Utility	PATHFINDER
Nissan	(G08) Van	QUEST
Nissan	(G09) Pickup	NISSAN PICKUP
Nissan	(G10) Comm. Chasis	NISSAN DSL TRUCK
Porsche	(G05) Luxury Car	PORSCHE 911
Porsche	(G05) Luxury Car	PORSCHE 928
Porsche	(G05) Luxury Car	PORSCHE 968
Suzuki	(G02) Small Car	SWIFT
Suzuki	(G07) Sport Utility	SAMURAI
Suzuki	(G07) Sport Utility	SIDEKICK
Toyota	(G02) Small Car	COROLLA
Toyota	(G02) Small Car	PASEO
Toyota	(G02) Small Car	TERCEL
Toyota	(G03) Middle Car	CAMRY
Toyota	(G03) Middle Car	CELICA
Toyota	(G03) Middle Car	TOYOTA MR2
Toyota	(G05) Luxury Car	CRESSIDA
Toyota	(G05) Luxury Car	LEXUS ES300
Toyota	(G05) Luxury Car	LEXUS GS300
Toyota	(G05) Luxury Car	LEXUS LS400
Toyota	(G05) Luxury Car	LEXUS SC300
Toyota	(G05) Luxury Car	LEXUS SC400
Toyota	(G05) Luxury Car	SUPRA
Toyota	(G05) Luxury Car	TOYOTA MR2
Toyota	(G07) Sport Utility	4RUNNER
Toyota	(G07) Sport Utility	LAND CRUISER
Toyota	(G08) Van	PREVIA
Toyota	(G09) Pickup	TOYOTA PICKUP
Toyota	(G09) Pickup	TOYOTA T100
Toyota	(G10) Comm. Chasis	HINO TRUCK
Volkswagen	(G02) Small Car	GOLF
Volkswagen	(G02) Small Car	JETTA
Volkswagen	(G02) Small Car	VW FOX
Volkswagen	(G03) Middle Car	CORRADO
Volkswagen	(G03) Middle Car	PASSAT
Volkswagen	(G03) Middle Car	VW CABRIOLET

Volkswagen	(G05) Luxury Car	AUDI 100
Volkswagen	(G05) Luxury Car	AUDI 200
Volkswagen	(G05) Luxury Car	AUDI 80
Volkswagen	(G05) Luxury Car	AUDI 90
Volkswagen	(G05) Luxury Car	AUDI CABRIO
Volkswagen	(G05) Luxury Car	AUDI S4
Volkswagen	(G05) Luxury Car	AUDI V8
Volkswagen	(G08) Van	EUROVAN
Volkswagen	(G08) Van	VANAGON

1994		
Company	**Segment Group**	**Series**
BMW	(G05) Luxury Car	BMW 3 SERIES
BMW	(G05) Luxury Car	BMW 5 SERIES
BMW	(G05) Luxury Car	BMW 6 SERIES
BMW	(G05) Luxury Car	BMW 7 SERIES
BMW	(G05) Luxury Car	BMW 8 SERIES
Chrysler Corp.	(G02) Small Car	COLT (DODGE)
Chrysler Corp.	(G02) Small Car	COLT (PLYM)
Chrysler Corp.	(G02) Small Car	LASER (PLYM)
Chrysler Corp.	(G02) Small Car	NEON (DODGE)
Chrysler Corp.	(G02) Small Car	NEON (PLYM)
Chrysler Corp.	(G02) Small Car	SHADOW
Chrysler Corp.	(G02) Small Car	SUMMIT
Chrysler Corp.	(G02) Small Car	SUNDANCE
Chrysler Corp.	(G02) Small Car	TALON
Chrysler Corp.	(G03) Middle Car	ACCLAIM
Chrysler Corp.	(G03) Middle Car	AVENGER
Chrysler Corp.	(G03) Middle Car	CIRRUS
Chrysler Corp.	(G03) Middle Car	LEBARON
Chrysler Corp.	(G03) Middle Car	SPIRIT
Chrysler Corp.	(G03) Middle Car	SUMMIT
Chrysler Corp.	(G03) Middle Car	VISTA (PLYM)
Chrysler Corp.	(G04) Large Car	CONCORDE
Chrysler Corp.	(G04) Large Car	INTREPID
Chrysler Corp.	(G04) Large Car	VISION
Chrysler Corp.	(G05) Luxury Car	CHRYSLER LHS
Chrysler Corp.	(G05) Luxury Car	NEW YORKER
Chrysler Corp.	(G05) Luxury Car	STEALTH
Chrysler Corp.	(G05) Luxury Car	VIPER
Chrysler Corp.	(G07) Sport Utility	CHEROKEE XJ
Chrysler Corp.	(G07) Sport Utility	GRAND CHEROKEE
Chrysler Corp.	(G07) Sport Utility	WRANGLER
Chrysler Corp.	(G08) Van	CARAVAN
Chrysler Corp.	(G08) Van	RAM VAN
Chrysler Corp.	(G08) Van	TOWN & COUNTRY
Chrysler Corp.	(G08) Van	VOYAGER
Chrysler Corp.	(G09) Pickup	DAKOTA
Chrysler Corp.	(G09) Pickup	RAM PICKUP
Fiat Group	(G05) Luxury Car	ALFA ROMEO 164
Fiat Group	(G05) Luxury Car	ALFA SPIDER
Ford Motor Co.	(G02) Small Car	ASPIRE
Ford Motor Co.	(G02) Small Car	CAPRI
Ford Motor Co.	(G02) Small Car	ESCORT
Ford Motor Co.	(G02) Small Car	FESTIVA

Ford Motor Co.	(G02) Small Car	TEMPO
Ford Motor Co.	(G02) Small Car	TOPAZ
Ford Motor Co.	(G02) Small Car	TRACER
Ford Motor Co.	(G03) Middle Car	CONTOUR
Ford Motor Co.	(G03) Middle Car	MUSTANG
Ford Motor Co.	(G03) Middle Car	MYSTIQUE
Ford Motor Co.	(G03) Middle Car	PROBE
Ford Motor Co.	(G03) Middle Car	SABLE
Ford Motor Co.	(G03) Middle Car	TAURUS
Ford Motor Co.	(G04) Large Car	COUGAR
Ford Motor Co.	(G04) Large Car	CROWN VICTORIA
Ford Motor Co.	(G04) Large Car	GRAND MARQUIS
Ford Motor Co.	(G04) Large Car	THUNDERBIRD
Ford Motor Co.	(G05) Luxury Car	CONTINENTAL
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJ6
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJS
Ford Motor Co.	(G05) Luxury Car	MARK
Ford Motor Co.	(G05) Luxury Car	TOWN CAR
Ford Motor Co.	(G05) Luxury Car	VOLVO 200
Ford Motor Co.	(G05) Luxury Car	VOLVO 700
Ford Motor Co.	(G05) Luxury Car	VOLVO 800
Ford Motor Co.	(G05) Luxury Car	VOLVO 900
Ford Motor Co.	(G07) Sport Utility	BRONCO
Ford Motor Co.	(G07) Sport Utility	DEFENDER
Ford Motor Co.	(G07) Sport Utility	DISCOVERY
Ford Motor Co.	(G07) Sport Utility	EXPLORER
Ford Motor Co.	(G07) Sport Utility	RANGE ROVER
Ford Motor Co.	(G08) Van	AEROSTAR
Ford Motor Co.	(G08) Van	ECONOLINE
Ford Motor Co.	(G08) Van	VILLAGER
Ford Motor Co.	(G08) Van	WINDSTAR
Ford Motor Co.	(G09) Pickup	FORD F SERIES
Ford Motor Co.	(G09) Pickup	RANGER
Fuji	(G02) Small Car	IMPREZA
Fuji	(G02) Small Car	JUSTY
Fuji	(G02) Small Car	LOYALE
Fuji	(G03) Middle Car	LEGACY
Fuji	(G05) Luxury Car	SVX
General Motors	(G02) Small Car	CAVALIER
General Motors	(G02) Small Car	METRO
General Motors	(G02) Small Car	PRIZM
General Motors	(G02) Small Car	SATURN S
General Motors	(G02) Small Car	STORM/SPECTRUM
General Motors	(G02) Small Car	SUNBIRD
General Motors	(G02) Small Car	SUNFIRE
General Motors	(G03) Middle Car	ACHIEVA
General Motors	(G03) Middle Car	CAMARO
General Motors	(G03) Middle Car	CENTURY
General Motors	(G03) Middle Car	CIERA
General Motors	(G03) Middle Car	CORSICA BERETTA
General Motors	(G03) Middle Car	FIREBIRD
General Motors	(G03) Middle Car	GRAND AM
General Motors	(G03) Middle Car	GRAND PRIX
General Motors	(G03) Middle Car	LUMINA
General Motors	(G03) Middle Car	MONTE CARLO

General Motors	(G03) Middle Car	REGAL
General Motors	(G03) Middle Car	SKYLARK
General Motors	(G03) Middle Car	SUPREME
General Motors	(G04) Large Car	BONNEVILLE
General Motors	(G04) Large Car	CAPRICE
General Motors	(G04) Large Car	LESABRE
General Motors	(G04) Large Car	OLDS 88
General Motors	(G05) Luxury Car	ALLANTE
General Motors	(G05) Luxury Car	AURORA
General Motors	(G05) Luxury Car	CORVETTE
General Motors	(G05) Luxury Car	ELDORADO
General Motors	(G05) Luxury Car	FLTWOOD BROUGHAM
General Motors	(G05) Luxury Car	FLTWOOD DEVILLE
General Motors	(G05) Luxury Car	OLDS 98
General Motors	(G05) Luxury Car	PARK AVE
General Motors	(G05) Luxury Car	RIVIERA
General Motors	(G05) Luxury Car	ROADMASTER
General Motors	(G05) Luxury Car	SAAB 900
General Motors	(G05) Luxury Car	SAAB 9000
General Motors	(G05) Luxury Car	SEVILLE
General Motors	(G07) Sport Utility	BLAZER
General Motors	(G07) Sport Utility	BRAVADA
General Motors	(G07) Sport Utility	CHEVY SUBURBAN
General Motors	(G07) Sport Utility	GMC SUBURBAN
General Motors	(G07) Sport Utility	S BLAZER
General Motors	(G07) Sport Utility	S JIMMY
General Motors	(G07) Sport Utility	TAHOE
General Motors	(G07) Sport Utility	TRACKER
General Motors	(G07) Sport Utility	YUKON
General Motors	(G08) Van	ASTRO
General Motors	(G08) Van	CHEVY VAN
General Motors	(G08) Van	LUMINA VAN
General Motors	(G08) Van	SAFARI VAN
General Motors	(G08) Van	SILHOUETTE
General Motors	(G08) Van	TRANS SPORT
General Motors	(G08) Van	VANDURA RALLY
General Motors	(G09) Pickup	CHEVY CK PICKUP
General Motors	(G09) Pickup	S10 PICKUP
General Motors	(G09) Pickup	SIERRA
General Motors	(G09) Pickup	SONOMA
General Motors	(G10) Comm. Chasis	CHEVY P MODEL
General Motors	(G10) Comm. Chasis	FORWARD
General Motors	(G10) Comm. Chasis	GMC P MODEL
General Motors	(G10) Comm. Chasis	TILTMASTER
Honda	(G02) Small Car	CIVIC
Honda	(G02) Small Car	DEL SOL
Honda	(G03) Middle Car	ACCORD
Honda	(G03) Middle Car	CIVIC
Honda	(G03) Middle Car	INTEGRA
Honda	(G03) Middle Car	PRELUDE
Honda	(G05) Luxury Car	ACURA NSX
Honda	(G05) Luxury Car	LEGEND
Honda	(G05) Luxury Car	VIGOR
Honda	(G07) Sport Utility	PASSPORT
Honda	(G08) Van	ODYSSEY

Hyundai	(G02) Small Car	ACCENT
Hyundai	(G02) Small Car	ELANTRA
Hyundai	(G02) Small Car	EXCEL
Hyundai	(G02) Small Car	SCOUPE
Hyundai	(G03) Middle Car	SONATA
Isuzu	(G02) Small Car	IMPULSE
Isuzu	(G02) Small Car	ISUZU STYLUS
Isuzu	(G07) Sport Utility	AMIGO
Isuzu	(G07) Sport Utility	RODEO
Isuzu	(G07) Sport Utility	TROOPER
Isuzu	(G09) Pickup	ISUZU PICKUP
Isuzu	(G10) Comm. Chasis	ISUZU TRUCK
Kia Motors	(G02) Small Car	SEPHIA
Mazda	(G02) Small Car	MAZDA 323
Mazda	(G02) Small Car	MX3
Mazda	(G02) Small Car	PROTEGE
Mazda	(G03) Middle Car	MAZDA 626
Mazda	(G03) Middle Car	MAZDA MX6
Mazda	(G03) Middle Car	MIATA
Mazda	(G05) Luxury Car	MAZDA 929
Mazda	(G05) Luxury Car	MAZDA RX7
Mazda	(G05) Luxury Car	MILLENIA
Mazda	(G07) Sport Utility	NAVAJO
Mazda	(G08) Van	MPV
Mazda	(G09) Pickup	MAZDA PU
Mercedes Benz	(G05) Luxury Car	MERCEDES C CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES E CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES S CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES SL CLASS
Mitsubishi	(G02) Small Car	ECLIPSE
Mitsubishi	(G02) Small Car	MIRAGE
Mitsubishi	(G02) Small Car	PRECIS
Mitsubishi	(G03) Middle Car	EXPO
Mitsubishi	(G03) Middle Car	GALANT
Mitsubishi	(G03) Middle Car	MITSUBISHI SIGMA
Mitsubishi	(G05) Luxury Car	DIAMANTE
Mitsubishi	(G05) Luxury Car	MITSUBISHI 3000 GT
Mitsubishi	(G07) Sport Utility	MONTERO
Mitsubishi	(G08) Van	MITSUBISHI VAN
Mitsubishi	(G09) Pickup	MITSUBISHI PICKUP
Mitsubishi	(G10) Comm. Chasis	MITSU FUSO TRUCK
Nissan	(G02) Small Car	NISSAN NX
Nissan	(G02) Small Car	SENTRA
Nissan	(G02) Small Car	STANZA
Nissan	(G03) Middle Car	ALTIMA
Nissan	(G03) Middle Car	MAXIMA
Nissan	(G03) Middle Car	NISSAN 240SX
Nissan	(G05) Luxury Car	INFINITI G20
Nissan	(G05) Luxury Car	INFINITI J30
Nissan	(G05) Luxury Car	INFINITI M30
Nissan	(G05) Luxury Car	INFINITI Q45
Nissan	(G05) Luxury Car	NISSAN 300ZX
Nissan	(G07) Sport Utility	PATHFINDER
Nissan	(G08) Van	QUEST
Nissan	(G09) Pickup	NISSAN PICKUP

Nissan	(G10) Comm. Chasis	NISSAN DSL TRUCK
Porsche	(G05) Luxury Car	PORSCHE 911
Porsche	(G05) Luxury Car	PORSCHE 928
Porsche	(G05) Luxury Car	PORSCHE 968
Suzuki	(G02) Small Car	SWIFT
Suzuki	(G07) Sport Utility	SAMURAI
Suzuki	(G07) Sport Utility	SIDEKICK
Toyota	(G02) Small Car	COROLLA
Toyota	(G02) Small Car	PASEO
Toyota	(G02) Small Car	TERCEL
Toyota	(G03) Middle Car	CAMRY
Toyota	(G03) Middle Car	CELICA
Toyota	(G05) Luxury Car	AVALON
Toyota	(G05) Luxury Car	CRESSIDA
Toyota	(G05) Luxury Car	LEXUS ES300
Toyota	(G05) Luxury Car	LEXUS GS300
Toyota	(G05) Luxury Car	LEXUS LS400
Toyota	(G05) Luxury Car	LEXUS SC300
Toyota	(G05) Luxury Car	LEXUS SC400
Toyota	(G05) Luxury Car	SUPRA
Toyota	(G05) Luxury Car	TOYOTA MR2
Toyota	(G07) Sport Utility	4RUNNER
Toyota	(G07) Sport Utility	LAND CRUISER
Toyota	(G08) Van	PREVIA
Toyota	(G09) Pickup	TOYOTA PICKUP
Toyota	(G09) Pickup	TOYOTA T100
Volkswagen	(G02) Small Car	GOLF
Volkswagen	(G02) Small Car	JETTA
Volkswagen	(G02) Small Car	VW FOX
Volkswagen	(G03) Middle Car	CORRADO
Volkswagen	(G03) Middle Car	PASSAT
Volkswagen	(G03) Middle Car	VW CABRIOLET
Volkswagen	(G05) Luxury Car	AUDI 100
Volkswagen	(G05) Luxury Car	AUDI 200
Volkswagen	(G05) Luxury Car	AUDI 80
Volkswagen	(G05) Luxury Car	AUDI 90
Volkswagen	(G05) Luxury Car	AUDI A4
Volkswagen	(G05) Luxury Car	AUDI CABRIO
Volkswagen	(G05) Luxury Car	AUDI S4
Volkswagen	(G05) Luxury Car	AUDI V8
Volkswagen	(G08) Van	EUROVAN

1995		
Company	**Segment Group**	**Series**
BMW	(G05) Luxury Car	BMW 3 SERIES
BMW	(G05) Luxury Car	BMW 5 SERIES
BMW	(G05) Luxury Car	BMW 7 SERIES
BMW	(G05) Luxury Car	BMW 8 SERIES
Chrysler Corp.	(G02) Small Car	COLT (DODGE)
Chrysler Corp.	(G02) Small Car	COLT (PLYM)
Chrysler Corp.	(G02) Small Car	NEON (DODGE)
Chrysler Corp.	(G02) Small Car	NEON (PLYM)
Chrysler Corp.	(G02) Small Car	SUMMIT
Chrysler Corp.	(G02) Small Car	TALON
Chrysler Corp.	(G03) Middle Car	ACCLAIM

Chrysler Corp.	(G03) Middle Car	AVENGER
Chrysler Corp.	(G03) Middle Car	BREEZE
Chrysler Corp.	(G03) Middle Car	CIRRUS
Chrysler Corp.	(G03) Middle Car	LEBARON
Chrysler Corp.	(G03) Middle Car	SEBRING
Chrysler Corp.	(G03) Middle Car	SPIRIT
Chrysler Corp.	(G03) Middle Car	STRATUS
Chrysler Corp.	(G03) Middle Car	SUMMIT
Chrysler Corp.	(G04) Large Car	CONCORDE
Chrysler Corp.	(G04) Large Car	INTREPID
Chrysler Corp.	(G04) Large Car	VISION
Chrysler Corp.	(G05) Luxury Car	CHRYSLER LHS
Chrysler Corp.	(G05) Luxury Car	NEW YORKER
Chrysler Corp.	(G05) Luxury Car	STEALTH
Chrysler Corp.	(G05) Luxury Car	VIPER
Chrysler Corp.	(G07) Sport Utility	CHEROKEE XJ
Chrysler Corp.	(G07) Sport Utility	GRAND CHEROKEE
Chrysler Corp.	(G07) Sport Utility	WRANGLER
Chrysler Corp.	(G08) Van	CARAVAN
Chrysler Corp.	(G08) Van	RAM VAN
Chrysler Corp.	(G08) Van	TOWN & COUNTRY
Chrysler Corp.	(G08) Van	VOYAGER
Chrysler Corp.	(G09) Pickup	DAKOTA
Chrysler Corp.	(G09) Pickup	RAM PICKUP
Fiat Group	(G05) Luxury Car	ALFA ROMEO 164
Fiat Group	(G05) Luxury Car	ALFA SPIDER
Ford Motor Co.	(G02) Small Car	ASPIRE
Ford Motor Co.	(G02) Small Car	ESCORT
Ford Motor Co.	(G02) Small Car	TEMPO
Ford Motor Co.	(G02) Small Car	TOPAZ
Ford Motor Co.	(G02) Small Car	TRACER
Ford Motor Co.	(G03) Middle Car	CONTOUR
Ford Motor Co.	(G03) Middle Car	MUSTANG
Ford Motor Co.	(G03) Middle Car	MYSTIQUE
Ford Motor Co.	(G03) Middle Car	PROBE
Ford Motor Co.	(G03) Middle Car	SABLE
Ford Motor Co.	(G03) Middle Car	TAURUS
Ford Motor Co.	(G04) Large Car	COUGAR
Ford Motor Co.	(G04) Large Car	CROWN VICTORIA
Ford Motor Co.	(G04) Large Car	GRAND MARQUIS
Ford Motor Co.	(G04) Large Car	THUNDERBIRD
Ford Motor Co.	(G05) Luxury Car	CONTINENTAL
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJ6
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJS
Ford Motor Co.	(G05) Luxury Car	MARK
Ford Motor Co.	(G05) Luxury Car	TOWN CAR
Ford Motor Co.	(G05) Luxury Car	VOLVO 200
Ford Motor Co.	(G05) Luxury Car	VOLVO 800
Ford Motor Co.	(G05) Luxury Car	VOLVO 900
Ford Motor Co.	(G07) Sport Utility	BRONCO
Ford Motor Co.	(G07) Sport Utility	DEFENDER
Ford Motor Co.	(G07) Sport Utility	DISCOVERY
Ford Motor Co.	(G07) Sport Utility	EXPLORER
Ford Motor Co.	(G07) Sport Utility	RANGE ROVER
Ford Motor Co.	(G08) Van	AEROSTAR

Ford Motor Co.	(G08) Van	ECONOLINE
Ford Motor Co.	(G08) Van	VILLAGER
Ford Motor Co.	(G08) Van	WINDSTAR
Ford Motor Co.	(G09) Pickup	FORD F SERIES
Ford Motor Co.	(G09) Pickup	RANGER
Fuji	(G02) Small Car	IMPREZA
Fuji	(G03) Middle Car	LEGACY
Fuji	(G05) Luxury Car	SVX
General Motors	(G02) Small Car	CAVALIER
General Motors	(G02) Small Car	METRO
General Motors	(G02) Small Car	PRIZM
General Motors	(G02) Small Car	SATURN S
General Motors	(G02) Small Car	STORM/SPECTRUM
General Motors	(G02) Small Car	SUNBIRD
General Motors	(G02) Small Car	SUNFIRE
General Motors	(G03) Middle Car	ACHIEVA
General Motors	(G03) Middle Car	CAMARO
General Motors	(G03) Middle Car	CENTURY
General Motors	(G03) Middle Car	CIERA
General Motors	(G03) Middle Car	CORSICA BERETTA
General Motors	(G03) Middle Car	FIREBIRD
General Motors	(G03) Middle Car	GRAND AM
General Motors	(G03) Middle Car	GRAND PRIX
General Motors	(G03) Middle Car	LUMINA
General Motors	(G03) Middle Car	MONTE CARLO
General Motors	(G03) Middle Car	REGAL
General Motors	(G03) Middle Car	SKYLARK
General Motors	(G03) Middle Car	SUPREME
General Motors	(G04) Large Car	BONNEVILLE
General Motors	(G04) Large Car	CAPRICE
General Motors	(G04) Large Car	LESABRE
General Motors	(G04) Large Car	OLDS 88
General Motors	(G05) Luxury Car	AURORA
General Motors	(G05) Luxury Car	CORVETTE
General Motors	(G05) Luxury Car	ELDORADO
General Motors	(G05) Luxury Car	FLTWOOD BROUGHAM
General Motors	(G05) Luxury Car	FLTWOOD DEVILLE
General Motors	(G05) Luxury Car	OLDS 98
General Motors	(G05) Luxury Car	PARK AVE
General Motors	(G05) Luxury Car	RIVIERA
General Motors	(G05) Luxury Car	ROADMASTER
General Motors	(G05) Luxury Car	SAAB 900
General Motors	(G05) Luxury Car	SAAB 9000
General Motors	(G05) Luxury Car	SEVILLE
General Motors	(G07) Sport Utility	BLAZER
General Motors	(G07) Sport Utility	BRAVADA
General Motors	(G07) Sport Utility	CHEVY SUBURBAN
General Motors	(G07) Sport Utility	GMC SUBURBAN
General Motors	(G07) Sport Utility	S BLAZER
General Motors	(G07) Sport Utility	S JIMMY
General Motors	(G07) Sport Utility	TAHOE
General Motors	(G07) Sport Utility	TRACKER
General Motors	(G07) Sport Utility	YUKON
General Motors	(G08) Van	ASTRO
General Motors	(G08) Van	CHEVY VAN

General Motors	(G08) Van	LUMINA VAN
General Motors	(G08) Van	SAFARI VAN
General Motors	(G08) Van	SILHOUETTE
General Motors	(G08) Van	TRANS SPORT
General Motors	(G08) Van	VANDURA RALLY
General Motors	(G09) Pickup	CHEVY CK PICKUP
General Motors	(G09) Pickup	S10 PICKUP
General Motors	(G09) Pickup	SIERRA
General Motors	(G09) Pickup	SONOMA
General Motors	(G10) Comm. Chasis	CHEVY P MODEL
General Motors	(G10) Comm. Chasis	FORWARD
General Motors	(G10) Comm. Chasis	GMC P MODEL
General Motors	(G10) Comm. Chasis	TILTMASTER
Honda	(G02) Small Car	CIVIC
Honda	(G02) Small Car	DEL SOL
Honda	(G03) Middle Car	ACCORD
Honda	(G03) Middle Car	CIVIC
Honda	(G03) Middle Car	INTEGRA
Honda	(G03) Middle Car	PRELUDE
Honda	(G05) Luxury Car	ACURA NSX
Honda	(G05) Luxury Car	ACURA TL
Honda	(G05) Luxury Car	LEGEND
Honda	(G05) Luxury Car	VIGOR
Honda	(G07) Sport Utility	ACURA SLX
Honda	(G07) Sport Utility	PASSPORT
Honda	(G08) Van	ODYSSEY
Hyundai	(G02) Small Car	ACCENT
Hyundai	(G02) Small Car	ELANTRA
Hyundai	(G02) Small Car	EXCEL
Hyundai	(G02) Small Car	SCOUPE
Hyundai	(G03) Middle Car	SONATA
Isuzu	(G02) Small Car	IMPULSE
Isuzu	(G02) Small Car	ISUZU STYLUS
Isuzu	(G07) Sport Utility	AMIGO
Isuzu	(G07) Sport Utility	RODEO
Isuzu	(G07) Sport Utility	TROOPER
Isuzu	(G09) Pickup	ISUZU PICKUP
Isuzu	(G10) Comm. Chasis	ISUZU TRUCK
Kia Motors	(G02) Small Car	SEPHIA
Kia Motors	(G07) Sport Utility	SPORTAGE
Mazda	(G02) Small Car	MAZDA 323
Mazda	(G02) Small Car	MX3
Mazda	(G02) Small Car	PROTEGE
Mazda	(G03) Middle Car	MAZDA 626
Mazda	(G03) Middle Car	MAZDA MX6
Mazda	(G03) Middle Car	MIATA
Mazda	(G05) Luxury Car	MAZDA 929
Mazda	(G05) Luxury Car	MAZDA RX7
Mazda	(G05) Luxury Car	MILLENIA
Mazda	(G07) Sport Utility	NAVAJO
Mazda	(G08) Van	MPV
Mazda	(G09) Pickup	MAZDA PU
Mercedes Benz	(G05) Luxury Car	MERCEDES C CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES E CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES S CLASS

Mercedes Benz	(G05) Luxury Car	MERCEDES SL CLASS
Mercedes Benz	(G10) Comm. Chasis	FREIGHTLINER TRK
Mitsubishi	(G02) Small Car	ECLIPSE
Mitsubishi	(G02) Small Car	MIRAGE
Mitsubishi	(G03) Middle Car	EXPO
Mitsubishi	(G03) Middle Car	GALANT
Mitsubishi	(G05) Luxury Car	DIAMANTE
Mitsubishi	(G05) Luxury Car	MITSUBISHI 3000 GT
Mitsubishi	(G07) Sport Utility	MONTERO
Mitsubishi	(G09) Pickup	MITSUBISHI PICKUP
Mitsubishi	(G10) Comm. Chasis	MITSU FUSO TRUCK
Nissan	(G02) Small Car	NISSAN 200SX
Nissan	(G02) Small Car	NISSAN NX
Nissan	(G02) Small Car	SENTRA
Nissan	(G02) Small Car	STANZA
Nissan	(G03) Middle Car	ALTIMA
Nissan	(G03) Middle Car	MAXIMA
Nissan	(G03) Middle Car	NISSAN 240SX
Nissan	(G05) Luxury Car	INFINITI G20
Nissan	(G05) Luxury Car	INFINITI I30
Nissan	(G05) Luxury Car	INFINITI J30
Nissan	(G05) Luxury Car	INFINITI Q45
Nissan	(G05) Luxury Car	NISSAN 300ZX
Nissan	(G07) Sport Utility	PATHFINDER
Nissan	(G08) Van	QUEST
Nissan	(G09) Pickup	NISSAN PICKUP
Porsche	(G05) Luxury Car	PORSCHE 911
Porsche	(G05) Luxury Car	PORSCHE 928
Porsche	(G05) Luxury Car	PORSCHE 968
Suzuki	(G02) Small Car	ESTEEM
Suzuki	(G02) Small Car	SWIFT
Suzuki	(G07) Sport Utility	SAMURAI
Suzuki	(G07) Sport Utility	SIDEKICK
Suzuki	(G07) Sport Utility	SUZUKI X90
Toyota	(G02) Small Car	COROLLA
Toyota	(G02) Small Car	PASEO
Toyota	(G02) Small Car	TERCEL
Toyota	(G03) Middle Car	CAMRY
Toyota	(G03) Middle Car	CELICA
Toyota	(G05) Luxury Car	AVALON
Toyota	(G05) Luxury Car	CRESSIDA
Toyota	(G05) Luxury Car	LEXUS ES300
Toyota	(G05) Luxury Car	LEXUS GS300
Toyota	(G05) Luxury Car	LEXUS LS400
Toyota	(G05) Luxury Car	LEXUS SC300
Toyota	(G05) Luxury Car	LEXUS SC400
Toyota	(G05) Luxury Car	SUPRA
Toyota	(G05) Luxury Car	TOYOTA MR2
Toyota	(G06) Cross Utility	RAV4
Toyota	(G07) Sport Utility	4RUNNER
Toyota	(G07) Sport Utility	LAND CRUISER
Toyota	(G08) Van	PREVIA
Toyota	(G09) Pickup	TACOMA
Toyota	(G09) Pickup	TOYOTA PICKUP
Toyota	(G09) Pickup	TOYOTA T100

Volkswagen	(G02) Small Car	GOLF
Volkswagen	(G02) Small Car	JETTA
Volkswagen	(G02) Small Car	VW FOX
Volkswagen	(G03) Middle Car	CORRADO
Volkswagen	(G03) Middle Car	PASSAT
Volkswagen	(G03) Middle Car	VW CABRIOLET
Volkswagen	(G05) Luxury Car	AUDI 100
Volkswagen	(G05) Luxury Car	AUDI 80
Volkswagen	(G05) Luxury Car	AUDI A4
Volkswagen	(G05) Luxury Car	AUDI A6
Volkswagen	(G05) Luxury Car	AUDI CABRIO
Volkswagen	(G05) Luxury Car	AUDI S4
Volkswagen	(G05) Luxury Car	AUDI V8
Volkswagen	(G08) Van	EUROVAN

1996		
Company	**Segment Group**	**Series**
BMW	(G05) Luxury Car	BMW 3 SERIES
BMW	(G05) Luxury Car	BMW 5 SERIES
BMW	(G05) Luxury Car	BMW 7 SERIES
BMW	(G05) Luxury Car	BMW 8 SERIES
BMW	(G05) Luxury Car	BMW Z3
Chrysler Corp.	(G02) Small Car	NEON (DODGE)
Chrysler Corp.	(G02) Small Car	NEON (PLYM)
Chrysler Corp.	(G02) Small Car	SUMMIT
Chrysler Corp.	(G02) Small Car	TALON
Chrysler Corp.	(G03) Middle Car	AVENGER
Chrysler Corp.	(G03) Middle Car	BREEZE
Chrysler Corp.	(G03) Middle Car	CIRRUS
Chrysler Corp.	(G03) Middle Car	LEBARON
Chrysler Corp.	(G03) Middle Car	SEBRING
Chrysler Corp.	(G03) Middle Car	STRATUS
Chrysler Corp.	(G03) Middle Car	SUMMIT
Chrysler Corp.	(G04) Large Car	CONCORDE
Chrysler Corp.	(G04) Large Car	INTREPID
Chrysler Corp.	(G04) Large Car	VISION
Chrysler Corp.	(G05) Luxury Car	CHRYSLER LHS
Chrysler Corp.	(G05) Luxury Car	NEW YORKER
Chrysler Corp.	(G05) Luxury Car	STEALTH
Chrysler Corp.	(G05) Luxury Car	VIPER
Chrysler Corp.	(G07) Sport Utility	CHEROKEE XJ
Chrysler Corp.	(G07) Sport Utility	GRAND CHEROKEE
Chrysler Corp.	(G07) Sport Utility	WRANGLER
Chrysler Corp.	(G08) Van	CARAVAN
Chrysler Corp.	(G08) Van	RAM VAN
Chrysler Corp.	(G08) Van	TOWN & COUNTRY
Chrysler Corp.	(G08) Van	VOYAGER
Chrysler Corp.	(G09) Pickup	DAKOTA
Chrysler Corp.	(G09) Pickup	RAM PICKUP
Ford Motor Co.	(G02) Small Car	ASPIRE
Ford Motor Co.	(G02) Small Car	ESCORT
Ford Motor Co.	(G02) Small Car	TRACER
Ford Motor Co.	(G03) Middle Car	CONTOUR
Ford Motor Co.	(G03) Middle Car	MUSTANG

Ford Motor Co.	(G03) Middle Car	MYSTIQUE
Ford Motor Co.	(G03) Middle Car	PROBE
Ford Motor Co.	(G03) Middle Car	SABLE
Ford Motor Co.	(G03) Middle Car	TAURUS
Ford Motor Co.	(G04) Large Car	COUGAR
Ford Motor Co.	(G04) Large Car	CROWN VICTORIA
Ford Motor Co.	(G04) Large Car	GRAND MARQUIS
Ford Motor Co.	(G04) Large Car	THUNDERBIRD
Ford Motor Co.	(G05) Luxury Car	CONTINENTAL
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJ6
Ford Motor Co.	(G05) Luxury Car	JAGUAR XJS
Ford Motor Co.	(G05) Luxury Car	JAGUAR XK8
Ford Motor Co.	(G05) Luxury Car	MARK
Ford Motor Co.	(G05) Luxury Car	TOWN CAR
Ford Motor Co.	(G05) Luxury Car	VOLVO 800
Ford Motor Co.	(G05) Luxury Car	VOLVO 900
Ford Motor Co.	(G07) Sport Utility	BRONCO
Ford Motor Co.	(G07) Sport Utility	DEFENDER
Ford Motor Co.	(G07) Sport Utility	DISCOVERY
Ford Motor Co.	(G07) Sport Utility	EXPEDITION
Ford Motor Co.	(G07) Sport Utility	EXPLORER
Ford Motor Co.	(G07) Sport Utility	MOUNTAINEER
Ford Motor Co.	(G07) Sport Utility	RANGE ROVER
Ford Motor Co.	(G08) Van	AEROSTAR
Ford Motor Co.	(G08) Van	ECONOLINE
Ford Motor Co.	(G08) Van	VILLAGER
Ford Motor Co.	(G08) Van	WINDSTAR
Ford Motor Co.	(G09) Pickup	FORD F SERIES
Ford Motor Co.	(G09) Pickup	RANGER
Fuji	(G02) Small Car	IMPREZA
Fuji	(G03) Middle Car	LEGACY
Fuji	(G05) Luxury Car	SVX
General Motors	(G02) Small Car	CAVALIER
General Motors	(G02) Small Car	METRO
General Motors	(G02) Small Car	PRIZM
General Motors	(G02) Small Car	SATURN S
General Motors	(G02) Small Car	SUNFIRE
General Motors	(G03) Middle Car	ACHIEVA
General Motors	(G03) Middle Car	CAMARO
General Motors	(G03) Middle Car	CENTURY
General Motors	(G03) Middle Car	CIERA
General Motors	(G03) Middle Car	CORSICA BERETTA
General Motors	(G03) Middle Car	CUTLASS
General Motors	(G03) Middle Car	FIREBIRD
General Motors	(G03) Middle Car	GRAND AM
General Motors	(G03) Middle Car	GRAND PRIX
General Motors	(G03) Middle Car	LUMINA
General Motors	(G03) Middle Car	MALIBU
General Motors	(G03) Middle Car	MONTE CARLO
General Motors	(G03) Middle Car	REGAL
General Motors	(G03) Middle Car	SKYLARK
General Motors	(G03) Middle Car	SUPREME
General Motors	(G04) Large Car	BONNEVILLE
General Motors	(G04) Large Car	CAPRICE
General Motors	(G04) Large Car	LESABRE

General Motors	(G04) Large Car	OLDS 88
General Motors	(G05) Luxury Car	AURORA
General Motors	(G05) Luxury Car	CATERA
General Motors	(G05) Luxury Car	CORVETTE
General Motors	(G05) Luxury Car	ELDORADO
General Motors	(G05) Luxury Car	FLTWOOD BROUGHAM
General Motors	(G05) Luxury Car	FLTWOOD DEVILLE
General Motors	(G05) Luxury Car	OLDS 98
General Motors	(G05) Luxury Car	PARK AVE
General Motors	(G05) Luxury Car	RIVIERA
General Motors	(G05) Luxury Car	ROADMASTER
General Motors	(G05) Luxury Car	SAAB 900
General Motors	(G05) Luxury Car	SAAB 9000
General Motors	(G05) Luxury Car	SEVILLE
General Motors	(G07) Sport Utility	BLAZER
General Motors	(G07) Sport Utility	BRAVADA
General Motors	(G07) Sport Utility	CHEVY SUBURBAN
General Motors	(G07) Sport Utility	GMC SUBURBAN
General Motors	(G07) Sport Utility	S BLAZER
General Motors	(G07) Sport Utility	S JIMMY
General Motors	(G07) Sport Utility	TAHOE
General Motors	(G07) Sport Utility	TRACKER
General Motors	(G07) Sport Utility	YUKON
General Motors	(G08) Van	ASTRO
General Motors	(G08) Van	CHEVY VAN
General Motors	(G08) Van	EXPRESS
General Motors	(G08) Van	LUMINA VAN
General Motors	(G08) Van	SAFARI VAN
General Motors	(G08) Van	SAVANA
General Motors	(G08) Van	SILHOUETTE
General Motors	(G08) Van	TRANS SPORT
General Motors	(G08) Van	VANDURA RALLY
General Motors	(G08) Van	VENTURE
General Motors	(G09) Pickup	CHEVY CK PICKUP
General Motors	(G09) Pickup	S10 PICKUP
General Motors	(G09) Pickup	SIERRA
General Motors	(G09) Pickup	SONOMA
General Motors	(G10) Comm. Chasis	CHEVY P MODEL
General Motors	(G10) Comm. Chasis	FORWARD
General Motors	(G10) Comm. Chasis	GMC P MODEL
General Motors	(G10) Comm. Chasis	TILTMASTER
Honda	(G02) Small Car	CIVIC
Honda	(G02) Small Car	DEL SOL
Honda	(G03) Middle Car	ACCORD
Honda	(G03) Middle Car	CIVIC
Honda	(G03) Middle Car	INTEGRA
Honda	(G03) Middle Car	PRELUDE
Honda	(G05) Luxury Car	ACURA CL
Honda	(G05) Luxury Car	ACURA NSX
Honda	(G05) Luxury Car	ACURA RL
Honda	(G05) Luxury Car	ACURA TL
Honda	(G05) Luxury Car	LEGEND
Honda	(G07) Sport Utility	ACURA SLX
Honda	(G07) Sport Utility	PASSPORT
Honda	(G08) Van	ODYSSEY

Hyundai	(G02) Small Car	ACCENT
Hyundai	(G02) Small Car	ELANTRA
Hyundai	(G02) Small Car	EXCEL
Hyundai	(G02) Small Car	SCOUPE
Hyundai	(G02) Small Car	TIBURON
Hyundai	(G03) Middle Car	SONATA
Isuzu	(G02) Small Car	ISUZU STYLUS
Isuzu	(G07) Sport Utility	AMIGO
Isuzu	(G07) Sport Utility	RODEO
Isuzu	(G07) Sport Utility	TROOPER
Isuzu	(G08) Van	OASIS
Isuzu	(G09) Pickup	HOMBRE
Isuzu	(G09) Pickup	ISUZU PICKUP
Isuzu	(G10) Comm. Chasis	ISUZU TRUCK
Kia Motors	(G02) Small Car	SEPHIA
Kia Motors	(G07) Sport Utility	SPORTAGE
Mazda	(G02) Small Car	MX3
Mazda	(G02) Small Car	PROTEGE
Mazda	(G03) Middle Car	MAZDA 626
Mazda	(G03) Middle Car	MAZDA MX6
Mazda	(G03) Middle Car	MIATA
Mazda	(G05) Luxury Car	MAZDA 929
Mazda	(G05) Luxury Car	MAZDA RX7
Mazda	(G05) Luxury Car	MILLENIA
Mazda	(G07) Sport Utility	NAVAJO
Mazda	(G08) Van	MPV
Mazda	(G09) Pickup	MAZDA PU
Mercedes Benz	(G05) Luxury Car	MERCEDES C CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES E CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES S CLASS
Mercedes Benz	(G05) Luxury Car	MERCEDES SL CLASS
Mercedes Benz	(G10) Comm. Chasis	FREIGHTLINER TRK
Mitsubishi	(G02) Small Car	ECLIPSE
Mitsubishi	(G02) Small Car	MIRAGE
Mitsubishi	(G03) Middle Car	EXPO
Mitsubishi	(G03) Middle Car	GALANT
Mitsubishi	(G05) Luxury Car	DIAMANTE
Mitsubishi	(G05) Luxury Car	MITSUBISHI 3000 GT
Mitsubishi	(G07) Sport Utility	MONTERO
Mitsubishi	(G07) Sport Utility	MONTERO SPORT
Mitsubishi	(G09) Pickup	MITSUBISHI PICKUP
Mitsubishi	(G10) Comm. Chasis	MITSU FUSO TRUCK
Nissan	(G02) Small Car	NISSAN 200SX
Nissan	(G02) Small Car	NISSAN NX
Nissan	(G02) Small Car	SENTRA
Nissan	(G03) Middle Car	ALTIMA
Nissan	(G03) Middle Car	MAXIMA
Nissan	(G03) Middle Car	NISSAN 240SX
Nissan	(G05) Luxury Car	INFINITI G20
Nissan	(G05) Luxury Car	INFINITI I30
Nissan	(G05) Luxury Car	INFINITI J30
Nissan	(G05) Luxury Car	INFINITI Q45
Nissan	(G05) Luxury Car	NISSAN 300ZX
Nissan	(G07) Sport Utility	INFINITI QX4
Nissan	(G07) Sport Utility	PATHFINDER

Nissan	(G08) Van	QUEST
Nissan	(G09) Pickup	NISSAN PICKUP
Porsche	(G05) Luxury Car	PORSCHE 911
Porsche	(G05) Luxury Car	PORSCHE 928
Porsche	(G05) Luxury Car	PORSCHE 968
Suzuki	(G02) Small Car	ESTEEM
Suzuki	(G02) Small Car	SWIFT
Suzuki	(G07) Sport Utility	SAMURAI
Suzuki	(G07) Sport Utility	SIDEKICK
Suzuki	(G07) Sport Utility	SUZUKI X90
Toyota	(G02) Small Car	COROLLA
Toyota	(G02) Small Car	PASEO
Toyota	(G02) Small Car	TERCEL
Toyota	(G03) Middle Car	CAMRY
Toyota	(G03) Middle Car	CELICA
Toyota	(G05) Luxury Car	AVALON
Toyota	(G05) Luxury Car	LEXUS ES300
Toyota	(G05) Luxury Car	LEXUS GS300
Toyota	(G05) Luxury Car	LEXUS LS400
Toyota	(G05) Luxury Car	LEXUS SC300
Toyota	(G05) Luxury Car	LEXUS SC400
Toyota	(G05) Luxury Car	SUPRA
Toyota	(G05) Luxury Car	TOYOTA MR2
Toyota	(G06) Cross Utility	RAV4
Toyota	(G07) Sport Utility	4RUNNER
Toyota	(G07) Sport Utility	LAND CRUISER
Toyota	(G07) Sport Utility	LEXUS LX450
Toyota	(G08) Van	PREVIA
Toyota	(G09) Pickup	TACOMA
Toyota	(G09) Pickup	TOYOTA PICKUP
Toyota	(G09) Pickup	TOYOTA T100
Volkswagen	(G02) Small Car	GOLF
Volkswagen	(G02) Small Car	JETTA
Volkswagen	(G02) Small Car	VW FOX
Volkswagen	(G03) Middle Car	CORRADO
Volkswagen	(G03) Middle Car	PASSAT
Volkswagen	(G03) Middle Car	VW CABRIO
Volkswagen	(G03) Middle Car	VW CABRIOLET
Volkswagen	(G05) Luxury Car	AUDI A4
Volkswagen	(G05) Luxury Car	AUDI A6
Volkswagen	(G05) Luxury Car	AUDI A8
Volkswagen	(G05) Luxury Car	AUDI CABRIO
Volkswagen	(G05) Luxury Car	AUDI S4
Volkswagen	(G08) Van	EUROVAN

Appendix 2: Mathematica program to solve first order conditions for coefficients

Quarter 1. 1st Quarter, 1989.

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Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==341622,asub2 ==262998,asub3 ==37038,asub4 ==119719,asub5 ==84980,
   csub1 ==97391,csub2 ==267224,csub3 ==57610,csub4 ==61215,csub5 ==4458,
   fsub1 ==203833,fsub2 ==387792,fsub3 ==44652,fsub4 ==201750,fsub5 ==78969,
   gsub1 ==144852,gsub2 ==664688,gsub3 ==82393,gsub4 ==218322,gsub5 ==103231,
   p1==11846.650137741,p2==15416.3952702703,p3==19086.6935483871,
   p4==14733.55,p5==26519.2264150943},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,
   t,u,v,w,x,y}]
```

Quarter 2. 2nd Quarter, 1989.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
```

```
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==374662,asub2 ==349842,asub3 ==32150,asub4 ==123933,asub5 ==92304,
   csub1 ==105812,csub2 ==333591,csub3 ==69627,csub4 ==62039,csub5 ==4016,
   fsub1 ==206327,fsub2 ==454969,fsub3 ==41479,fsub4 ==228347,fsub5 ==91915,
   gsub1 ==192085,gsub2 ==805776,gsub3 ==86198,gsub4 ==255135,gsub5 ==113333,
   p1==11442.6993464052,p2==15282.7355932203,p3==18372.5081967213,
   p4==13618.3098039216,p5==23555.3392857143},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 3. 3rd Quarter, 1989.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==359326,asub2 ==365529,asub3 ==44666,asub4 ==135222,asub5 ==101272,
   csub1 ==128651,csub2 ==243589,csub3 ==70706,csub4 ==52631,csub5 ==5577,
```

fsub1 ==211244,fsub2 ==424418,fsub3 ==48051,fsub4 ==212169,fsub5 ==82402,
gsub1 ==180406,gsub2 ==751663,gsub3 ==101032,gsub4 ==264151,
gsub5 ==115555,p1==11533.8007590133,p2==15768.9907084785,
p3==17858.268907563,p4==14303.8372093023,p5==22583.5966386555},{a,b,c,d,e,
f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y}]

Quarter 4. 4th Quarter, 1989.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==315377,asub2 ==305455,asub3 ==47875,asub4 ==111484,asub5 ==92695,
csub1 ==85255,csub2 ==231420,csub3 ==54576,csub4 ==57752,csub5 ==14082,
fsub1 ==153583,fsub2 ==306549,fsub3 ==42193,fsub4 ==182598,fsub5 ==77381,
gsub1 ==148809,gsub2 ==512975,gsub3 ==83997,gsub4 ==182337,gsub5 ==93193,
p1==11163.404494382,p2==16242.8824306473,p3==16850.1454545455,
p4==14174.2736318408,p5==30184.7878787879},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
p,q,r,s,t,u,v,w,x,y}]

Quarter 5. 1st Quarter, 1990.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==336769,asub2 ==323708,asub3 ==48106,asub4 ==108388,asub5 ==88574,
csub1 ==85031,csub2 ==245399,csub3 ==51453,csub4 ==55791,csub5 ==14366,
fsub1 ==169238,fsub2 ==355644,fsub3 ==39112,fsub4 ==210264,fsub5 ==91591,
gsub1 ==180062,gsub2 ==636437,gsub3 ==77682,gsub4 ==219400,gsub5 ==118393,
p1==11486.8339222615,p2==15745.6870925684,p3==17927.1020408163,
p4==14043.6435185185,p5==28041.2361111111},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
p,q,r,s,t,u,v,w,x,y}]

Quarter 6. 2nd Quarter, 1990.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,

```
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==376397,asub2 ==364097,asub3 ==43228,asub4 ==133626,asub5 ==108382,
   csub1 ==82658,csub2 ==254159,csub3 ==51088,csub4 ==51941,csub5 ==12376,
   fsub1 ==170484,fsub2 ==388505,fsub3 ==59782,fsub4 ==214292,fsub5 ==94954,
   gsub1 ==195366,gsub2 ==745505,gsub3 ==87547,gsub4 ==230441,gsub5 ==115452,
   p1==12131.2234332425,p2==16123.4803664921,p3==18403.8059701493,
   p4==14602.5201793722,p5==27444.6486486487},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 7. 3rd Quarter, 1990.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==338148,asub2 ==376375,asub3 ==42358,asub4 ==123469,asub5 ==102833,
   csub1 ==77491,csub2 ==215406,csub3 ==50377,csub4 ==41299,csub5 ==11642,
   fsub1 ==178772,fsub2 ==344341,fsub3 ==67142,fsub4 ==194261,fsub5 ==79332,
   gsub1 ==190532,gsub2 ==653796,gsub3 ==84772,gsub4 ==224881,gsub5 ==111395,
   p1==11746.864,p2==16065.3210191083,p3==18128.0967741935,
   p4==14746.1090909091,p5==25316.4788732394},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 8. 4th Quarter, 1990.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
```

p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==304592,asub2 ==317133,asub3 ==48100,asub4 ==102108,asub5 ==106831,
csub1 ==73562,csub2 ==226938,csub3 ==43229,csub4 ==37752,csub5 ==20969,
fsub1 ==151362,fsub2 ==293130,fsub3 ==67090,fsub4 ==157810,fsub5 ==77027,
gsub1 ==185158,gsub2 ==507707,gsub3 ==68000,gsub4 ==187211,gsub5 ==114206,
p1==11654.8541666667,p2==15723.4307958478,p3==19151.1290322581,
p4==15051.3661202186,p5==23923.0588235294},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
p,q,r,s,t,u,v,w,x,y}]

Quarter 9. 1st Quarter, 1991.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

```
p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==278030,asub2 ==304095,asub3 ==44302,asub4 ==89438,asub5 ==72376,
   csub1 ==50556,csub2 ==214939,csub3 ==35836,csub4 ==40736,csub5 ==17169,
   fsub1 ==168588,fsub2 ==251955,fsub3 ==62571,fsub4 ==136512,fsub5 ==67085,
   gsub1 ==166562,gsub2 ==489213,gsub3 ==59766,gsub4 ==171028,gsub5 ==100614,
   p1==11738.385786802,p2==16572.036809816,p3==20204.0972222222,
   p4==14208.5957446809,p5==26187.9666666667},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 10. 2nd Quarter, 1991.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==340952,asub2 ==356553,asub3 ==47383,asub4 ==105964,asub5 ==100120,
   csub1 ==69068,csub2 ==225622,csub3 ==48031,csub4 ==47594,csub5 ==18308,
   fsub1 ==165279,fsub2 ==294650,fsub3 ==74563,fsub4 ==167893,fsub5 ==72831,
   gsub1 ==200491,gsub2 ==615980,gsub3 ==70465,gsub4 ==205314,gsub5 ==117480,
   p1==11296.5551330798,p2==15760.2380073801,p3==18353.4590163934,
   p4==13559.1559139785,p5==28426.4615384615},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 11. 3rd Quarter, 1991.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==364548,asub2 ==329887,asub3 ==54273,asub4 ==120260,asub5 ==108634,
   csub1 ==69817,csub2 ==188374,csub3 ==47448,csub4 ==40712,csub5 ==13918,
   fsub1 ==188904,fsub2 ==261875,fsub3 ==69684,fsub4 ==193441,fsub5 ==60180,
   gsub1 ==197882,gsub2 ==524061,gsub3 ==73565,gsub4 ==214698,gsub5 ==124564,
   p1==11724.8992248062,p2==16630.8361823362,p3==20620.6849315069,
   p4==15383.8323353293,p5==23361.7777777778},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 12. 4th Quarter, 1991.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
```

```
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==276245,asub2 ==296755,asub3 ==47055,asub4 ==93512,asub5 ==106221,
   csub1 ==59560,csub2 ==211477,csub3 ==45403,csub4 ==44804,csub5 ==18299,
   fsub1 ==158917,fsub2 ==246277,fsub3 ==72294,fsub4 ==168301,fsub5 ==55662,
   gsub1 ==159493,gsub2 ==480433,gsub3 ==56916,gsub4 ==180532,gsub5 ==110280,
   p1==13548.3081395349,p2==16725.388308977,p3==22112.4189189189,
   p4==14394.3894736842,p5==27524.4680851064},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 13. 1st Quarter, 1992.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==267700,asub2 ==306972,asub3 ==38724,asub4 ==88429,asub5 ==95924,
   csub1 ==56644,csub2 ==204165,csub3 ==54144,csub4 ==52202,csub5 ==14790,
   fsub1 ==166464,fsub2 ==271186,fsub3 ==76858,fsub4 ==152379,fsub5 ==60482,
   gsub1 ==175133,gsub2 ==509372,gsub3 ==61248,gsub4 ==174908,gsub5 ==98309,
   p1==11827.7025641026,p2==17798.974537037,p3==20462.4025974026,
   p4==16150.2209302326,p5==31004.380952381},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
```

```
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 14. 2nd Quarter, 1992.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==315833,asub2 ==350140,asub3 ==43350,asub4 ==100713,asub5 ==112278,
   csub1 ==73941,csub2 ==250924,csub3 ==67637,csub4 ==61145,csub5 ==16109,
   fsub1 ==185928,fsub2 ==344845,fsub3 ==89408,fsub4 ==200431,fsub5 ==61312,
   gsub1 ==211790,gsub2 ==634612,gsub3 ==90699,gsub4 ==214472,gsub5 ==113432,
   p1==11754.7625570776,p2==17574.0096153846,p3==20273.0505050505,
   p4==16631.5929648241,p5==30326.8421052632},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 15. 3rd Quarter, 1992.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
```

p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==287444,asub2 ==359751,asub3 ==51918,asub4 ==109354,asub5 ==106100,
csub1 ==64568,csub2 ==206715,csub3 ==65613,csub4 ==52331,csub5 ==15334,
fsub1 ==162328,fsub2 ==338773,fsub3 ==82234,fsub4 ==194841,fsub5 ==51425,
gsub1 ==184974,gsub2 ==505608,gsub3 ==91917,gsub4 ==226404,gsub5 ==90594,
p1==12011.5134228188,p2==17698.2876984127,p3==19302.9818181818,
p4==14634.6031746032,p5==27970.7346938776},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
p,q,r,s,t,u,v,w,x,y}]

Quarter 16. 4th Quarter, 1992.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==227465,asub2 ==358526,asub3 ==54125,asub4 ==95065,asub5 ==103589,
csub1 ==64198,csub2 ==239858,csub3 ==81836,csub4 ==54958,csub5 ==15900,

fsub1 ==127456,fsub2 ==366082,fsub3 ==87167,fsub4 ==170914,fsub5 ==65026,
gsub1 ==160602,gsub2 ==450583,gsub3 ==96263,gsub4 ==196843,gsub5 ==102991,
p1==13163.1855670103,p2==17899.1529636711,p3==22294.6020408163,
p4==16789.6600985222,p5==31128.6428571429},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
p,q,r,s,t,u,v,w,x,y}]

Quarter 17. 1st Quarter, 1993.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==230312,asub2 ==284385,asub3 ==49929,asub4 ==89762,asub5 ==91795,
csub1 ==67774,csub2 ==251870,csub3 ==80651,csub4 ==59443,csub5 ==14634,
fsub1 ==161025,fsub2 ==331907,fsub3 ==72630,fsub4 ==180626,fsub5 ==63104,
gsub1 ==180436,gsub2 ==471662,gsub3 ==87929,gsub4 ==204307,gsub5 ==76200,
p1==12770.8056872038,p2==17905.4756871036,p3==24901.2134831461,
p4==17984.8903225806,p5==25238.0833333333},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
p,q,r,s,t,u,v,w,x,y}]

Quarter 18. 2nd Quarter, 1993.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

```
p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==288801,asub2 ==390476,asub3 ==51583,asub4 ==96893,asub5 ==108859,
   csub1 ==79786,csub2 ==331142,csub3 ==110826,csub4 ==59962,csub5 ==19514,
   fsub1 ==169883,fsub2 ==430382,fsub3 ==88916,fsub4 ==238232,fsub5 ==71496,
   gsub1 ==239908,gsub2 ==661678,gsub3 ==111686,gsub4 ==258467,
   gsub5 ==100291,p1==13267.3981042654,p2==18399.0601851852,
   p3==22508.8674698795,p4==16280.2694300518,p5==25225.75},{a,b,c,d,e,f,g,h,
   i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y}]
```

Quarter 19. 3rd Quarter, 1993.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
```

```
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==276963,asub2 ==426028,asub3 ==56442,asub4 ==125033,asub5 ==113928,
   csub1 ==76333,csub2 ==237056,csub3 ==108844,csub4 ==41595,csub5 ==18032,
   fsub1 ==172467,fsub2 ==379204,fsub3 ==87086,fsub4 ==223688,fsub5 ==59365,
   gsub1 ==197066,gsub2 ==507298,gsub3 ==102505,gsub4 ==215518,gsub5 ==81191,
   p1==13400.3102040816,p2==17716.7961373391,p3==21638.9736842105,
   p4==14944.6153846154,p5==32554.9310344828},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 20. 4th Quarter, 1993.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==211881,asub2 ==378350,asub3 ==61568,asub4 ==93279,asub5 ==103475,
   csub1 ==72957,csub2 ==229607,csub3 ==109880,csub4 ==55499,csub5 ==22417,
   fsub1 ==147965,fsub2 ==358708,fsub3 ==88205,fsub4 ==241272,fsub5 ==65368,
   gsub1 ==199104,gsub2 ==510710,gsub3 ==110920,gsub4 ==233654,gsub5 ==96188,
   p1==13708.9014778325,p2==18921.0550239234,p3==22002.4193548387,
   p4==18715.0124223602,p5==32167.5789473684},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 21. 1st Quarter, 1994.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
```

```
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==246956,asub2 ==386310,asub3 ==69923,asub4 ==96467,asub5 ==99673,
   csub1 ==87889,csub2 ==274744,csub3 ==109733,csub4 ==76810,csub5 ==16039,
   fsub1 ==147206,fsub2 ==401648,fsub3 ==82874,fsub4 ==221504,fsub5 ==67272,
   gsub1 ==205024,gsub2 ==568131,gsub3 ==105965,gsub4 ==251502,gsub5 ==88876,
   p1==14208.4822695035,p2==19453.8144927536,p3==21780.265625,
   p4==18244.6100628931,p5==20886.8461538462},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
   p,q,r,s,t,u,v,w,x,y}]
```

Quarter 22. 2nd Quarter, 1994.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,
```

```
p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==274556,asub2 ==466762,asub3 ==73338,asub4 ==109988,asub5 ==119414,
   csub1 ==95720,csub2 ==305865,csub3 ==115807,csub4 ==92442,csub5 ==20903,
   fsub1 ==154806,fsub2 ==482367,fsub3 ==90042,fsub4 ==252288,fsub5 ==74663,
   gsub1 ==222444,gsub2 ==640646,gsub3 ==100864,gsub4 ==301743,
   gsub5 ==104480,p1==13796.0970873786,p2==20001.482832618,
   p3==22470.4827586207,p4==18956.5882352941,p5==31800},{a,b,c,d,e,f,g,h,i,j,
   k,l,m,n,o,p,q,r,s,t,u,v,w,x,y}]
```

Quarter 23. 3rd Quarter, 1994.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==271005,asub2 ==453447,asub3 ==85478,asub4 ==128757,asub5 ==122458,
   csub1 ==70794,csub2 ==221174,csub3 ==95302,csub4 ==87674,csub5 ==24872,
   fsub1 ==145143,fsub2 ==428571,fsub3 ==81709,fsub4 ==238199,fsub5 ==65024,
   gsub1 ==183024,gsub2 ==544633,gsub3 ==106577,gsub4 ==238826,
   gsub5 ==108874,p1==13519.4,p2==19635.953125,p3==22021.6515151515,
   p4==17309.2987012987,p5==27224},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,
   u,v,w,x,y}]
```

Quarter 24. 4th Quarter, 1994.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==213076,asub2 ==403923,asub3 ==87998,asub4 ==103631,asub5 ==106519,
   csub1 ==59035,csub2 ==225226,csub3 ==115603,csub4 ==91611,csub5 ==16752,
   fsub1 ==114072,fsub2 ==458872,fsub3 ==72852,fsub4 ==249346,fsub5 ==69190,
   gsub1 ==132486,gsub2 ==563804,gsub3 ==162010,gsub4 ==251275,
   gsub5 ==110868,p1==14814.2966101695,p2==18936.671957672,
   p3==24631.4791666667,p4==18710.4105960265,p5==27535.1621621622},{a,b,c,d,
   e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u,v,w,x,y}]
```

Quarter 25. 1st Quarter, 1995.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
```

p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==212911,asub2 ==372149,asub3 ==68074,asub4 ==94837,asub5 ==113036,
csub1 ==66888,csub2 ==253975,csub3 ==94252,csub4 ==92210,csub5 ==17255,
fsub1 ==111361,fsub2 ==453633,fsub3 ==91162,fsub4 ==232187,fsub5 ==63041,
gsub1 ==148720,gsub2 ==528724,gsub3 ==129859,gsub4 ==229785,gsub5 ==82188,
p1==14628.0238095238,p2==19990.0076628353,p3==27894.0192307692,
p4==17798.6888888889,p5==33250},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,
u,v,w,x,y}]

Quarter 26. 2nd Quarter, 1995.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==265131,asub2 ==443230,asub3 ==75960,asub4 ==92958,asub5 ==132737,
csub1 ==81642,csub2 ==295194,csub3 ==125421,csub4 ==96564,csub5 ==13466,
fsub1 ==105976,fsub2 ==519200,fsub3 ==125855,fsub4 ==256424,fsub5 ==75610,
gsub1 ==194344,gsub2 ==612909,gsub3 ==138857,gsub4 ==258315,gsub5 ==92465,
p1==15430.9463087248,p2==19902.0962732919,p3==27761.6056338028,
p4==18315.3148148148,p5==32687.3448275862},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,

```
p,q,r,s,t,u,v,w,x,y}]
```

Quarter 27. 3rd Quarter, 1995.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==260198,asub2 ==473236,asub3 ==93865,asub4 ==101068,asub5 ==122858,
   csub1 ==65061,csub2 ==243985,csub3 ==96689,csub4 ==89200,csub5 ==10842,
   fsub1 ==96373,fsub2 ==449608,fsub3 ==108285,fsub4 ==243090,fsub5 ==60485,
   gsub1 ==201744,gsub2 ==567343,gsub3 ==128316,gsub4 ==220705,
   gsub5 ==101672,p1==15567.0065359477,p2==19188.3713355049,p3==27017,
   p4==18482.6056338028,p5==35356.25},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,
   t,u,v,w,x,y}]
```

Quarter 28. 4th Quarter, 1995.

```
Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
```

p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==197449,asub2 ==394156,asub3 ==88309,asub4 ==81992,asub5 ==122106,
csub1 ==53775,csub2 ==242241,csub3 ==110266,csub4 ==105204,csub5 ==10213,
fsub1 ==85218,fsub2 ==398823,fsub3 ==124161,fsub4 ==235586,fsub5 ==58268,
gsub1 ==191863,gsub2 ==517012,gsub3 ==154084,gsub4 ==226826,gsub5 ==96919,
p1==15455.3033707865,p2==19655.5555555556,p3==26608.9615384615,
p4==20731.2222222222,p5==37800.3181818182},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
p,q,r,s,t,u,v,w,x,y}]

Quarter 29. 1st Quarter, 1996.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==193201,asub2 ==430983,asub3 ==78976,asub4 ==92328,asub5 ==110789,
csub1 ==67824,csub2 ==277760,csub3 ==105478,csub4 ==125861,csub5 ==14383,

fsub1 ==95616,fsub2 ==428984,fsub3 ==122033,fsub4 ==254441,fsub5 ==61222,
gsub1 ==187950,gsub2 ==488027,gsub3 ==156235,gsub4 ==224352,gsub5 ==80976,
p1==16224.0677966102,p2==21841.993902439,p3==28721.9705882353,
p4==19324.1625,p5==35523.1666666667},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,
s,t,u,v,w,x,y}]

Quarter 30. 2nd Quarter, 1996.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==242655,asub2 ==473116,asub3 ==88507,asub4 ==106288,asub5 ==136449,
csub1 ==80007,csub2 ==349278,csub3 ==132231,csub4 ==133808,csub5 ==9262,
fsub1 ==105026,fsub2 ==490221,fsub3 ==121855,fsub4 ==289504,fsub5 ==61419,
gsub1 ==237065,gsub2 ==612257,gsub3 ==165960,gsub4 ==246046,gsub5 ==93219,
p1==16494.4761904762,p2==21191.8231292517,p3==26510.16,
p4==20516.7678571429,p5==31235.4444444444},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
p,q,r,s,t,u,v,w,x,y}]

Quarter 31. 3rd Quarter, 1996.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

asub1 ==245592,asub2 ==462501,asub3 ==91579,asub4 ==127139,asub5 ==139791,
csub1 ==64828,csub2 ==271333,csub3 ==141461,csub4 ==105029,csub5 ==7458,
fsub1 ==97984,fsub2 ==437254,fsub3 ==119011,fsub4 ==240545,fsub5 ==63528,
gsub1 ==222454,gsub2 ==461979,gsub3 ==178577,gsub4 ==224815,gsub5 ==80918,
p1==15453.8301886792,p2==20369.2530120482,p3==28753.8095238095,
p4==23205.0294117647,p5==32566.8333333333},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,
p,q,r,s,t,u,v,w,x,y}]

Quarter 32. 4th Quarter, 1996.

Solve[{p1 + a asub1 + b asub2 + c asub3 + d asub4 +e asub5-MCasub1==0,
p2 + f asub1 + g asub2 + h asub3 + i asub4 + j asub5-MCasub2==0,
p3 + k asub1 + l asub2 + m asub3 + n asub4 +o asub5 -MCasub3==0,
p4 + p asub1 + q asub2 + r asub3 + s asub4 +t asub5 -MCasub4==0,
p5 + u asub1 + v asub2 + w asub3 + x asub4 + y asub5 - MCasub5==0,

p1 + a csub1 + b csub2 + c csub3 + d csub4 +e csub5-MCcsub1==0,
p2 + f csub1 + g csub2 + h csub3 + i csub4 + j csub5-MCcsub2==0,
p3 + k csub1 + l csub2 + m csub3 + n csub4 +o csub5 -MCcsub3==0,
p4 + p csub1 + q csub2 + r csub3 + s csub4 +t csub5 -MCcsub4==0,
p5 + u csub1 + v csub2 + w csub3 + x csub4 + y csub5 - MCcsub5==0,

p1 + a fsub1 + b fsub2 + c fsub3 + d fsub4 +e fsub5-MCfsub1==0,
p2 + f fsub1 + g fsub2 + h fsub3 + i fsub4 + j fsub5-MCfsub2==0,
p3 + k fsub1 + l fsub2 + m fsub3 + n fsub4 +o fsub5 -MCfsub3==0,
p4 + p fsub1 + q fsub2 + r fsub3 + s fsub4 +t fsub5 -MCfsub4==0,
p5 + u fsub1 + v fsub2 + w fsub3 + x fsub4 + y fsub5 - MCfsub5==0,

p1 + a gsub1 + b gsub2 + c gsub3 + d gsub4 +e gsub5-MCgsub1==0,
p2 + f gsub1 + g gsub2 + h gsub3 + i gsub4 + j gsub5-MCgsub2==0,
p3 + k gsub1 + l gsub2 + m gsub3 + n gsub4 +o gsub5 -MCgsub3==0,
p4 + p gsub1 + q gsub2 + r gsub3 + s gsub4 +t gsub5 -MCgsub4==0,
p5 + u gsub1 + v gsub2 + w gsub3 + x gsub4 + y gsub5 - MCgsub5==0,

```
asub1 ==180842,asub2 ==413497,asub3 ==95547,asub4 ==97559,asub5 ==133615,
   csub1 ==48537,csub2 ==253276,csub3 ==130013,csub4 ==124016,csub5 ==8983,
   fsub1 ==71174,fsub2 ==394302,fsub3 ==172453,fsub4 ==248092,fsub5 ==61766,
   gsub1 ==172171,gsub2 ==403534,gsub3 ==183830,gsub4 ==227754,gsub5 ==83338,
   p1==14116.4736842105,p2==24112.9714285714,p3==28666.6666666667,
   p4==21997.2592592593,p5==34490.625},{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,
   s,t,u,v,w,x,y}]
```

Appendix 3: Variable Key

Variable	Description
a	Coefficient of Demand: Derivative of price in segment 1 with respect to quantity in segment 1
aa	Non-Zero Coefficient of Demand: Derivative of price in segment 1 with respect to quantity in segment 1
Abate1	Abatement constant for segment 1
Abate2	Abatement constant for segment 2
Abate3	Abatement constant for segment 3
Abate4	Abatement constant for segment 4
Abate5	Abatement constant for segment 5
allmc	Grouping Variable for all marginal cost variables
allpartials	Grouping Variable for all coefficients of demand
Asub1	Quantity before taxes in segment 1 by Alternate Producers
Asub1n	Quantity after PMET in segment 1 by Alternate Producers
Asub1nl	Quantity after LSET in segment 1 by Alternate Producers
Asub2	Quantity before taxes in segment 2 Alternate Producers
Asub2n	Quantity after PMET in segment 2 Alternate Producers
Asub2nl	Quantity after LSET in segment 2 Alternate Producers
Asub3	Quantity before taxes in segment 3 Alternate Producers
Asub3n	Quantity after PMET in segment 3 Alternate Producers
Asub3nl	Quantity after LSET in segment 3 Alternate Producers
asub4	Quantity before taxes in segment 4 Alternate Producers
asub4n	Quantity after PMET in segment 4 Alternate Producers
asub4nl	Quantity after LSET in segment 4 Alternate Producers
asub5	Quantity before taxes in segment 5 Alternate Producers
asub5n	Quantity after PMET in segment 5 Alternate Producers
asub5nl	Quantity after LSET in segment 5 Alternate Producers
b	Coefficient of Demand: Derivative of price in segment 2 with respect to quantity in segment 1
bb	Non-Zero Coefficient of Demand: Derivative of price in segment 2 with respect to quantity in segment 1
c_	Coefficient of Demand: Derivative of price in segment 3 with respect to quantity in segment 1
cc	Non-Zero Coefficient of Demand: Derivative of price in segment 3 with respect to quantity in segment 1
coefficients	Grouping Variable: grouping variable for all coefficients of demand except "exogenous"
constant1	Demand intercept for auto market in segment 1

Variable	Description
constant2	Demand intercept for auto market in segment 2
constant3	Demand intercept for auto market in segment 3
constant4	Demand intercept for auto market in segment 4
constant5	Demand intercept for auto market in segment 5
CSlsetseg1	Consumer surplus in auto market after LSET in segment 1
CSlsetseg2	Consumer surplus in auto market after LSET in segment 2
CSlsetseg3	Consumer surplus in auto market after LSET in segment 3
CSlsetseg4	Consumer surplus in auto market after LSET in segment 4
CSlsetseg5	Consumer surplus in auto market after LSET in segment 5
Cslsetsum	Consumer surplus in auto market after LSET in all segments
CSPMETseg1	Consumer surplus in auto market after PMET in segment 1
CSPMETseg2	Consumer surplus in auto market after PMET in segment 2
CSPMETseg3	Consumer surplus in auto market after PMET in segment 3
CSPMETseg4	Consumer surplus in auto market after PMET in segment 4
CSPMETseg5	Consumer surplus in auto market after PMET in segment 5
CsPMETsum	Consumer surplus in auto market after PMET in all segments
CSseg1	Consumer surplus before taxes in segment 1
CSseg2	Consumer surplus before taxes in segment 2
CSseg3	Consumer surplus before taxes in segment 3
CSseg4	Consumer surplus before taxes in segment 4
CSseg5	Consumer surplus before taxes in segment 5
Cssum	Consumer surplus before taxes in all segments
cstravelpmetseg1	Consumer surplus in travel market after PMET in segment 1
cstravelpmetseg2	Consumer surplus in travel market after PMET in segment 2
cstravelpmetseg3	Consumer surplus in travel market after PMET in segment 3
cstravelpmetseg4	Consumer surplus in travel market after PMET in segment 4
cstravelpmetseg5	Consumer surplus in travel market after PMET in segment 5
cstravelpmetsum	Consumer surplus in travel market after PMET in all segments
CStravseg1	Consumer surplus in travel market before taxes in segment 1
CStravseg2	Consumer surplus in travel market before taxes in segment 2
CStravseg3	Consumer surplus in travel market before taxes in segment 3
CStravseg4	Consumer surplus in travel market before taxes in segment 4

Variable	Description
CStravseg5	Consumer surplus in travel market before taxes in segment 5
Cstravsum	Consumer surplus in travel market before taxes in all segments
Csub1	Quantity before taxes in segment 1 by Chrysler
Csub1n	Quantity after PMET in segment 1 by Chrysler
Csub1nl	Quantity after LSET in segment 1 by Chrysler
Csub2	Quantity before taxes in segment 2 Chrysler
Csub2n	Quantity after PMET in segment 2 Chrysler
Csub2nl	Quantity after LSET in segment 2 Chrysler
Csub3	Quantity before taxes in segment 3 Chrysler
Csub3n	Quantity after PMET in segment 3 Chrysler
Csub3nl	Quantity after LSET in segment 3 Chrysler
Csub4	Quantity before taxes in segment 4 Chrysler
Csub4n	Quantity after PMET in segment 4 Chrysler
Csub4nl	Quantity after LSET in segment 4 Chrysler
Csub5	Quantity before taxes in segment 5 Chrysler
Csub5n	Quantity after PMET in segment 5 Chrysler
Csub5nl	Quantity after LSET in segment 5 Chrysler
cur_emis1	Emissions from new vehicles before taxes in segment 1
cur_emis2	Emissions from new vehicles before taxes in segment 2
cur_emis3	Emissions from new vehicles before taxes in segment 3
cur_emis4	Emissions from new vehicles before taxes in segment 4
cur_emis5	Emissions from new vehicles before taxes in segment 5
d	Coefficient of Demand: Derivative of price in segment 4 with respect to quantity in segment 1
dd	Non-Zero Coefficient of Demand: Derivative of price in segment 4 with respect to quantity in segment 1
dp_dgas1	Impact of vehicle price of increase in per mile operating costs in segment 1
dp_dgas2	Impact of vehicle price of increase in per mile operating costs in segment 2
dp_dgas3	Impact of vehicle price of increase in per mile operating costs in segment 3
dp_dgas4	Impact of vehicle price of increase in per mile operating costs in segment 4
dp_dgas5	Impact of vehicle price of increase in per mile operating costs in segment 5
dpdgas	Grouping of all dP_dgas variables
e	Coefficient of Demand: Derivative of price in segment 5 with respect to quantity in segment 1
ee	Non-Zero Coefficient of Demand: Derivative of price in segment 5 with respect to quantity in segment 1

Variable	Description
Elasiticity11	Elasticity of demand: Own price elasticity of good 1
Elasiticity12	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 1) /(% change in price in segment 2)
Elasiticity13	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 1) /(% change in price in segment 3)
Elasiticity14	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 1) /(% change in price in segment 4)
Elasiticity15	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 1) /(% change in price in segment 5)
Elasiticity21	Elasticity of demand: Own price elasticity of good 2
Elasiticity22	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 2) /(% change in price in segment 2)
Elasiticity23	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 2) /(% change in price in segment 3)
Elasiticity24	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 2) /(% change in price in segment 4)
Elasiticity25	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 2) /(% change in price in segment 5)
Elasiticity31	Elasticity of demand: Own price elasticity of good 3
Elasiticity32	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 3) /(% change in price in segment 2)
Elasiticity33	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 3) /(% change in price in segment 3)
Elasiticity34	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 3) /(% change in price in segment 4)
Elasiticity35	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 3) /(% change in price in segment 5)
Elasiticity41	Elasticity of demand: Own price elasticity of good 4
Elasiticity42	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 4) /(% change in price in segment 2)
Elasiticity43	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 4) /(% change in price in segment 3)

Variable	Description
Elasiticity44	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 4) /(% change in price in segment 4)
Elasiticity45	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 4) /(% change in price in segment 5)
Elasiticity51	Elasticity of demand: Own price elasticity of good 5
Elasiticity52	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 5) /(% change in price in segment 2)
Elasiticity53	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 5) /(% change in price in segment 3)
Elasiticity54	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 5) /(% change in price in segment 4)
Elasiticity55	Elasticity of demand: Cross price elasticity: (% change in quantity in segment 5) /(% change in price in segment 5)
epm_a1	emissions per mile after PMET in segment 1 for Alternate Producers
epm_a2	emissions per mile after PMET in segment 2 for Alternate Producers
epm_a3	emissions per mile after PMET in segment 3 for Alternate Producers
epm_a4	emissions per mile after PMET in segment 4 for Alternate Producers
epm_a5	emissions per mile after PMET in segment 5 for Alternate Producers
epm_c1	emissions per mile after PMET in segment 1 for Chrysler
epm_c2	emissions per mile after PMET in segment 2 for Chrysler
epm_c3	emissions per mile after PMET in segment 3 for Chrysler
epm_c4	emissions per mile after PMET in segment 4 for Chrysler
epm_c5	emissions per mile after PMET in segment 5 for Chrysler
epm_f1	emissions per mile after PMET in segment 1 for Ford
epm_f2	emissions per mile after PMET in segment 2 for Ford
epm_f3	emissions per mile after PMET in segment 3 for Ford
epm_f4	emissions per mile after PMET in segment 4 for Ford
epm_f5	emissions per mile after PMET in segment 5 for Ford
epm_g1	emissions per mile after PMET in segment 1 for G.M.
epm_g2	emissions per mile after PMET in segment 2 for G.M.
epm_g3	emissions per mile after PMET in segment 3 for G.M.
epm_g4	emissions per mile after PMET in segment 4 for G.M.

Variable	Description
epm_g5	emissions per mile after PMET in segment 5 for G.M.
f	Coefficient of Demand: Derivative of price in segment 1 with respect to quantity in segment 2
ff	Non-Zero Coefficient of Demand: Derivative of price in segment 1 with respect to quantity in segment 2
foc10l	First order condition under LSET
foc10p	First order condition under PMET
foc11l	First order condition under LSET
foc11p	First order condition under PMET
foc12l	First order condition under LSET
foc12p	First order condition under PMET
foc13l	First order condition under LSET
foc13p	First order condition under PMET
foc14l	First order condition under LSET
foc14p	First order condition under PMET
foc15l	First order condition under LSET
foc15p	First order condition under PMET
foc16l	First order condition under LSET
foc16p	First order condition under PMET
foc17l	First order condition under LSET
foc17p	First order condition under PMET
foc18l	First order condition under LSET
foc18p	First order condition under PMET
foc19l	First order condition under LSET
foc19p	First order condition under PMET
foc1l	First order condition under LSET
foc1p	First order condition under PMET
foc20l	First order condition under LSET
foc20p	First order condition under PMET
foc2l	First order condition under LSET
foc2p	First order condition under PMET
foc3l	First order condition under LSET
foc3p	First order condition under PMET
foc4l	First order condition under LSET

Variable	Description
foc4p	First order condition under PMET
foc5l	First order condition under LSET
foc5p	First order condition under PMET
foc6l	First order condition under LSET
foc6p	First order condition under PMET
foc7l	First order condition under LSET
foc7p	First order condition under PMET
foc8l	First order condition under LSET
foc8p	First order condition under PMET
foc9l	First order condition under LSET
foc9p	First order condition under PMET
foclset	Grouping of first order conditions for LSET
focpmet	Grouping of first order conditions for PMET
Fsub1	Quantity before taxes in segment 1 by Ford
Fsub1n	Quantity after PMET in segment 1 by Ford
Fsub1nl	Quantity after LSET in segment 1 by Ford
Fsub2	Quantity before taxes in segment 2 Ford
Fsub2n	Quantity after PMET in segment 2 Ford
Fsub2nl	Quantity after LSET in segment 2 Ford
Fsub3	Quantity before taxes in segment 3 Ford
Fsub3n	Quantity after PMET in segment 3 Ford
Fsub3nl	Quantity after LSET in segment 3 Ford
fsub4	Quantity before taxes in segment 4 Ford
fsub4n	Quantity after PMET in segment 4 Ford
fsub4nl	Quantity after LSET in segment 4 Ford
fsub5	Quantity before taxes in segment 5 Ford
fsub5n	Quantity after PMET in segment 5 Ford
fsub5nl	Quantity after LSET in segment 5 Ford
g	Coefficient of Demand: Derivative of price in segment 2 with respect to quantity in segment 2
gg	Non-Zero Coefficient of Demand: Derivative of price in segment 2 with respect to quantity in segment 2
Gsub1	Quantity before taxes in segment 1 by G.M.
Gsub1n	Quantity after PMET in segment 1 by G.M.

Variable	Description
Gsub1nl	Quantity after LSET in segment 1 by G.M.
Gsub2	Quantity before taxes in segment 2 G.M.
Gsub2n	Quantity after PMET in segment 2 G.M.
Gsub2nl	Quantity after LSET in segment 2 G.M.
Gsub3	Quantity before taxes in segment 3 G.M.
Gsub3n	Quantity after PMET in segment 3 G.M.
Gsub3nl	Quantity after LSET in segment 3 G.M.
gsub4	Quantity before taxes in segment 4 G.M.
gsub4n	Quantity after PMET in segment 4 G.M.
gsub4nl	Quantity after LSET in segment 4 G.M.
gsub5	Quantity before taxes in segment 5 G.M.
gsub5n	Quantity after PMET in segment 5 G.M.
gsub5nl	Quantity after LSET in segment 5 G.M.
h	Coefficient of Demand: Derivative of price in segment 3 with respect to quantity in segment 2
hh	Non-Zero Coefficient of Demand: Derivative of price in segment 3 with respect to quantity in segment 2
I	Coefficient of Demand: Derivative of price in segment 4 with respect to quantity in segment 2
ii	Non-Zero Coefficient of Demand: Derivative of price in segment 4 with respect to quantity in segment 2
j	Coefficient of Demand: Derivative of price in segment 5 with respect to quantity in segment 2
jj	Non-Zero Coefficient of Demand: Derivative of price in segment 5 with respect to quantity in segment 2
k	Coefficient of Demand: Derivative of price in segment 1 with respect to quantity in segment 3
kk	Non-Zero Coefficient of Demand: Derivative of price in segment 1 with respect to quantity in segment 3
l	Coefficient of Demand: Derivative of price in segment 2 with respect to quantity in segment 3
lemp_a1	emissions per mile after LSET in segment 1 for Alternate Producers
lemp_a2	emissions per mile after LSET in segment 2 for Alternate Producers
lemp_a3	emissions per mile after LSET in segment 3 for Alternate Producers
lemp_a4	emissions per mile after LSET in segment 4 for Alternate Producers
lemp_a5	emissions per mile after LSET in segment 5 for Alternate Producers
lemp_c1	emissions per mile after LSET in segment 1 for Chrysler
lemp_c2	emissions per mile after LSET in segment 2 for Chrysler
lemp_c3	emissions per mile after LSET in segment 3 for Chrysler
lemp_c4	emissions per mile after LSET in segment 4 for Chrysler
lemp_c5	emissions per mile after LSET in segment 5 for Chrysler

Variable	Description
lemp_f1	emissions per mile after LSET in segment 1 for Ford
lemp_f2	emissions per mile after LSET in segment 2 for Ford
lemp_f3	emissions per mile after LSET in segment 3 for Ford
lemp_f4	emissions per mile after LSET in segment 4 for Ford
lemp_f5	emissions per mile after LSET in segment 5 for Ford
lemp_g1	emissions per mile after LSET in segment 1 for G.M.
lemp_g2	emissions per mile after LSET in segment 2 for G.M.
lemp_g3	emissions per mile after LSET in segment 3 for G.M.
lemp_g4	emissions per mile after LSET in segment 4 for G.M.
lemp_g5	emissions per mile after LSET in segment 5 for G.M.
ll	Non-Zero Coefficient of Demand: Derivative of price in segment 2 with respect to quantity in segment 3
lostsales1	Reduction in sales after PMET in segment 1
lostsales1l	Reduction in sales after LSET in segment 1
lostsales2	Reduction in sales after PMET in segment 2
lostsales2l	Reduction in sales after LSET in segment 2
lostsales3	Reduction in sales after PMET in segment 3
lostsales3l	Reduction in sales after LSET in segment 3
lostsales4	Reduction in sales after PMET in segment 4
lostsales4l	Reduction in sales after LSET in segment 4
lostsales5	Reduction in sales after PMET in segment 5
lostsales5l	Reduction in sales after LSET in segment 5
lostsum	Reduction in sales after PMET in segment 6
lostsuml	Reduction in sales after LSET in segment 6
LSET	Tax per gram per mile of emissions
m	Coefficient of Demand: Derivative of price in segment 3 with respect to quantity in segment 3
max_emis1	Emissions from current non-gross emitter in segment 1
max_emis2	Emissions from current non-gross emitter in segment 2
max_emis3	Emissions from current non-gross emitter in segment 3
max_emis4	Emissions from current non-gross emitter in segment 4
max_emis5	Emissions from current non-gross emitter in segment 5
maxmc1	group of marginal cost variables for every firm in segment 1
maxmc2	group of marginal cost variables for every firm in segment 2

Variable	Description
maxmc3	group of marginal cost variables for every firm in segment 3
maxmc4	group of marginal cost variables for every firm in segment 4
maxmc5	group of marginal cost variables for every firm in segment 5
MCasub1	Marginal cost of production for last unit in segment 1 by Alternate Producers
MCasub2	Marginal cost of production for last unit in segment 2 by Alternate Producers
MCasub3	Marginal cost of production for last unit in segment 3 by Alternate Producers
MCasub4	Marginal cost of production for last unit in segment 4 by Alternate Producers
MCasub5	Marginal cost of production for last unit in segment 5 by Alternate Producers
MCcsub1	Marginal cost of production for last unit in segment 1 by Chrysler
MCcsub2	Marginal cost of production for last unit in segment 2 by Chrysler
MCcsub3	Marginal cost of production for last unit in segment 3 by Chrysler
MCcsub4	Marginal cost of production for last unit in segment 4 by Chrysler
MCcsub5	Marginal cost of production for last unit in segment 5 by Chrysler
mcexog	Variable grouping of exogenous coefficients of demand
MCfsub1	Marginal cost of production for last unit in segment 1 by Ford
MCfsub2	Marginal cost of production for last unit in segment 2 by Ford
MCfsub3	Marginal cost of production for last unit in segment 3 by Ford
MCfsub4	Marginal cost of production for last unit in segment 4 by Ford
MCfsub5	Marginal cost of production for last unit in segment 5 by Ford
MCgsub1	Marginal cost of production for last unit in segment 1 by G.M.
MCgsub2	Marginal cost of production for last unit in segment 2 by G.M.
MCgsub3	Marginal cost of production for last unit in segment 3 by G.M.
MCgsub4	Marginal cost of production for last unit in segment 4 by G.M.
MCgsub5	Marginal cost of production for last unit in segment 5 by G.M.
mm	Non-Zero Coefficient of Demand: Derivative of price in segment 3 with respect to quantity in segment 3
n	Coefficient of Demand: Derivative of price in segment 4 with respect to quantity in segment 3
nn	Non-Zero Coefficient of Demand: Derivative of price in segment 4 with respect to quantity in segment 3
o	Coefficient of Demand: Derivative of price in segment 5 with respect to quantity in segment 3
oo	Non-Zero Coefficient of Demand: Derivative of price in segment 5 with respect to quantity in segment 3
p	Coefficient of Demand: Derivative of price in segment 1 with respect to quantity in segment 4
P1_	Observed price in segment 1
p1a1	Price after PMET in segment 1 for Alternate Producers

Variable	Description
p1a1l	Price after LSET in segment 1 for Alternate Producers
p1c1	Price after PMET in segment 1 for Chrysler
p1c1l	Price after LSET in segment 1 for Chrysler
p1f1	Price after PMET in segment 1 for Ford
p1f1l	Price after LSET in segment 1 for Ford
p1g1	Price after PMET in segment 1 for G.M.
p1g1l	Price after LSET in segment 1 for G.M.
P2_	Observed price in segment 2
p2a2	Price after PMET in segment 2 for Alternate Producers
p2a2l	Price after LSET in segment 2 for Alternate Producers
p2c2	Price after PMET in segment 2 for Chrysler
p2c2l	Price after LSET in segment 2 for Chrysler
p2f2	Price after PMET in segment 2 for Ford
p2f2l	Price after LSET in segment 2 for Ford
p2g2	Price after PMET in segment 2 for G.M.
p2g2l	Price after LSET in segment 2 for G.M.
P3_	Observed price in segment 3
p3a3	Price after PMET in segment 3 for Alternate Producers
p3a3l	Price after LSET in segment 3 for Alternate Producers
p3c3	Price after PMET in segment 3 for Chrysler
p3c3l	Price after LSET in segment 3 for Chrysler
p3f3	Price after PMET in segment 3 for Ford
p3f3l	Price after LSET in segment 3 for Ford
p3g3	Price after PMET in segment 3 for G.M.
p3g3l	Price after LSET in segment 3 for G.M.
P4_	Observed price in segment 4
p4a4	Price after PMET in segment 4 for Alternate Producers
p4a4l	Price after LSET in segment 4 for Alternate Producers
p4c4	Price after PMET in segment 4 for Chrysler
p4c4l	Price after LSET in segment 4 for Chrysler
p4f4	Price after PMET in segment 4 for Ford
p4f4l	Price after LSET in segment 4 for Ford

Variable	Description
p4g4	Price after PMET in segment 4 for G.M.
p4g4l	Price after LSET in segment 4 for G.M.
P5_	Observed price in segment 5
p5a5	Price after PMET in segment 5 for Alternate Producers
p5a5l	Price after LSET in segment 5 for Alternate Producers
p5c5	Price after PMET in segment 5 for Chrysler
p5c5l	Price after LSET in segment 5 for Chrysler
p5f5	Price after PMET in segment 5 for Ford
p5f5l	Price after LSET in segment 5 for Ford
p5g5	Price after PMET in segment 5 for G.M.
p5g5l	Price after LSET in segment 5 for G.M.
partials5	Variable group for the '"Exogenous" coefficients of demand
PMET	Tax per mile of emissions paid by consumer
pmetsurplus	Total gains from trade under the PMET
pollution_reduction_1l	Pollution reduction under LSET in segment 1
pollution_reduction_1p	Pollution reduction under PMET in segment 1
pollution_reduction_2l	Pollution reduction under LSET in segment 2
pollution_reduction_2p	Pollution reduction under PMET in segment 2
pollution_reduction_3l	Pollution reduction under LSET in segment 3
pollution_reduction_3p	Pollution reduction under PMET in segment 3
pollution_reduction_4l	Pollution reduction under LSET in segment 4
pollution_reduction_4p	Pollution reduction under PMET in segment 4
pollution_reduction_5l	Pollution reduction under LSET in segment 5
pollution_reduction_5p	Pollution reduction under PMET in segment 5
pp	Non-Zero Coefficient of Demand: Derivative of price in segment 1 with respect to quantity in segment 4
PSlsetseg1	Producer surplus in auto market under LSET in segment 1
PSlsetseg2	Producer surplus in auto market under LSET in segment 2
PSlsetseg3	Producer surplus in auto market under LSET in segment 3
PSlsetseg4	Producer surplus in auto market under LSET in segment 4
PSlsetseg5	Producer surplus in auto market under LSET in segment 5
Pslsetsum	Producer surplus in auto market under LSET in all segments
PSpmetseg1	Producer surplus in auto market under PMET in segment 1

Variable	Description
PSpmetseg2	Producer surplus in auto market under PMET in segment 2
PSpmetseg3	Producer surplus in auto market under PMET in segment 3
PSpmetseg4	Producer surplus in auto market under PMET in segment 4
PSpmetseg5	Producer surplus in auto market under PMET in segment 5
Pspmetsum	Producer surplus in auto market under PMET in all segments
PSseg1	Producer surplus in auto market before taxes in segment 1
PSseg2	Producer surplus in auto market before taxes in segment 2
PSseg3	Producer surplus in auto market before taxes in segment 3
PSseg4	Producer surplus in auto market before taxes in segment 4
PSseg5	Producer surplus in auto market before taxes in segment 5
Pssum	Producer surplus in auto market before taxes in all segments
q	Coefficient of Demand: Derivative of price in segment 2 with respect to quantity in segment 4
qlset	Grouping variable of all quantities after LSET
qpmet	Grouping variable of all quantities after PMET
qq	Non-Zero Coefficient of Demand: Derivative of price in segment 2 with respect to quantity in segment 4
r_	Coefficient of Demand: Derivative of price in segment 3 with respect to quantity in segment 4
rr	Non-Zero Coefficient of Demand: Derivative of price in segment 3 with respect to quantity in segment 4
s	Coefficient of Demand: Derivative of price in segment 4 with respect to quantity in segment 4
ss	Non-Zero Coefficient of Demand: Derivative of price in segment 4 with respect to quantity in segment 4
surpluslset	Total gains from trade under the LSET
t	Coefficient of Demand: Derivative of price in segment 5 with respect to quantity in segment 4
taxa1	Additional abatement cost per vehicle under LSET in segment 1 for Alternate Producers
taxa1p	Additional abatement cost per vehicle under PMET in segment 1 for Alternate Producers
taxa2	Additional abatement cost per vehicle under LSET in segment 2 for Alternate Producers
taxa2p	Additional abatement cost per vehicle under PMET in segment 2 for Alternate Producers
taxa3	Additional abatement cost per vehicle under LSET in segment 3 for Alternate Producers
taxa3p	Additional abatement cost per vehicle under PMET in segment 3 for Alternate Producers
taxa4	Additional abatement cost per vehicle under LSET in segment 4 for Alternate Producers
taxa4p	Additional abatement cost per vehicle under PMET in segment 4 for Alternate Producers
taxa5	Additional abatement cost per vehicle under LSET in segment 5 for Alternate Producers
taxa5p	Additional abatement cost per vehicle under PMET in segment 5 for Alternate Producers
taxc1	Additional abatement cost per vehicle under LSET in segment 1 Chrysler

Variable	Description
taxc1p	Additional abatement cost per vehicle under PMET in segment 1 Chrysler
taxc2	Additional abatement cost per vehicle under LSET in segment 2 Chrysler
taxc2p	Additional abatement cost per vehicle under PMET in segment 2 Chrysler
taxc3	Additional abatement cost per vehicle under LSET in segment 3 Chrysler
taxc3p	Additional abatement cost per vehicle under PMET in segment 3 Chrysler
taxc4	Additional abatement cost per vehicle under LSET in segment 4 Chrysler
taxc4p	Additional abatement cost per vehicle under PMET in segment 4 Chrysler
taxc5	Additional abatement cost per vehicle under LSET in segment 5 Chrysler
taxc5p	Additional abatement cost per vehicle under PMET in segment 5 Chrysler
taxf1	Additional abatement cost per vehicle under LSET in segment 1 Ford
taxf1p	Additional abatement cost per vehicle under PMET in segment 1 Ford
taxf2	Additional abatement cost per vehicle under LSET in segment 2 Ford
taxf2p	Additional abatement cost per vehicle under PMET in segment 2 Ford
taxf3	Additional abatement cost per vehicle under LSET in segment 3 Ford
taxf3p	Additional abatement cost per vehicle under PMET in segment 3 Ford
taxf4	Additional abatement cost per vehicle under LSET in segment 4 Ford
taxf4p	Additional abatement cost per vehicle under PMET in segment 4 Ford
taxf5	Additional abatement cost per vehicle under LSET in segment 5 Ford
taxf5p	Additional abatement cost per vehicle under PMET in segment 5 Ford
taxg1	Additional abatement cost per vehicle under LSET in segment 1 G.M.
taxg1p	Additional abatement cost per vehicle under PMET in segment 1 G.M.
taxg2	Additional abatement cost per vehicle under LSET in segment 2 G.M.
taxg2p	Additional abatement cost per vehicle under PMET in segment 2 G.M.
taxg3	Additional abatement cost per vehicle under LSET in segment 3 G.M.
taxg3p	Additional abatement cost per vehicle under PMET in segment 3 G.M.
taxg4	Additional abatement cost per vehicle under LSET in segment 4 G.M.
taxg4p	Additional abatement cost per vehicle under PMET in segment 4 G.M.
taxg5	Additional abatement cost per vehicle under LSET in segment 5 G.M.
taxg5p	Additional abatement cost per vehicle under PMET in segment 5 G.M.
taxrevlsetseg1	Tax revenue collected by LSET in segment 1
taxrevlsetseg2	Tax revenue collected by LSET in segment 2
taxrevlsetseg3	Tax revenue collected by LSET in segment 3

Variable	Description
taxrevlsetseg4	Tax revenue collected by LSET in segment 4
taxrevlsetseg5	Tax revenue collected by LSET in segment 5
taxrevlsetsum	Tax revenue collected by LSET in all sectors
taxrevpmetseg1	Tax revenue collected by PMET in segment 1
taxrevpmetseg2	Tax revenue collected by PMET in segment 2
taxrevpmetseg3	Tax revenue collected by PMET in segment 3
taxrevpmetseg4	Tax revenue collected by PMET in segment 4
taxrevpmetseg5	Tax revenue collected by PMET in segment 5
taxrevpmetsum	Tax revenue collected by PMET in all sectors
Total_reductionl	Total emissions reduction in all segments under the LSET
Total_reductionp	Total emissions reduction in all segments under the PMET
tpma1	Increase in operating costs per mile under LSET in segment 1 for Alternate Producers
tpma2	Increase in operating costs per mile under LSET in segment 2 for Alternate Producers
tpma3	Increase in operating costs per mile under LSET in segment 3 for Alternate Producers
tpma4	Increase in operating costs per mile under LSET in segment 4 for Alternate Producers
tpma5	Increase in operating costs per mile under LSET in segment 5 for Alternate Producers
tpmc1	Increase in operating costs per mile under LSET in segment 1 for Chysler
tpmc2	Increase in operating costs per mile under LSET in segment 2 for Chysler
tpmc3	Increase in operating costs per mile under LSET in segment 3 for Chysler
tpmc4	Increase in operating costs per mile under LSET in segment 4 for Chysler
tpmc5	Increase in operating costs per mile under LSET in segment 5 for Chysler
tpmf1	Increase in operating costs per mile under LSET in segment 1 for Ford
tpmf2	Increase in operating costs per mile under LSET in segment 2 for Ford
tpmf3	Increase in operating costs per mile under LSET in segment 3 for Ford
tpmf4	Increase in operating costs per mile under LSET in segment 4 for Ford
tpmf5	Increase in operating costs per mile under LSET in segment 5 for Ford
tpmg1	Increase in operating costs per mile under LSET in segment 1 for G.M.
tpmg2	Increase in operating costs per mile under LSET in segment 2 for G.M.
tpmg3	Increase in operating costs per mile under LSET in segment 3 for G.M.
tpmg4	Increase in operating costs per mile under LSET in segment 4 for G.M.
tpmg5	Increase in operating costs per mile under LSET in segment 5 for G.M.
Tsdiff	Difference in total gains from trade under the LSET and the PMET

Variable	Description
tseg1	Total sales before taxes in segment 1
tseg1n	Total sales after PMET in segment 1
tseg1nl	Total sales after LSET in segment 1
tseg2	Total sales before taxes in segment 2
tseg2n	Total sales after PMET in segment 2
tseg2nl	Total sales after LSET in segment 2
tseg3	Total sales before taxes in segment 3
tseg3n	Total sales after PMET in segment 3
tseg3nl	Total sales after LSET in segment 3
tseg4	Total sales before taxes in segment 4
tseg4n	Total sales after PMET in segment 4
tseg4nl	Total sales after LSET in segment 4
tseg5	Total sales before taxes in segment 5
tseg5n	Total sales after PMET in segment 5
tseg5nl	Total sales after LSET in segment 5
TSlsetseg1	Total surplus under LSET in auto market for segment 1
TSlsetseg2	Total surplus under LSET in auto market for segment 2
TSlsetseg3	Total surplus under LSET in auto market for segment 3
TSlsetseg4	Total surplus under LSET in auto market for segment 4
TSlsetseg5	Total surplus under LSET in auto market for segment 5
Tslsetsum	Total surplus under LSET in auto market for all segments
TSPMETseg1	Total surplus under PMET in auto market for segment 1
TSPMETseg2	Total surplus under PMET in auto market for segment 2
TSPMETseg3	Total surplus under PMET in auto market for segment 3
TSPMETseg4	Total surplus under PMET in auto market for segment 4
TSPMETseg5	Total surplus under PMET in auto market for segment 5
TSPMETsum	Total surplus under PMET in auto market for all segments
TSseg1	Total surplus before taxes in auto market for segment 1
TSseg2	Total surplus before taxes in auto market for segment 2
TSseg3	Total surplus before taxes in auto market for segment 3
TSseg4	Total surplus before taxes in auto market for segment 4
TSseg5	Total surplus before taxes in auto market for segment 5

Variable	Description
Tssum	Total surplus before taxes in auto market for all segments
tsum	Total quantity of vehicles sold before taxes
tsumn	Total quantity of vehicles sold after PMET
tsumnl	Total quantity of vehicles sold after LSET
tt	Non-Zero Coefficient of Demand: Derivative of price in segment 5 with respect to quantity in segment 4
u	Coefficient of Demand: Derivative of price in segment 1 with respect to quantity in segment 5
uu	Non-Zero Coefficient of Demand: Derivative of price in segment 1 with respect to quantity in segment 5
v	Coefficient of Demand: Derivative of price in segment 2 with respect to quantity in segment 5
Variable Name	Variable Description
VMT1	Vehicle miles traveled after the PMET in segment 1
VMT2	Vehicle miles traveled after the PMET in segment 2
VMT3	Vehicle miles traveled after the PMET in segment 3
VMT4	Vehicle miles traveled after the PMET in segment 4
VMT5	Vehicle miles traveled after the PMET in segment 5
vv	Non-Zero Coefficient of Demand: Derivative of price in segment 2 with respect to quantity in segment 5
w	Coefficient of Demand: Derivative of price in segment 3 with respect to quantity in segment 5
ww	Non-Zero Coefficient of Demand: Derivative of price in segment 3 with respect to quantity in segment 5
x	Coefficient of Demand: Derivative of price in segment 4 with respect to quantity in segment 5
XMCasub1	Mark-up for Alternate Producers in auto market segment 1
XMCasub2	Mark-up for Alternate Producers in auto market segment 2
XMCasub3	Mark-up for Alternate Producers in auto market segment 3
XMCasub4	Mark-up for Alternate Producers in auto market segment 4
XMCasub5	Mark-up for Alternate Producers in auto market segment 5
XMCcsub1	Mark-up for Chysler in auto market segment 1
XMCcsub2	Mark-up for Chysler in auto market segment 2
XMCcsub3	Mark-up for Chysler in auto market segment 3
XMCcsub4	Mark-up for Chysler in auto market segment 4
XMCcsub5	Mark-up for Chysler in auto market segment 5
XMCfsub1	Mark-up for Ford in auto market segment 1
XMCfsub2	Mark-up for Ford in auto market segment 2
XMCfsub3	Mark-up for Ford in auto market segment 3
XMCfsub4	Mark-up for Ford in auto market segment 4

Variable	Description
XMCfsub5	Mark-up for Ford in auto market segment 5
XMCgsub1	Mark-up for G.M. in auto market segment 1
XMCgsub2	Mark-up for G.M. in auto market segment 2
XMCgsub3	Mark-up for G.M. in auto market segment 3
XMCgsub4	Mark-up for G.M. in auto market segment 4
XMCgsub5	Mark-up for G.M. in auto market segment 5
xx	Non-Zero Coefficient of Demand: Derivative of price in segment 4 with respect to quantity in segment 5
y	Coefficient of Demand: Derivative of price in segment 5 with respect to quantity in segment 5
yy	Non-Zero Coefficient of Demand: Derivative of price in segment 5 with respect to quantity in segment 5

Appendix 4: Coefficients solved in terms of marginal cost and coefficients e,j,o,t,y after substituting in known values

Quarter 1. 1st Quarter, 1989.

a	=4.187*10^-28*(-3.048*10^25 - 4.954*10^26*e + 1.138*10^22*MCasub1 - 2.92*10^21*MCcsub1 - 6.144*10^21*MCfsub1 + 2.551*10^20*MCgsub1)
b	=4.885*10^-28*(9.553*10^25 - 8.586*10^26*e + 7.782*10^21*MCasub1 - 1.423*10^22*MCcsub1 - 1.761*10^22*MCfsub1 + 1.6*10^22*MCgsub1)
c	=6.978*10^-28*(-4.806*10^26 + 2.914*10^27*e - 2.4*10^22*MCasub1 + 6.776*10^22*MCcsub1 + 3.495*10^22*MCfsub1 - 3.813*10^22*MCgsub1)
d	=8.373*10^-27*(-7.32*10^24 + 2.08*10^25*e - 1.005*10^21*MCasub1 + 4.937*10^20*MCcsub1 + 2.232*10^21*MCfsub1 - 1.103*10^21*MCgsub1)
e	exogenous variable
f'	=2.254*10^-28*(-7.368*10^25 - 9.203*10^26*j + 2.114*10^22*MCasub2 - 5.425*10^21*MCcsub2 - 1.141*10^22*MCfsub2 + 4.739*10^20*MCgsub2)
g	=2.629*10^-28*(2.31*10^26 - 1.595*10^27*j + 1.446*10^22*MCasub2 - 2.644*10^22*MCcsub2 - 3.272*10^22*MCfsub2 + 2.972*10^22*MCgsub2)
h	=3.756*10^-28*(-1.162*10^27 + 5.414*10^27*j - 4.459*10^22*MCasub2 + 1.259*10^23*MCcsub2 + 6.493*10^22*MCfsub2 - 7.084*10^22*MCgsub2)
I	=1.127*10^-27*(-7.078*10^25 + 1.546*10^26*j - 7.468*10^21*MCasub2 + 3.669*10^21*MCcsub2 + 1.659*10^22*MCfsub2 - 8.198*10^21*MCgsub2)
j	exogenous variable
k	=4.009*10^-22*(-5.128*10^19 + 1.189*10^16*MCasub3 - 3.049*10^15*MCcsub3 - 6.416*10^15*MCfsub3 + 2.664*10^14*MCgsub3 - 5.173*10^20*o)
l	=4.678*10^-22*(1.607*10^20 + 8.126*10^15*MCasub3 - 1.486*10^16*MCcsub3 - 1.839*10^16*MCfsub3 + 1.67*10^16*MCgsub3 - 8.966*10^20*o)
m	=6.682*10^-22*(-8.086*10^20 - 2.506*10^16*MCasub3 + 7.075*10^16*MCcsub3 + 3.649*10^16*MCfsub3 - 3.982*10^16*MCgsub3 + 3.043*10^21*o)
n	=4.009*10^-21*(-2.463*10^19 - 2.099*10^15*MCasub3 + 1.031*10^15*MCcsub3 + 4.662*10^15*MCfsub3 - 2.304*10^15*MCgsub3 + 4.344*10^19*o)
o	exogenous variable
p	=1.243*10^-21*(-1.277*10^19 + 3.834*10^15*MCasub4 - 9.837*10^14*MCcsub4 - 2.07*10^15*MCfsub4 + 8.593*10^13*MCgsub4 - 1.669*10^20*t)
q	=1.45*10^-21*(4.002*10^19 + 2.621*10^15*MCasub4 - 4.794*10^15*MCcsub4 - 5.932*10^15*MCfsub4 + 5.389*10^15*MCgsub4 - 2.892*10^20*t)
r	=2.072*10^-21*(-2.014*10^20 - 8.084*10^15*MCasub4 + 2.282*10^16*MCcsub4 + 1.177*10^16*MCfsub4 - 1.285*10^16*MCgsub4 + 9.816*10^20*t)
s	=2.486*10^-20*(-3.066*10^18 - 3.385*10^14*MCasub4 + 1.663*10^14*MCcsub4 + 7.52*10^14*MCfsub4 - 3.716*10^14*MCgsub4 + 7.007*10^18*t)
t	exogenous variable
u	=5.082*10^-29*(-5.62*10^26 + 9.376*10^22*MCasub5 - 2.406*10^22*MCcsub5 - 5.061*10^22*MCfsub5 + 2.101*10^21*MCgsub5 - 4.081*10^27*y)
v	=5.93*10^-29*(1.762*10^27 + 6.411*10^22*MCasub5 - 1.172*10^23*MCcsub5 - 1.451*10^23*MCfsub5 + 1.318*10^23*MCgsub5 - 7.073*10^27*y)
w	=8.471*10^-29*(-8.863*10^27 - 1.977*10^23*MCasub5 + 5.581*10^23*MCcsub5 + 2.879*10^23*MCfsub5 - 3.141*10^23*MCgsub5 + 2.401*10^28*y)
x	=2.541*10^-28*(-5.399*10^26 - 3.311*10^22*MCasub5 + 1.627*10^22*MCcsub5 + 7.356*10^22*MCfsub5 - 3.635*10^22*MCgsub5 + 6.854*10^26*y)
y	exogenous variable

Quarter 2. 2nd Quarter, 1989.

a	=3.063*10^-29*(-7.943*10^26 - 3.968*10^27*e + 1.139*10^23*MCasub1 + 1.565*10^22*MCcsub1 - 9.698*10^21*MCfsub1 - 5.047*10^22*MCgsub1)
b	=1.531*10^-29*(2.235*10^27 - 1.431*10^28*e + 1.071*10^23*MCasub1 - 2.748*10^23*MCcsub1 - 4.041*10^23*MCfsub1 + 3.765*10^23*MCgsub1)
c	=1.531*10^-29*(-1.601*10^28 + 8.169*10^28*e - 5.798*10^23*MCasub1 + 2.081*10^24*MCcsub1 + 1.167*10^24*MCfsub1 - 1.268*10^24*MCgsub1)
d	=2.45*10^-28*(-2.113*10^26 - 3.404*10^26*e - 1.963*10^22*MCasub1 + 8.825*10^21*MCcsub1 + 5.605*10^22*MCfsub1 - 2.678*10^22*MCgsub1)
e	exogenous variable
f	=7.646*10^-29*(-4.25*10^26 - 1.59*10^27*j + 4.564*10^22*MCasub2 + 6.27*10^21*MCcsub2 - 3.885*10^21*MCfsub2 - 2.022*10^22*MCgsub2)
g	=3.823*10^-29*(1.196*10^27 - 5.731*10^27*j + 4.292*10^22*MCasub2 - 1.101*10^23*MCcsub2 - 1.619*10^23*MCfsub2 + 1.508*10^23*MCgsub2)
h	=3.823*10^-29*(-8.566*10^27 + 3.272*10^28*j - 2.323*10^23*MCasub2 + 8.336*10^23*MCcsub2 + 4.673*10^23*MCfsub2 - 5.081*10^23*MCgsub2)
I	=6.117*10^-28*(-1.13*10^26 - 1.364*10^26*j - 7.863*10^21*MCasub2 + 3.535*10^21*MCcsub2 + 2.245*10^22*MCfsub2 - 1.073*10^22*MCgsub2)
j	exogenous variable
k	=4.379*10^-30*(-8.921*10^27 + 7.969*10^23*MCasub3 + 1.095*10^23*MCcsub3 - 6.783*10^22*MCfsub3 - 3.53*10^23*MCgsub3 - 2.776*10^28*o)
l	=2.19*10^-30*(2.51*10^28 + 7.494*10^23*MCasub3 - 1.922*10^24*MCcsub3 - 2.827*10^24*MCfsub3 + 2.633*10^24*MCgsub3 - 1.001*10^29*o)
m	=2.19*10^-30*(-1.798*10^29 - 4.055*10^24*MCasub3 + 1.455*10^25*MCcsub3 + 8.16*10^24*MCfsub3 - 8.872*10^24*MCgsub3 + 5.714*10^29*o)
n	=1.752*10^-29*(-4.746*10^27 - 2.746*10^23*MCasub3 + 1.234*10^23*MCcsub3 + 7.84*10^23*MCfsub3 - 3.746*10^23*MCgsub3 - 4.762*10^27*o)
o	exogenous variable
p	=2.736*10^-29*(-1.058*10^27 + 1.276*10^23*MCasub4 + 1.752*10^22*MCcsub4 - 1.086*10^22*MCfsub4 - 5.651*10^22*MCgsub4 - 4.443*10^27*t)
q	=1.368*10^-29*(2.978*10^27 + 1.2*10^23*MCasub4 - 3.076*10^23*MCcsub4 - 4.524*10^23*MCfsub4 + 4.215*10^23*MCgsub4 - 1.602*10^28*t)
r	=1.368*10^-29*(-2.133*10^28 - 6.492*10^23*MCasub4 + 2.33*10^24*MCcsub4 + 1.306*10^24*MCfsub4 - 1.42*10^24*MCgsub4 + 9.146*10^28*t)
s	=1.094*10^-28*(-5.631*10^26 - 4.395*10^22*MCasub4 + 1.976*10^22*MCcsub4 + 1.255*10^23*MCfsub4 - 5.996*10^22*MCgsub4 - 7.622*10^26*t)
t	exogenous variable
u	=2.87*10^-30*(-1.745*10^28 + 1.216*10^24*MCasub5 + 1.67*10^23*MCcsub5 - 1.035*10^23*MCfsub5 - 5.387*10^23*MCgsub5 - 4.235*10^28*y)
v	=1.435*10^-30*(4.909*10^28 + 1.143*10^24*MCasub5 - 2.933*10^24*MCcsub5 - 4.313*10^24*MCfsub5 + 4.018*10^24*MCgsub5 - 1.527*10^29*y)
w	=1.435*10^-30*(-3.518*10^29 - 6.188*10^24*MCasub5 + 2.221*10^25*MCcsub5 + 1.245*10^25*MCfsub5 - 1.354*10^25*MCgsub5 + 8.719*10^29*y)
x	=1.148*10^-29*(-9.284*10^27 - 4.19*10^23*MCasub5 + 1.884*10^23*MCcsub5 + 1.196*10^24*MCfsub5 - 5.715*10^23*MCgsub5 - 7.266*10^27*y)
y	exogenous variable

Quarter 3. 3rd Quarter, 1989.

a	=2.138*10^-29*(-1.11*10^27 - 6.99*10^27*e + 1.712*10^23*MCasub1 + 1.801*10^22*MCcsub1 - 8.959*10^21*MCfsub1 - 8.403*10^22*MCgsub1)
b	=2.138*10^-29*(2.103*10^27 - 1.619*10^28*e + 1.844*10^23*MCasub1 - 2.402*10^23*MCcsub1 - 4.064*10^23*MCfsub1 + 2.799*10^23*MCgsub1)
c	=6.413*10^-29*(-3.47*10^27 + 1.966*10^28*e - 2.186*10^23*MCasub1 + 4.459*10^23*MCcsub1 + 2.568*10^23*MCfsub1 - 1.831*10^23*MCgsub1)
d	=1.069*10^-28*(-6.574*10^26 + 1.563*10^27*e - 7.815*10^22*MCasub1 + 3.193*10^22*MCcsub1 + 1.736*10^23*MCfsub1 - 7.035*10^22*MCgsub1)
e	exogenous variable
f	=2.493*10^-29*(-1.301*10^27 - 5.993*10^27*j + 1.468*10^23*MCasub2 + 1.545*10^22*MCcsub2 - 7.682*10^21*MCfsub2 - 7.205*10^22*MCgsub2)
g	=2.493*10^-29*(2.465*10^27 - 1.388*10^28*j + 1.581*10^23*MCasub2 - 2.06*10^23*MCcsub2 - 3.484*10^23*MCfsub2 + 2.4*10^23*MCgsub2)
h	=2.493*10^-29*(-1.22*10^28 + 5.057*10^28*j - 5.624*10^23*MCasub2 + 1.147*10^24*MCcsub2 + 6.605*10^23*MCfsub2 - 4.711*10^23*MCgsub2)
I	=4.238*10^-28*(-2.267*10^26 + 3.942*10^26*j - 1.971*10^22*MCasub2 + 8.053*10^21*MCcsub2 + 4.377*10^22*MCfsub2 - 1.774*10^22*MCgsub2)
j	exogenous variable
k	=1.364*10^-29*(-2.693*10^27 + 2.683*10^23*MCasub3 + 2.823*10^22*MCcsub3 - 1.404*10^22*MCfsub3 - 1.317*10^23*MCgsub3 - 1.095*10^28*o)
l	=6.82*10^-30*(1.021*10^28 + 5.78*10^23*MCasub3 - 7.53*10^23*MCcsub3 - 1.274*10^24*MCfsub3 + 8.772*10^23*MCgsub3 - 5.074*10^28*o)
m	=2.046*10^-29*(-1.684*10^28 - 6.853*10^23*MCasub3 + 1.398*10^24*MCcsub3 + 8.048*10^23*MCfsub3 - 5.741*10^23*MCgsub3 + 6.163*10^28*o)
n	=1.364*10^-29*(-7.977*10^27 - 6.124*10^23*MCasub3 + 2.502*10^23*MCcsub3 + 1.36*10^24*MCfsub3 - 5.512*10^23*MCgsub3 + 1.225*10^28*o)
o	exogenous variable
p	=4.944*10^-30*(-5.951*10^27 + 7.403*10^23*MCasub4 + 7.789*10^22*MCcsub4 - 3.874*10^22*MCfsub4 - 3.633*10^23*MCgsub4 - 3.022*10^28*t)
q	=2.472*10^-30*(2.255*10^28 + 1.595*10^24*MCasub4 - 2.077*10^24*MCcsub4 - 3.514*10^24*MCfsub4 + 2.42*10^24*MCgsub4 - 1.4*10^29*t)
r	=2.472*10^-30*(-1.116*10^29 - 5.672*10^24*MCasub4 + 1.157*10^25*MCcsub4 + 6.661*10^24*MCfsub4 - 4.751*10^24*MCgsub4 + 5.101*10^29*t)
s	=2.472*10^-29*(-3.525*10^27 - 3.379*10^23*MCasub4 + 1.381*10^23*MCcsub4 + 7.505*10^23*MCfsub4 - 3.042*10^23*MCgsub4 + 6.759*10^27*t)
t	exogenous variable
u	=1.073*10^-29*(-4.328*10^27 + 3.41*10^23*MCasub5 + 3.588*10^22*MCcsub5 - 1.784*10^22*MCfsub5 - 1.674*10^23*MCgsub5 - 1.392*10^28*y)
v	=1.073*10^-29*(8.201*10^27 + 3.673*10^23*MCasub5 - 4.785*10^23*MCcsub5 - 8.094*10^23*MCfsub5 + 5.574*10^23*MCgsub5 - 3.224*10^28*y)
w	=1.073*10^-29*(-4.06*10^28 - 1.306*10^24*MCasub5 + 2.664*10^24*MCcsub5 + 1.534*10^24*MCfsub5 - 1.094*10^24*MCgsub5 + 1.175*10^29*y)
x	=1.073*10^-29*(-1.282*10^28 - 7.783*10^23*MCasub5 + 3.18*10^23*MCcsub5 + 1.728*10^24*MCfsub5 - 7.006*10^23*MCgsub5 + 1.557*10^28*y)
y	exogenous variable

Quarter 4. 4th Quarter, 1989.

a	=6.338*10^-29*(-3.667*10^26 - 2.314*10^27*e + 6.879*10^22*MCasub1 + 8.957*10^21*MCcsub1 + 2.625*10^20*MCfsub1 - 4.516*10^22*MCgsub1)
b	=1.584*10^-29*(6.068*10^27 - 2.926*10^28*e + 1.635*10^23*MCasub1 - 8.898*10^23*MCcsub1 - 6.073*10^23*MCfsub1 + 7.9*10^23*MCgsub1)
c	=1.584*10^-29*(-3.017*10^28 + 1.196*10^29*e - 7.78*10^23*MCasub1 + 4.401*10^24*MCcsub1 + 1.495*10^24*MCfsub1 - 2.416*10^24*MCgsub1)
d	=3.169*10^-29*(-2.921*10^27 + 1.266*10^27*e - 1.631*10^23*MCasub1 + 2.234*10^23*MCcsub1 + 5.094*10^23*MCfsub1 - 3.081*10^23*MCgsub1)
e	exogenous variable
f	=1.952*10^-28*(-1.733*10^26 - 7.516*10^26*j + 2.234*10^22*MCasub2 + 2.909*10^21*MCcsub2 + 8.525*10^19*MCfsub2 - 1.466*10^22*MCgsub2)
g	=4.879*10^-29*(2.867*10^27 - 9.501*10^27*j + 5.31*10^22*MCasub2 - 2.89*10^23*MCcsub2 - 1.972*10^23*MCfsub2 + 2.565*10^23*MCgsub2)
h	=4.879*10^-29*(-1.425*10^28 + 3.883*10^28*j - 2.527*10^23*MCasub2 + 1.429*10^24*MCcsub2 + 4.856*10^23*MCfsub2 - 7.844*10^23*MCgsub2)
I	=9.758*10^-29*(-1.38*10^27 + 4.111*10^26*j - 5.296*10^22*MCasub2 + 7.255*10^22*MCcsub2 + 1.654*10^23*MCfsub2 - 1*10^23*MCgsub2)
j	exogenous variable
k	=8.542*10^-29*(-4.107*10^26 + 5.104*10^22*MCasub3 + 6.646*10^21*MCcsub3 + 1.948*10^20*MCfsub3 - 3.35*10^22*MCgsub3 - 1.717*10^27*o)
l	=4.271*10^-29*(3.398*10^27 + 6.066*10^22*MCasub3 - 3.301*10^23*MCcsub3 - 2.253*10^23*MCfsub3 + 2.931*10^23*MCgsub3 - 1.085*10^28*o)
m	=4.271*10^-29*(-1.689*10^28 - 2.886*10^23*MCasub3 + 1.633*10^24*MCcsub3 + 5.547*10^23*MCfsub3 - 8.961*10^23*MCgsub3 + 4.435*10^28*o)
n	=8.542*10^-29*(-1.635*10^27 - 6.05*10^22*MCasub3 + 8.288*10^22*MCcsub3 + 1.89*10^23*MCfsub3 - 1.143*10^23*MCgsub3 + 4.696*10^26*o)
o	exogenous variable
p	=3.025*10^-29*(-9.755*10^26 + 1.441*10^23*MCasub4 + 1.877*10^22*MCcsub4 + 5.5*10^20*MCfsub4 - 9.461*10^22*MCgsub4 - 4.849*10^27*t)
q	=7.563*10^-30*(1.614*10^28 + 3.426*10^23*MCasub4 - 1.864*10^24*MCcsub4 - 1.272*10^24*MCfsub4 + 1.655*10^24*MCgsub4 - 6.13*10^28*t)
r	=7.563*10^-30*(-8.025*10^28 - 1.63*10^24*MCasub4 + 9.22*10^24*MCcsub4 + 3.133*10^24*MCfsub4 - 5.061*10^24*MCgsub4 + 2.505*10^29*t)
s	=1.513*10^-29*(-7.769*10^27 - 3.417*10^23*MCasub4 + 4.681*10^23*MCcsub4 + 1.067*10^24*MCfsub4 - 6.454*10^23*MCgsub4 + 2.652*10^27*t)
t	exogenous variable
u	=2.492*10^-29*(-2.522*10^27 + 1.749*10^23*MCasub5 + 2.278*10^22*MCcsub5 + 6.676*10^20*MCfsub5 - 1.148*10^23*MCgsub5 - 5.886*10^27*y)
v	=1.246*10^-29*(2.086*10^28 + 2.079*10^23*MCasub5 - 1.132*10^24*MCcsub5 - 7.722*10^23*MCfsub5 + 1.005*10^24*MCgsub5 - 3.72*10^28*y)
w	=1.246*10^-29*(-1.037*10^29 - 9.894*10^23*MCasub5 + 5.596*10^24*MCcsub5 + 1.902*10^24*MCfsub5 - 3.072*10^24*MCgsub5 + 1.52*10^29*y)
x	=2.492*10^-29*(-1.004*10^28 - 2.074*10^23*MCasub5 + 2.841*10^23*MCcsub5 + 6.477*10^23*MCfsub5 - 3.917*10^23*MCgsub5 + 1.61*10^27*y)
y	exogenous variable

Quarter 5. 1st Quarter, 1990.

a	=3.366*10^-29*(-2.777*10^26 - 4.991*10^27*e + 1.283*10^23*MCasub1 - 5.387*10^22*MCcsub1 - 1.301*10^22*MCfsub1 - 3.719*10^22*MCgsub1)
b	=1.683*10^-28*(3.558*10^26 - 1.704*10^27*e + 6.434*10^21*MCasub1 - 4.381*10^22*MCcsub1 - 3.753*10^22*MCfsub1 + 4.393*10^22*MCgsub1)
c	=8.414*10^-29*(-4.95*10^27 + 1.736*10^28*e - 9.743*10^22*MCasub1 + 6.326*10^23*MCcsub1 + 2.043*10^23*MCfsub1 - 3.085*10^23*MCgsub1)
d	=5.048*10^-29*(-1.405*10^27 - 1.724*10^27*e - 7.489*10^22*MCasub1 + 7.979*10^22*MCcsub1 + 2.494*10^23*MCfsub1 - 1.321*10^23*MCgsub1)
e	exogenous variable
f	=2.88*10^-28*(-4.448*10^25 - 5.832*10^26*j + 1.499*10^22*MCasub2 - 6.295*10^21*MCcsub2 - 1.521*10^21*MCfsub2 - 4.345*10^21*MCgsub2)
g	=2.88*10^-28*(2.849*10^26 - 9.955*10^26*j + 3.759*10^21*MCasub2 - 2.559*10^22*MCcsub2 - 2.193*10^22*MCfsub2 + 2.566*10^22*MCgsub2)
h	=1.44*10^-28*(-3.964*10^27 + 1.014*10^28*j - 5.692*10^22*MCasub2 + 3.696*10^23*MCcsub2 + 1.194*10^23*MCfsub2 - 1.802*10^23*MCgsub2)
I	=4.321*10^-28*(-2.25*10^26 - 2.015*10^26*j - 8.75*10^21*MCasub2 + 9.323*10^21*MCcsub2 + 2.915*10^22*MCfsub2 - 1.543*10^22*MCgsub2)
j	exogenous variable
k	=1.056*10^-29*(-1.381*10^27 + 4.086*10^23*MCasub3 - 1.716*10^23*MCcsub3 - 4.146*10^22*MCfsub3 - 1.185*10^23*MCgsub3 - 1.59*10^28*o)
l	=1.056*10^-29*(8.845*10^27 + 1.025*10^23*MCasub3 - 6.978*10^23*MCcsub3 - 5.978*10^23*MCfsub3 + 6.997*10^23*MCgsub3 - 2.714*10^28*o)
m	=5.282*10^-30*(-1.231*10^29 - 1.552*10^24*MCasub3 + 1.008*10^25*MCcsub3 + 3.254*10^24*MCfsub3 - 4.914*10^24*MCgsub3 + 2.765*10^29*o)
n	=1.585*10^-29*(-6.984*10^27 - 2.386*10^23*MCasub3 + 2.542*10^23*MCcsub3 + 7.947*10^23*MCfsub3 - 4.207*10^23*MCgsub3 - 5.493*10^27*o)
o	exogenous variable
p	=3.071*10^-29*(-3.721*10^26 + 1.405*10^23*MCasub4 - 5.903*10^22*MCcsub4 - 1.426*10^22*MCfsub4 - 4.075*10^22*MCgsub4 - 5.469*10^27*t)
q	=3.071*10^-29*(2.383*10^27 + 3.525*10^22*MCasub4 - 2.4*10^23*MCcsub4 - 2.056*10^23*MCfsub4 + 2.407*10^23*MCgsub4 - 9.336*10^27*t)
r	=1.536*10^-29*(-3.316*10^28 - 5.338*10^23*MCasub4 + 3.466*10^24*MCcsub4 + 1.119*10^24*MCfsub4 - 1.69*10^24*MCgsub4 + 9.51*10^28*t)
s	=4.607*10^-29*(-1.882*10^27 - 8.206*10^22*MCasub4 + 8.744*10^22*MCcsub4 + 2.733*10^23*MCfsub4 - 1.447*10^23*MCgsub4 - 1.889*10^27*t)
t	exogenous variable
u	=6.95*10^-30*(-3.283*10^27 + 6.211*10^23*MCasub5 - 2.609*10^23*MCcsub5 - 6.303*10^22*MCfsub5 - 1.801*10^23*MCgsub5 - 2.417*10^28*y)
v	=6.95*10^-30*(2.103*10^28 + 1.558*10^23*MCasub5 - 1.061*10^24*MCcsub5 - 9.087*10^23*MCfsub5 + 1.064*10^24*MCgsub5 - 4.126*10^28*y)
w	=3.475*10^-30*(-2.926*10^29 - 2.359*10^24*MCasub5 + 1.532*10^25*MCcsub5 + 4.947*10^24*MCfsub5 - 7.47*10^24*MCgsub5 + 4.203*10^29*y)
x	=1.042*10^-29*(-1.661*10^28 - 3.627*10^23*MCasub5 + 3.864*10^23*MCcsub5 + 1.208*10^24*MCfsub5 - 6.396*10^23*MCgsub5 - 8.35*10^27*y)
y	exogenous variable

Quarter 6. 2nd Quarter, 1990.

a	=1.664*10^-29*(-1.324*10^27 - 9.455*10^27*e + 2.231*10^23*MCasub1 + 2.384*10^22*MCcsub1 - 4.319*10^22*MCfsub1 - 9.459*10^22*MCgsub1)
b	=5.546*10^-30*(5.139*10^27 - 1.782*10^28*e + 4.216*10^22*MCasub1 - 5.025*10^23*MCcsub1 - 7.431*10^23*MCfsub1 + 7.799*10^23*MCgsub1)
c	=5.546*10^-30*(-6.326*10^28 + 1.624*10^29*e - 9.403*10^23*MCasub1 + 7.043*10^24*MCcsub1 + 2.201*10^24*MCfsub1 - 3.089*10^24*MCgsub1)
d	=1.664*10^-29*(4.282*10^26 - 2.344*10^28*e - 1.155*10^23*MCasub1 - 3.702*10^23*MCcsub1 + 5.593*10^23*MCfsub1 - 1.088*10^23*MCgsub1)
e	exogenous variable
f	=2.233*10^-28*(-1.312*10^26 - 7.045*10^26*j + 1.663*10^22*MCasub2 + 1.777*10^21*MCcsub2 - 3.218*10^21*MCfsub2 - 7.048*10^21*MCgsub2)
g	=7.442*10^-29*(5.089*10^26 - 1.328*10^27*j + 3.141*10^21*MCasub2 - 3.744*10^22*MCcsub2 - 5.537*10^22*MCfsub2 + 5.811*10^22*MCgsub2)
h	=7.442*10^-29*(-6.265*10^27 + 1.21*10^28*j - 7.006*10^22*MCasub2 + 5.248*10^23*MCcsub2 + 1.64*10^23*MCfsub2 - 2.302*10^23*MCgsub2)
I	=1.563*10^-27*(6.059*10^24 - 2.495*10^26*j - 1.23*10^21*MCasub2 - 3.941*10^21*MCcsub2 + 5.954*10^21*MCfsub2 - 1.158*10^21*MCgsub2)
j	exogenous variable
k	=5.875*10^-29*(-5.69*10^26 + 6.318*10^22*MCasub3 + 6.751*10^21*MCcsub3 - 1.223*10^22*MCfsub3 - 2.678*10^22*MCgsub3 - 2.677*10^27*o)
l	=1.958*10^-29*(2.208*10^27 + 1.194*10^22*MCasub3 - 1.423*10^23*MCcsub3 - 2.104*10^23*MCfsub3 + 2.208*10^23*MCgsub3 - 5.047*10^27*o)
m	=1.958*10^-29*(-2.718*10^28 - 2.663*10^23*MCasub3 + 1.994*10^24*MCcsub3 + 6.232*10^23*MCfsub3 - 8.746*10^23*MCgsub3 + 4.598*10^28*o)
n	=5.875*10^-29*(1.84*10^26 - 3.272*10^22*MCasub3 - 1.048*10^23*MCcsub3 + 1.584*10^23*MCfsub3 - 3.081*10^22*MCgsub3 - 6.637*10^27*o)
o	exogenous variable
p	=4.89*10^-30*(-5.424*10^27 + 7.59*10^23*MCasub4 + 8.111*10^22*MCcsub4 - 1.469*10^23*MCfsub4 - 3.218*10^23*MCgsub4 - 3.217*10^28*t)
q	=1.63*10^-30*(2.104*10^28 + 1.434*10^23*MCasub4 - 1.709*10^24*MCcsub4 - 2.528*10^24*MCfsub4 + 2.653*10^24*MCgsub4 - 6.064*10^28*t)
r	=1.63*10^-30*(-2.591*10^29 - 3.199*10^24*MCasub4 + 2.396*10^25*MCcsub4 + 7.487*10^24*MCfsub4 - 1.051*10^25*MCgsub4 + 5.524*10^29*t)
s	=4.89*10^-30*(1.754*10^27 - 3.931*10^23*MCasub4 - 1.26*10^24*MCcsub4 + 1.903*10^24*MCfsub4 - 3.702*10^23*MCgsub4 - 7.974*10^28*t)
t	exogenous variable
u	=3.654*10^-29*(-1.364*10^27 + 1.016*10^23*MCasub5 + 1.086*10^22*MCcsub5 - 1.966*10^22*MCfsub5 - 4.306*10^22*MCgsub5 - 4.305*10^27*y)
v	=1.34*10^-28*(4.812*10^26 + 1.745*10^21*MCasub5 - 2.08*10^22*MCcsub5 - 3.076*10^22*MCfsub5 + 3.228*10^22*MCgsub5 - 7.378*10^26*y)
w	=1.218*10^-29*(-6.516*10^28 - 4.281*10^23*MCasub5 + 3.207*10^24*MCcsub5 + 1.002*10^24*MCfsub5 - 1.406*10^24*MCgsub5 + 7.393*10^28*y)
x	=3.654*10^-29*(4.411*10^26 - 5.26*10^22*MCasub5 - 1.686*10^23*MCcsub5 + 2.546*10^23*MCfsub5 - 4.954*10^22*MCgsub5 - 1.067*10^28*y)
y	exogenous variable

Quarter 7. 3rd Quarter, 1990.

a	=3.113*10^-22*(-9.191*10^19 - 5.051*10^20*e + 1.329*10^16*MCasub1 + 1.928*10^15*MCcsub1 + 1.884*10^15*MCfsub1 - 9.279*10^15*MCgsub1)
b	=6.225*10^-22*(2.096*10^19 - 1.721*10^20*e + 7.05*10^14*MCasub1 - 1.276*10^15*MCcsub1 - 7.784*10^15*MCfsub1 + 6.571*10^15*MCgsub1)
c	=1.038*10^-22*(-2.663*10^21 + 7.12*10^21*e - 6.027*10^16*MCasub1 + 2.908*10^17*MCcsub1 + 1.21*10^17*MCfsub1 - 1.249*10^17*MCgsub1)
d	=4.15*10^-22*(9.211*10^19 - 7.929*10^20*e - 5.841*10^15*MCasub1 - 2.306*10^16*MCcsub1 + 2.134*10^16*MCfsub1 - 2.797*10^14*MCgsub1)
e	exogenous variable
f	=4.795*10^-28*(-8.159*10^25 - 3.279*10^26*j + 8.628*10^21*MCasub2 + 1.251*10^21*MCcsub2 + 1.223*10^21*MCfsub2 - 6.023*10^21*MCgsub2)
g	=4.795*10^-27*(3.721*10^24 - 2.235*10^25*j + 9.153*10^19*MCasub2 - 1.657*10^20*MCcsub2 - 1.011*10^21*MCfsub2 + 8.531*10^20*MCgsub2)
h	=1.598*10^-28*(-2.364*10^27 + 4.622*10^27*j - 3.912*10^22*MCasub2 + 1.888*10^23*MCcsub2 + 7.855*10^22*MCfsub2 - 8.105*10^22*MCgsub2)
l	=1.598*10^-28*(3.271*10^26 - 2.059*10^27*j - 1.517*10^22*MCasub2 - 5.989*10^22*MCcsub2 + 5.542*10^22*MCfsub2 - 7.262*10^20*MCgsub2)
j	exogenous variable
k	=4.835*10^-29*(-9.131*10^26 + 8.556*10^22*MCasub3 + 1.241*10^22*MCcsub3 + 1.213*10^22*MCfsub3 - 5.973*10^22*MCgsub3 - 3.251*10^27*o)
l	=4.835*10^-28*(4.164*10^25 + 9.077*10^20*MCasub3 - 1.643*10^21*MCcsub3 - 1.002*10^22*MCfsub3 + 8.46*10^21*MCgsub3 - 2.216*10^26*o)
m	=1.612*10^-29*(-2.646*10^28 - 3.88*10^23*MCasub3 + 1.872*10^24*MCcsub3 + 7.79*10^23*MCfsub3 - 8.037*10^23*MCgsub3 + 4.583*10^28*o)
n	=1.612*10^-29*(3.66*10^27 - 1.504*10^23*MCasub3 - 5.939*10^23*MCcsub3 + 5.496*10^23*MCfsub3 - 7.201*10^21*MCgsub3 - 2.042*10^28*o)
o	exogenous variable
p	=3.08*10^-29*(-1.166*10^27 + 1.343*10^23*MCasub4 + 1.948*10^22*MCcsub4 + 1.904*10^22*MCfsub4 - 9.377*10^22*MCgsub4 - 5.104*10^27*t)
q	=3.08*10^-28*(5.317*10^25 + 1.425*10^21*MCasub4 - 2.58*10^21*MCcsub4 - 1.573*10^22*MCfsub4 + 1.328*10^22*MCgsub4 - 3.479*10^26*t)
r	=1.027*10^-29*(-3.378*10^28 - 6.091*10^23*MCasub4 + 2.939*10^24*MCcsub4 + 1.223*10^24*MCfsub4 - 1.262*10^24*MCgsub4 + 7.195*10^28*t)
s	=5.133*10^-30*(9.348*10^27 - 4.722*10^23*MCasub4 - 1.865*10^24*MCcsub4 + 1.726*10^24*MCfsub4 - 2.261*10^22*MCgsub4 - 6.41*10^28*t)
t	exogenous variable
u	=1.976*10^-29*(-3.12*10^27 + 2.094*10^23*MCasub5 + 3.036*10^22*MCcsub5 + 2.967*10^22*MCfsub5 - 1.462*10^23*MCgsub5 - 7.956*10^27*y)
v	=1.976*10^-28*(1.423*10^26 + 2.221*10^21*MCasub5 - 4.021*10^21*MCcsub5 - 2.452*10^22*MCfsub5 + 2.07*10^22*MCgsub5 - 5.423*10^26*y)
w	=6.587*10^-30*(-9.041*10^28 - 9.494*10^23*MCasub5 + 4.581*10^24*MCcsub5 + 1.906*10^24*MCfsub5 - 1.967*10^24*MCgsub5 + 1.122*10^29*y)
x	=2.635*10^-29*(3.127*10^27 - 9.2*10^22*MCasub5 - 3.633*10^23*MCcsub5 + 3.362*10^23*MCfsub5 - 4.405*10^21*MCgsub5 - 1.249*10^28*y)
y	exogenous variable

Quarter 8. 4th Quarter, 1990.

a	=8.785*10^-30*(-1.117*10^27 - 2.744*10^28*e + 5.97*10^23*MCasub1 - 2.157*10^23*MCcsub1 - 2.118*10^22*MCfsub1 - 2.642*10^23*MCgsub1)
b	=1.757*10^-29*(-3.508*10^26 - 4.698*10^27*e - 2.832*10^22*MCasub1 + 1.172*10^23*MCcsub1 - 3.222*10^23*MCfsub1 + 2.634*10^23*MCgsub1)
c	=1.757*10^-29*(-1.578*10^28 + 4.064*10^28*e - 2.468*10^23*MCasub1 + 1.566*10^24*MCcsub1 + 1.373*10^24*MCfsub1 - 1.338*10^24*MCgsub1)
d	=1.757*10^-29*(3.691*10^27 - 2.317*10^28*e - 1.288*10^23*MCasub1 - 7.8*10^23*MCcsub1 + 3.857*10^23*MCfsub1 + 2.064*10^23*MCgsub1)
e	exogenous variable
f'	=1.093*10^-26*(-1.212*10^24 - 2.207*10^25*j + 4.8*10^20*MCasub2 - 1.734*10^20*MCcsub2 - 1.703*10^19*MCfsub2 - 2.125*10^20*MCgsub2)
g	=3.078*10^-28*(-2.702*10^25 - 2.682*10^26*j - 1.617*10^21*MCasub2 + 6.692*10^21*MCcsub2 - 1.84*10^22*MCfsub2 + 1.504*10^22*MCgsub2)
h	=3.078*10^-28*(-1.215*10^27 + 2.32*10^27*j - 1.409*10^22*MCasub2 + 8.94*10^22*MCcsub2 + 7.838*10^22*MCfsub2 - 7.641*10^22*MCgsub2)
I	=3.078*10^-28*(2.843*10^26 - 1.323*10^27*j - 7.351*10^21*MCasub2 - 4.453*10^22*MCcsub2 + 2.202*10^22*MCfsub2 + 1.178*10^22*MCgsub2)
j	exogenous variable
k	=6.059*10^-30*(-2.661*10^27 + 8.655*10^23*MCasub3 - 3.127*10^23*MCcsub3 - 3.071*10^22*MCfsub3 - 3.831*10^23*MCgsub3 - 3.979*10^28*o)
l	=1.212*10^-29*(-8.358*10^26 - 4.106*10^22*MCasub3 + 1.7*10^23*MCcsub3 - 4.672*10^23*MCfsub3 + 3.82*10^23*MCgsub3 - 6.811*10^27*o)
m	=2.424*10^-29*(-1.879*10^28 - 1.789*10^23*MCasub3 + 1.135*10^24*MCcsub3 + 9.952*10^23*MCfsub3 - 9.702*10^23*MCgsub3 + 2.946*10^28*o)
n	=1.212*10^-29*(8.792*10^27 - 1.867*10^23*MCasub3 - 1.131*10^24*MCcsub3 + 5.593*10^23*MCfsub3 + 2.992*10^23*MCgsub3 - 3.359*10^28*o)
o	exogenous variable
p	=1.417*10^-27*(-8.946*10^24 + 3.702*10^21*MCasub4 - 1.338*10^21*MCcsub4 - 1.313*10^20*MCfsub4 - 1.639*10^21*MCgsub4 - 1.702*10^26*t)
q	=3.991*10^-29*(-1.995*10^26 - 1.247*10^22*MCasub4 + 5.161*10^22*MCcsub4 - 1.419*10^23*MCfsub4 + 1.16*10^23*MCgsub4 - 2.068*10^27*t)
r	=3.991*10^-29*(-8.97*10^27 - 1.087*10^23*MCasub4 + 6.895*10^23*MCcsub4 + 6.045*10^23*MCfsub4 - 5.893*10^23*MCgsub4 + 1.789*10^28*t)
s	=3.991*10^-29*(2.099*10^27 - 5.669*10^22*MCasub4 - 3.434*10^23*MCcsub4 + 1.698*10^23*MCfsub4 + 9.086*10^22*MCgsub4 - 1.02*10^28*t)
t	exogenous variable
u	=9.217*10^-31*(-2.185*10^28 + 5.69*10^24*MCasub5 - 2.056*10^24*MCcsub5 - 2.019*10^23*MCfsub5 - 2.519*10^24*MCgsub5 - 2.616*10^29*y)
v	=1.843*10^-30*(-6.864*10^27 - 2.7*10^23*MCasub5 + 1.117*10^24*MCcsub5 - 3.072*10^24*MCfsub5 + 2.511*10^24*MCgsub5 - 4.478*10^28*y)
w	=1.843*10^-30*(-3.087*10^29 - 2.352*10^24*MCasub5 + 1.493*10^25*MCcsub5 + 1.309*10^25*MCfsub5 - 1.276*10^25*MCgsub5 + 3.874*10^29*y)
x	=1.843*10^-30*(7.221*10^28 - 1.227*10^24*MCasub5 - 7.435*10^24*MCcsub5 + 3.677*10^24*MCfsub5 + 1.967*10^24*MCgsub5 - 2.209*10^29*y)
y	exogenous variable

Quarter 9. 1st Quarter, 1991.

a	=8.489*10^-29*(-2.6*10^25 - 1.567*10^27*e + 6.443*10^22*MCasub1 - 3.651*10^22*MCcsub1 - 3.493*10^21*MCfsub1 - 2.221*10^22*MCgsub1)
b	=6.961*10^-27*(-2.68*10^24 - 8.561*10^24*e + 1.072*10^20*MCasub1 + 4.186*10^20*MCcsub1 - 7.023*10^20*MCfsub1 + 4.048*10^20*MCgsub1)
c	=1.698*10^-28*(-1.931*10^27 + 3.847*10^27*e - 3.626*10^22*MCasub1 + 2.037*10^23*MCcsub1 + 1.321*10^23*MCfsub1 - 1.35*10^23*MCgsub1)
d	=8.489*10^-29*(1.195*10^27 - 6.084*10^27*e - 6.255*10^22*MCasub1 - 2.05*10^23*MCcsub1 + 7.582*10^22*MCfsub1 + 8.989*10^22*MCgsub1)
e	exogenous variable
f	=2.284*10^-28*(-1.364*10^25 - 5.825*10^26*j + 2.394*10^22*MCasub2 - 1.357*10^22*MCcsub2 - 1.298*10^21*MCfsub2 - 8.253*10^21*MCgsub2)
g	=9.366*10^-27*(-2.812*10^24 - 6.363*10^24*j + 7.97*10^19*MCasub2 + 3.111*10^20*MCcsub2 - 5.22*10^20*MCfsub2 + 3.008*10^20*MCgsub2)
h	=1.828*10^-27*(-2.533*10^26 + 3.574*10^26*j - 3.369*10^21*MCasub2 + 1.892*10^22*MCcsub2 + 1.227*10^22*MCfsub2 - 1.254*10^22*MCgsub2)
I	=2.284*10^-28*(6.27*10^26 - 2.261*10^27*j - 2.325*10^22*MCasub2 - 7.617*10^22*MCcsub2 + 2.818*10^22*MCfsub2 + 3.34*10^22*MCgsub2)
j	exogenous variable
k	=2.214*10^-29*(-1.715*10^26 + 2.47*10^23*MCasub3 - 1.4*10^23*MCcsub3 - 1.339*10^22*MCfsub3 - 8.514*10^22*MCgsub3 - 6.009*10^27*o)
l	=1.816*10^-27*(-1.768*10^25 + 4.111*10^20*MCasub3 + 1.605*10^21*MCcsub3 - 2.692*10^21*MCfsub3 + 1.552*10^21*MCgsub3 - 3.282*10^25*o)
m	=4.429*10^-29*(-1.274*10^28 - 1.39*10^23*MCasub3 + 7.808*10^23*MCcsub3 + 5.063*10^23*MCfsub3 - 5.174*10^23*MCgsub3 + 1.475*10^28*o)
n	=2.214*10^-29*(7.886*10^27 - 2.398*10^23*MCasub3 - 7.858*10^23*MCcsub3 + 2.907*10^23*MCfsub3 + 3.446*10^23*MCgsub3 - 2.332*10^28*o)
o	exogenous variable
p	=3.348*10^-29*(-7.98*10^25 + 1.634*10^23*MCasub4 - 9.259*10^22*MCcsub4 - 8.859*10^21*MCfsub4 - 5.632*10^22*MCgsub4 - 3.975*10^27*t)
q	=2.745*10^-27*(-8.226*10^24 + 2.719*10^20*MCasub4 + 1.061*10^21*MCcsub4 - 1.781*10^21*MCfsub4 + 1.026*10^21*MCgsub4 - 2.171*10^25*t)
r	=6.695*10^-29*(-5.928*10^27 - 9.196*10^22*MCasub4 + 5.165*10^23*MCcsub4 + 3.349*10^23*MCfsub4 - 3.422*10^23*MCgsub4 + 9.756*10^27*t)
s	=3.348*10^-29*(3.668*10^27 - 1.586*10^23*MCasub4 - 5.198*10^23*MCcsub4 + 1.923*10^23*MCfsub4 + 2.279*10^23*MCgsub4 - 1.543*10^28*t)
t	exogenous variable
u	=1.431*10^-29*(-3.441*10^26 + 3.822*10^23*MCasub5 - 2.166*10^23*MCcsub5 - 2.072*10^22*MCfsub5 - 1.317*10^23*MCgsub5 - 9.299*10^27*y)
v	=4.342*10^-26*(-9.586*10^23 + 1.719*10^19*MCasub5 + 6.711*10^19*MCcsub5 - 1.126*10^20*MCfsub5 + 6.49*10^19*MCgsub5 - 1.373*10^24*y)
w	=2.862*10^-29*(-2.556*10^28 - 2.151*10^23*MCasub5 + 1.208*10^24*MCcsub5 + 7.835*10^23*MCfsub5 - 8.006*10^23*MCgsub5 + 2.282*10^28*y)
x	=1.431*10^-29*(1.582*10^28 - 3.711*10^23*MCasub5 - 1.216*10^24*MCcsub5 + 4.498*10^23*MCfsub5 + 5.332*10^23*MCgsub5 - 3.609*10^28*y)
y	exogenous variable

Quarter 10. 2nd Quarter, 1991.

a	=6.239*10^-28*(-1.643*10^25 - 2.928*10^26*e + 6.992*10^21*MCasub1 - 2.575*10^21*MCcsub1 + 2.72*10^20*MCfsub1 - 3.234*10^21*MCgsub1)
b	=1.609*10^-27*(-6.057*10^24 - 4.049*10^25*e - 1.15*10^20*MCasub1 + 1.354*10^21*MCcsub1 - 2.458*10^21*MCfsub1 + 1.755*10^21*MCgsub1)
c	=3.612*10^-28*(-6.672*10^26 + 1.611*10^27*e - 7.27*10^21*MCasub1 + 7.475*10^22*MCcsub1 + 2.827*10^22*MCfsub1 - 3.67*10^22*MCgsub1)
d	=3.284*10^-29*(2.039*10^27 - 1.212*10^28*e - 8.538*10^22*MCasub1 - 4.334*10^23*MCcsub1 + 2.495*10^23*MCfsub1 + 8.882*10^22*MCgsub1)
e	exogenous variable
f	=1.11*10^-28*(-1.289*10^26 - 1.646*10^27*j + 3.932*10^22*MCasub2 - 1.448*10^22*MCcsub2 + 1.529*10^21*MCfsub2 - 1.819*10^22*MCgsub2)
g	=5.437*10^-27*(-2.501*10^24 - 1.198*10^25*j - 3.403*10^19*MCasub2 + 4.006*10^20*MCcsub2 - 7.273*10^20*MCfsub2 + 5.195*10^20*MCgsub2)
h	=4.069*10^-28*(-8.264*10^26 + 1.43*10^27*j - 6.454*10^21*MCasub2 + 6.637*10^22*MCcsub2 + 2.51*10^22*MCfsub2 - 3.258*10^22*MCgsub2)
I	=1.11*10^-28*(8.417*10^26 - 3.588*10^27*j - 2.527*10^22*MCasub2 - 1.283*10^23*MCcsub2 + 7.384*10^22*MCfsub2 + 2.629*10^22*MCgsub2)
j	exogenous variable
k	=1.35*10^-29*(-1.234*10^27 + 3.232*10^23*MCasub3 - 1.191*10^23*MCcsub3 + 1.257*10^22*MCfsub3 - 1.495*10^23*MCgsub3 - 1.353*10^28*o)
l	=6.614*10^-28*(-2.394*10^25 - 2.798*10^20*MCasub3 + 3.293*10^21*MCcsub3 - 5.979*10^21*MCfsub3 + 4.27*10^21*MCgsub3 - 9.85*10^25*o)
m	=7.424*10^-29*(-5.274*10^27 - 3.537*10^22*MCasub3 + 3.637*10^23*MCcsub3 + 1.376*10^23*MCfsub3 - 1.786*10^23*MCgsub3 + 7.84*10^27*o)
n	=1.35*10^-29*(8.058*10^27 - 2.077*10^23*MCasub3 - 1.054*10^24*MCcsub3 + 6.07*10^23*MCfsub3 + 2.161*10^23*MCgsub3 - 2.95*10^28*o)
o	exogenous variable
p	=2.84*10^-30*(-4.333*10^27 + 1.536*10^24*MCasub4 - 5.658*10^23*MCcsub4 + 5.976*10^22*MCfsub4 - 7.105*10^23*MCgsub4 - 6.432*10^28*t)
q	=1.392*10^-28*(-8.406*10^25 - 1.33*10^21*MCasub4 + 1.565*10^22*MCcsub4 - 2.842*10^22*MCfsub4 + 2.03*10^22*MCgsub4 - 4.681*10^26*t)
r	=3.124*10^-29*(-9.259*10^27 - 8.406*10^22*MCasub4 + 8.643*10^23*MCcsub4 + 3.269*10^23*MCfsub4 - 4.243*10^23*MCgsub4 + 1.863*10^28*t)
s	=2.84*10^-30*(2.829*10^28 - 9.873*10^23*MCasub4 - 5.011*10^24*MCcsub4 + 2.885*10^24*MCfsub4 + 1.027*10^24*MCgsub4 - 1.402*10^29*t)
t	exogenous variable
u	=2.715*10^-30*(-9.503*10^27 + 1.607*10^24*MCasub5 - 5.919*10^23*MCcsub5 + 6.251*10^22*MCfsub5 - 7.433*10^23*MCgsub5 - 6.729*10^28*y)
v	=2.661*10^-28*(-9.218*10^25 - 6.955*10^20*MCasub5 + 8.186*10^21*MCcsub5 - 1.486*10^22*MCfsub5 + 1.062*10^22*MCgsub5 - 2.449*10^26*y)
w	=1.493*10^-29*(-4.061*10^28 - 1.759*10^23*MCasub5 + 1.808*10^24*MCcsub5 + 6.84*10^23*MCfsub5 - 8.878*10^23*MCgsub5 + 3.898*10^28*y)
x	=2.715*10^-30*(6.205*10^28 - 1.033*10^24*MCasub5 - 5.242*10^24*MCcsub5 + 3.018*10^24*MCfsub5 + 1.074*10^24*MCgsub5 - 1.466*10^29*y)
y	exogenous variable

Quarter 11. 3rd Quarter, 1991.

a	=1.223*10^-22*(-4.926*10^19 - 1.434*10^21*e + 3.392*10^16*MCasub1 - 1.326*10^16*MCcsub1 + 2.514*10^14*MCfsub1 - 1.671*10^16*MCgsub1)
b	=2.038*10^-23*(3.391*10^19 - 1.171*10^22*e + 6.804*10^15*MCasub1 + 2.007*10^16*MCcsub1 - 2.237*10^17*MCfsub1 + 1.939*10^17*MCgsub1)
c	=1.834*10^-22*(-1.525*10^21 + 5.958*10^21*e - 2.381*10^16*MCasub1 + 1.654*10^17*MCcsub1 + 6.587*10^16*MCfsub1 - 7.738*10^16*MCgsub1)
d	=2.038*10^-23*(2.212*10^21 - 1.033*10^22*e - 1.308*10^17*MCasub1 - 4.857*10^17*MCcsub1 + 3.415*10^17*MCfsub1 + 8.624*10^16*MCgsub1)
e	exogenous variable
f'	=1.875*10^-28*(-4.556*10^25 - 9.347*10^26*j + 2.211*10^22*MCasub2 - 8.643*10^21*MCcsub2 + 1.639*10^20*MCfsub2 - 1.09*10^22*MCgsub2)
g	=3.125*10^-29*(3.137*10^25 - 7.637*10^27*j + 4.436*10^21*MCasub2 + 1.308*10^22*MCcsub2 - 1.459*10^23*MCfsub2 + 1.264*10^23*MCgsub2)
h	=2.813*10^-28*(-1.41*10^27 + 3.885*10^27*j - 1.552*10^22*MCasub2 + 1.078*10^23*MCcsub2 + 4.295*10^22*MCfsub2 - 5.045*10^22*MCgsub2)
I	=3.125*10^-29*(2.046*10^27 - 6.735*10^27*j - 8.525*10^22*MCasub2 - 3.167*10^23*MCcsub2 + 2.227*10^23*MCfsub2 + 5.623*10^22*MCgsub2)
j	exogenous variable
k	=1.195*10^-28*(-8.867*10^25 + 3.471*10^22*MCasub3 - 1.357*10^22*MCcsub3 + 2.573*10^20*MCfsub3 - 1.71*10^22*MCgsub3 - 1.467*10^27*o)
l	=1.991*10^-29*(6.104*10^25 + 6.964*10^21*MCasub3 + 2.054*10^22*MCcsub3 - 2.289*10^23*MCfsub3 + 1.985*10^23*MCgsub3 - 1.199*10^28*o)
m	=1.792*10^-28*(-2.745*10^27 - 2.436*10^22*MCasub3 + 1.693*10^23*MCcsub3 + 6.742*10^22*MCfsub3 - 7.919*10^22*MCgsub3 + 6.098*10^27*o)
n	=1.991*10^-29*(3.982*10^27 - 1.338*10^23*MCasub3 - 4.971*10^23*MCcsub3 + 3.495*10^23*MCfsub3 + 8.826*10^22*MCgsub3 - 1.057*10^28*o)
o	exogenous variable
p	=2.182*10^-28*(-3.622*10^25 + 1.9*10^22*MCasub4 - 7.427*10^21*MCcsub4 + 1.409*10^20*MCfsub4 - 9.363*10^21*MCgsub4 - 8.032*10^26*t)
q	=3.637*10^-29*(2.493*10^25 + 3.812*10^21*MCasub4 + 1.124*10^22*MCcsub4 - 1.253*10^23*MCfsub4 + 1.087*10^23*MCgsub4 - 6.563*10^27*t)
r	=3.273*10^-28*(-1.121*10^27 - 1.334*10^22*MCasub4 + 9.266*10^22*MCcsub4 + 3.691*10^22*MCfsub4 - 4.335*10^22*MCgsub4 + 3.339*10^27*t)
s	=3.637*10^-29*(1.626*10^27 - 7.326*10^22*MCasub4 - 2.721*10^23*MCcsub4 + 1.913*10^23*MCfsub4 + 4.832*10^22*MCgsub4 - 5.787*10^27*t)
t	exogenous variable
u	=3.041*10^-30*(-3.946*10^27 + 1.364*10^24*MCasub5 - 5.329*10^23*MCcsub5 + 1.011*10^22*MCfsub5 - 6.718*10^23*MCgsub5 - 5.763*10^28*y)
v	=5.068*10^-31*(2.717*10^27 + 2.736*10^23*MCasub5 + 8.068*10^23*MCcsub5 - 8.994*10^24*MCfsub5 + 7.797*10^24*MCgsub5 - 4.709*10^29*y)
w	=4.561*10^-30*(-1.222*10^29 - 9.571*10^23*MCasub5 + 6.649*10^24*MCcsub5 + 2.648*10^24*MCfsub5 - 3.111*10^24*MCgsub5 + 2.396*10^29*y)
x	=5.068*10^-31*(1.772*10^29 - 5.257*10^24*MCasub5 - 1.953*10^25*MCcsub5 + 1.373*10^25*MCfsub5 + 3.467*10^24*MCgsub5 - 4.153*10^29*y)
y	exogenous variable

Quarter 12. 4th Quarter, 1991.

a	=3.15*10^-29*(-1.547*10^26 - 9.541*10^27*e + 1.74*10^23*MCasub1 - 9.615*10^22*MCcsub1 - 2.646*10^21*MCfsub1 - 6.381*10^22*MCgsub1)
b	=3.15*10^-29*(-6.558*10^26 - 5.033*10^27*e - 1.385*10^21*MCasub1 + 7.634*10^22*MCcsub1 - 1.229*10^23*MCfsub1 + 9.633*10^22*MCgsub1)
c	=3.15*10^-29*(-8.307*10^27 + 3.014*10^28*e - 1.071*10^23*MCasub1 + 8.514*10^23*MCcsub1 + 3.641*10^23*MCfsub1 - 4.953*10^23*MCgsub1)
d	=1.575*10^-28*(4.236*10^26 - 1.415*10^27*e - 2.326*10^22*MCasub1 - 7.732*10^22*MCcsub1 + 4.291*10^22*MCfsub1 + 2.641*10^22*MCgsub1)
e	exogenous variable
f	=1.98*10^-28*(-3.037*10^25 - 1.517*10^27*j + 2.768*10^22*MCasub2 - 1.529*10^22*MCcsub2 - 4.208*10^20*MCfsub2 - 1.015*10^22*MCgsub2)
g	=1.98*10^-28*(-1.288*10^26 - 8.004*10^26*j - 2.202*10^20*MCasub2 + 1.214*10^22*MCcsub2 - 1.954*10^22*MCfsub2 + 1.532*10^22*MCgsub2)
h	=1.98*10^-28*(-1.631*10^27 + 4.794*10^27*j - 1.703*10^22*MCasub2 + 1.354*10^23*MCcsub2 + 5.79*10^22*MCfsub2 - 7.876*10^22*MCgsub2)
I	=9.902*10^-28*(8.317*10^25 - 2.25*10^26*j - 3.699*10^21*MCasub2 - 1.23*10^22*MCcsub2 + 6.825*10^21*MCfsub2 + 4.2*10^21*MCgsub2)
j	exogenous variable
k	=5.742*10^-30*(-1.385*10^27 + 9.547*10^23*MCasub3 - 5.275*10^23*MCcsub3 - 1.452*10^22*MCfsub3 - 3.501*10^23*MCgsub3 - 5.234*10^28*o)
l	=1.722*10^-29*(-1.957*10^27 - 2.532*10^21*MCasub3 + 1.396*10^23*MCcsub3 - 2.247*10^23*MCfsub3 + 1.761*10^23*MCgsub3 - 9.203*10^27*o)
m	=5.742*10^-30*(-7.437*10^28 - 5.874*10^23*MCasub3 + 4.67*10^24*MCcsub3 + 1.997*10^24*MCfsub3 - 2.717*10^24*MCgsub3 + 1.654*10^29*o)
n	=2.871*10^-29*(3.793*10^27 - 1.276*10^23*MCasub3 - 4.242*10^23*MCcsub3 + 2.354*10^23*MCfsub3 + 1.449*10^23*MCgsub3 - 7.762*10^27*o)
o	exogenous variable
p	=7.942*10^-30*(-6.517*10^26 + 6.901*10^23*MCasub4 - 3.813*10^23*MCcsub4 - 1.049*10^22*MCfsub4 - 2.531*10^23*MCgsub4 - 3.784*10^28*t)
q	=1.191*10^-29*(-1.842*10^27 - 3.661*10^21*MCasub4 + 2.018*10^23*MCcsub4 - 3.249*10^23*MCfsub4 + 2.547*10^23*MCgsub4 - 1.331*10^28*t)
r	=7.942*10^-30*(-3.5*10^28 - 4.246*10^23*MCasub4 + 3.376*10^24*MCcsub4 + 1.444*10^24*MCfsub4 - 1.964*10^24*MCgsub4 + 1.195*10^29*t)
s	=3.971*10^-29*(1.785*10^27 - 9.225*10^22*MCasub4 - 3.066*10^23*MCcsub4 + 1.702*10^23*MCfsub4 + 1.047*10^23*MCgsub4 - 5.611*10^27*t)
t	exogenous variable
u	=9.227*10^-30*(-1.073*10^27 + 5.94*10^23*MCasub5 - 3.282*10^23*MCcsub5 - 9.032*10^21*MCfsub5 - 2.178*10^23*MCgsub5 - 3.257*10^28*y)
v	=9.227*10^-30*(-4.548*10^27 - 4.726*10^21*MCasub5 + 2.606*10^23*MCcsub5 - 4.194*10^23*MCfsub5 + 3.288*10^23*MCgsub5 - 1.718*10^28*y)
w	=9.227*10^-30*(-5.76*10^28 - 3.655*10^23*MCasub5 + 2.906*10^24*MCcsub5 + 1.243*10^24*MCfsub5 - 1.69*10^24*MCgsub5 + 1.029*10^29*y)
x	=4.614*10^-29*(2.937*10^27 - 7.94*10^22*MCasub5 - 2.639*10^23*MCcsub5 + 1.465*10^23*MCfsub5 + 9.014*10^22*MCgsub5 - 4.83*10^27*y)
y	exogenous variable

Quarter 13. 1st Quarter, 1992.

a	=5.881*10^-29*(-3.142*10^26 - 4.385*10^27*e + 9.433*10^22*MCasub1 - 3.182*10^22*MCcsub1 + 1.741*10^22*MCfsub1 - 5.337*10^22*MCgsub1)
b	=5.881*10^-29*(-3.386*10^26 - 1.519*10^27*e + 5.029*10^21*MCasub1 + 5.219*10^22*MCcsub1 - 8.131*10^22*MCfsub1 + 5.272*10^22*MCgsub1)
c	=5.881*10^-28*(-3.403*10^26 + 9.642*10^26*e - 1.882*10^21*MCasub1 + 4.021*10^22*MCcsub1 + 1.161*10^22*MCfsub1 - 2.116*10^22*MCgsub1)
d	=5.881*10^-29*(1.343*10^27 - 4.118*10^27*e - 1.025*10^23*MCasub1 - 2.609*10^23*MCcsub1 + 1.787*10^23*MCfsub1 + 7.122*10^22*MCgsub1)
e	exogenous variable
f'	=1.365*10^-28*(-2.038*10^26 - 1.89*10^27*j + 4.066*10^22*MCasub2 - 1.371*10^22*MCcsub2 + 7.506*10^21*MCfsub2 - 2.3*10^22*MCgsub2)
g	=1.365*10^-28*(-2.196*10^26 - 6.548*10^26*j + 2.168*10^21*MCasub2 + 2.249*10^22*MCcsub2 - 3.505*10^22*MCfsub2 + 2.272*10^22*MCgsub2)
h	=3.411*10^-28*(-8.829*10^26 + 1.662*10^27*j - 3.244*10^21*MCasub2 + 6.932*10^22*MCcsub2 + 2.001*10^22*MCfsub2 - 3.649*10^22*MCgsub2)
I	=1.365*10^-28*(8.708*10^26 - 1.775*10^27*j - 4.418*10^22*MCasub2 - 1.125*10^23*MCcsub2 + 7.703*10^22*MCfsub2 + 3.069*10^22*MCgsub2)
j	exogenous variable
k	=2.241*10^-30*(-1.426*10^28 + 2.476*10^24*MCasub3 - 8.35*10^23*MCcsub3 + 4.57*10^23*MCfsub3 - 1.401*10^24*MCgsub3 - 1.151*10^29*o)
l	=2.241*10^-30*(-1.537*10^28 + 1.32*10^23*MCasub3 + 1.37*10^24*MCcsub3 - 2.134*10^24*MCfsub3 + 1.384*10^24*MCgsub3 - 3.987*10^28*o)
m	=1.121*10^-29*(-3.09*10^28 - 9.877*10^22*MCasub3 + 2.11*10^24*MCcsub3 + 6.093*10^23*MCfsub3 - 1.111*10^24*MCgsub3 + 5.061*10^28*o)
n	=2.241*10^-30*(6.096*10^28 - 2.69*10^24*MCasub3 - 6.848*10^24*MCcsub3 + 4.69*10^24*MCfsub3 + 1.869*10^24*MCgsub3 - 1.081*10^29*o)
o	exogenous variable
p	=3.016*10^-29*(-8.365*10^26 + 1.839*10^23*MCasub4 - 6.204*10^22*MCcsub4 + 3.396*10^22*MCfsub4 - 1.041*10^23*MCgsub4 - 8.55*10^27*t)
q	=3.016*10^-29*(-9.015*10^26 + 9.807*10^21*MCasub4 + 1.018*10^23*MCcsub4 - 1.586*10^23*MCfsub4 + 1.028*10^23*MCgsub4 - 2.963*10^27*t)
r	=6.786*10^-28*(-4.027*10^26 - 1.631*10^21*MCasub4 + 3.485*10^22*MCcsub4 + 1.006*10^22*MCfsub4 - 1.834*10^22*MCgsub4 + 8.356*10^26*t)
s	=9.048*10^-29*(1.192*10^27 - 6.663*10^22*MCasub4 - 1.696*10^23*MCcsub4 + 1.162*10^23*MCfsub4 + 4.629*10^22*MCgsub4 - 2.677*10^27*t)
t	exogenous variable
u	=8.809*10^-30*(-5.498*10^27 + 6.298*10^23*MCasub5 - 2.124*10^23*MCcsub5 + 1.163*10^23*MCfsub5 - 3.563*10^23*MCgsub5 - 2.928*10^28*y)
v	=8.809*10^-30*(-5.926*10^27 + 3.358*10^22*MCasub5 + 3.485*10^23*MCcsub5 - 5.429*10^23*MCfsub5 + 3.52*10^23*MCgsub5 - 1.014*10^28*y)
w	=2.202*10^-29*(-2.383*10^28 - 5.026*10^22*MCasub5 + 1.074*10^24*MCcsub5 + 3.1*10^23*MCfsub5 - 5.652*10^23*MCgsub5 + 2.575*10^28*y)
x	=8.809*10^-30*(2.35*10^28 - 6.844*10^23*MCasub5 - 1.742*10^24*MCcsub5 + 1.193*10^24*MCfsub5 + 4.755*10^23*MCgsub5 - 2.749*10^28*y)
y	exogenous variable

Quarter 14. 2nd Quarter, 1992.

a	=1.147*10^-29*(-2.471*10^27 - 2.074*10^28*e + 4.084*10^23*MCasub1 - 1.644*10^22*MCcsub1 + 8.114*10^22*MCfsub1 - 2.629*10^23*MCgsub1)
b	=1.147*10^-29*(7.41*10^25 - 1.351*10^28*e - 2.154*10^22*MCasub1 + 3.874*10^22*MCcsub1 - 3.448*10^23*MCfsub1 + 3.213*10^23*MCgsub1)
c	=2.294*10^-29*(-8.428*10^27 + 3.161*10^28*e - 4.823*10^22*MCasub1 + 1.013*10^24*MCcsub1 + 2.757*10^23*MCfsub1 - 5.239*10^23*MCgsub1)
d	=3.442*10^-29*(1.524*10^27 - 4.129*10^27*e - 9.958*10^22*MCasub1 - 3.185*10^23*MCcsub1 + 2.356*10^23*MCfsub1 + 5.284*10^22*MCgsub1)
e	exogenous variable
f	=3.507*10^-30*(-1.208*10^28 - 6.785*10^28*j + 1.336*10^24*MCasub2 - 5.379*10^22*MCcsub2 + 2.654*10^23*MCfsub2 - 8.6*10^23*MCgsub2)
g	=3.507*10^-30*(3.624*10^26 - 4.419*10^28*j - 7.047*10^22*MCasub2 + 1.267*10^23*MCcsub2 - 1.128*10^24*MCfsub2 + 1.051*10^24*MCgsub2)
h	=7.014*10^-30*(-4.122*10^28 + 1.034*10^29*j - 1.578*10^23*MCasub2 + 3.315*10^24*MCcsub2 + 9.018*10^23*MCfsub2 - 1.714*10^24*MCgsub2)
I	=1.052*10^-29*(7.452*10^27 - 1.351*10^28*j - 3.257*10^23*MCasub2 - 1.042*10^24*MCcsub2 + 7.708*10^23*MCfsub2 + 1.728*10^23*MCgsub2)
j	exogenous variable
k	=7.389*10^-28*(-6.615*10^25 + 6.34*10^21*MCasub3 - 2.553*10^20*MCcsub3 + 1.26*10^21*MCfsub3 - 4.082*10^21*MCgsub3 - 3.22*10^26*o)
l	=6.836*10^-31*(2.145*10^27 - 3.616*10^23*MCasub3 + 6.502*10^23*MCcsub3 - 5.786*10^24*MCfsub3 + 5.392*10^24*MCgsub3 - 2.267*10^29*o)
m	=1.367*10^-30*(-2.439*10^29 - 8.094*10^23*MCasub3 + 1.701*10^25*MCcsub3 + 4.626*10^24*MCfsub3 - 8.792*10^24*MCgsub3 + 5.306*10^29*o)
n	=2.051*10^-30*(4.41*10^28 - 1.671*10^24*MCasub3 - 5.346*10^24*MCcsub3 + 3.955*10^24*MCfsub3 + 8.868*10^23*MCgsub3 - 6.93*10^28*o)
o	exogenous variable
p	=8.411*10^-30*(-4.768*10^27 + 5.57*10^23*MCasub4 - 2.243*10^22*MCcsub4 + 1.107*10^23*MCfsub4 - 3.586*10^23*MCgsub4 - 2.829*10^28*t)
q	=8.411*10^-30*(1.43*10^26 - 2.938*10^22*MCasub4 + 5.284*10^22*MCcsub4 - 4.703*10^23*MCfsub4 + 4.382*10^23*MCgsub4 - 1.843*10^28*t)
r	=1.682*10^-29*(-1.626*10^28 - 6.578*10^22*MCasub4 + 1.382*10^24*MCcsub4 + 3.76*10^23*MCfsub4 - 7.146*10^23*MCgsub4 + 4.312*10^28*t)
s	=2.523*10^-29*(2.94*10^27 - 1.358*10^23*MCasub4 - 4.344*10^23*MCcsub4 + 3.214*10^23*MCfsub4 + 7.207*10^22*MCgsub4 - 5.632*10^27*t)
t	exogenous variable
u	=4.926*10^-30*(-1.484*10^28 + 9.511*10^23*MCasub5 - 3.83*10^22*MCcsub5 + 1.89*10^23*MCfsub5 - 6.123*10^23*MCgsub5 - 4.83*10^28*y)
v	=4.926*10^-30*(4.452*10^26 - 5.017*10^22*MCasub5 + 9.022*10^22*MCcsub5 - 8.029*10^23*MCfsub5 + 7.482*10^23*MCgsub5 - 3.146*10^28*y)
w	=9.852*10^-30*(-5.064*10^28 - 1.123*10^23*MCasub5 + 2.36*10^24*MCcsub5 + 6.42*10^23*MCfsub5 - 1.22*10^24*MCgsub5 + 7.362*10^28*y)
x	=1.478*10^-29*(9.155*10^27 - 2.319*10^23*MCasub5 - 7.418*10^23*MCcsub5 + 5.488*10^23*MCfsub5 + 1.231*10^23*MCgsub5 - 9.616*10^27*y)
y	exogenous variable

Quarter 15. 3rd Quarter, 1992.

a	=3.509*10^-29*(-8.206*10^26 - 5.49*10^27*e + 1.454*10^23*MCasub1 - 3.467*10^22*MCcsub1 + 1.42*10^23*MCfsub1 - 1.844*10^23*MCgsub1)
b	=2.34*10^-29*(4.065*10^26 - 1.101*10^28*e + 3.402*10^21*MCasub1 + 2.856*10^22*MCcsub1 - 4.129*10^23*MCfsub1 + 3.471*10^23*MCgsub1)
c	=2.34*10^-29*(-9.115*10^27 + 3.175*10^28*e - 1.141*10^23*MCasub1 + 9.311*10^23*MCcsub1 + 7.314*10^23*MCfsub1 - 7.896*10^23*MCgsub1)
d	=7.019*10^-29*(5.102*10^26 + 4.415*10^26*e - 4.649*10^22*MCasub1 - 1.331*10^23*MCcsub1 + 1.504*10^23*MCfsub1 - 1.325*10^22*MCgsub1)
e	exogenous variable
f	=2.061*10^-22*(-2.058*10^20 - 9.347*10^20*j + 2.476*10^16*MCasub2 - 5.904*10^15*MCcsub2 + 2.418*10^16*MCfsub2 - 3.14*10^16*MCgsub2)
g	=1.963*10^-23*(7.138*10^20 - 1.312*10^22*j + 4.055*10^15*MCasub2 + 3.404*10^16*MCcsub2 - 4.921*10^17*MCfsub2 + 4.137*10^17*MCgsub2)
h	=3.926*10^-23*(-8.003*10^21 + 1.892*10^22*j - 6.801*10^16*MCasub2 + 5.548*10^17*MCcsub2 + 4.359*10^17*MCfsub2 - 4.705*10^17*MCgsub2)
I	=4.711*10^-22*(1.12*10^20 + 6.577*10^19*j - 6.925*10^15*MCasub2 - 1.983*10^16*MCcsub2 + 2.24*10^16*MCfsub2 - 1.974*10^15*MCgsub2)
j	exogenous variable
k	=9.864*10^-29*(-4.691*10^26 + 5.173*10^22*MCasub3 - 1.234*10^22*MCcsub3 + 5.053*10^22*MCfsub3 - 6.562*10^22*MCgsub3 - 1.953*10^27*o)
l	=9.395*10^-30*(1.627*10^27 + 8.473*10^21*MCasub3 + 7.113*10^22*MCcsub3 - 1.028*10^24*MCfsub3 + 8.644*10^23*MCgsub3 - 2.742*10^28*o)
m	=1.879*10^-29*(-1.824*10^28 - 1.421*10^23*MCasub3 + 1.159*10^24*MCcsub3 + 9.108*10^23*MCfsub3 - 9.832*10^23*MCgsub3 + 3.953*10^28*o)
n	=2.255*10^-28*(2.553*10^26 - 1.447*10^22*MCasub3 - 4.143*10^22*MCcsub3 + 4.681*10^22*MCfsub3 - 4.126*10^21*MCgsub3 + 1.374*10^26*o)
o	exogenous variable
p	=2.411*10^-29*(-1.455*10^27 + 2.117*10^23*MCasub4 - 5.048*10^22*MCcsub4 + 2.068*10^23*MCfsub4 - 2.685*10^23*MCgsub4 - 7.992*10^27*t)
q	=1.607*10^-29*(7.21*10^26 + 4.953*10^21*MCasub4 + 4.158*10^22*MCcsub4 - 6.011*10^23*MCfsub4 + 5.053*10^23*MCgsub4 - 1.603*10^28*t)
r	=3.214*10^-29*(-8.083*10^27 - 8.307*10^22*MCasub4 + 6.777*10^23*MCcsub4 + 5.324*10^23*MCfsub4 - 5.747*10^23*MCgsub4 + 2.311*10^28*t)
s	=1.929*10^-28*(2.263*10^26 - 1.692*10^22*MCasub4 - 4.844*10^22*MCcsub4 + 5.472*10^22*MCfsub4 - 4.823*10^21*MCgsub4 + 1.607*10^26*t)
t	exogenous variable
u	=1.747*10^-28*(-3.839*10^26 + 2.922*10^22*MCasub5 - 6.967*10^21*MCcsub5 + 2.854*10^22*MCfsub5 - 3.706*10^22*MCgsub5 - 1.103*10^27*y)
v	=1.164*10^-28*(1.902*10^26 + 6.836*10^20*MCasub5 + 5.739*10^21*MCcsub5 - 8.296*10^22*MCfsub5 + 6.974*10^22*MCgsub5 - 2.212*10^27*y)
w	=1.164*10^-28*(-4.265*10^27 - 2.293*10^22*MCasub5 + 1.871*10^23*MCcsub5 + 1.47*10^23*MCfsub5 - 1.586*10^23*MCgsub5 + 6.379*10^27*y)
x	=3.493*10^-28*(2.387*10^26 - 9.34*10^21*MCasub5 - 2.674*10^22*MCcsub5 + 3.021*10^22*MCfsub5 - 2.663*10^21*MCgsub5 + 8.871*10^25*y)
y	exogenous variable

Quarter 16. 4th Quarter, 1992.

a	=2.497*10^-28*(-4.061*10^26 + 1.446*10^27*e + 4.157*10^22*MCasub1 - 1.618*10^22*MCcsub1 + 1.596*10^23*MCfsub1 - 1.541*10^23*MCgsub1)
b	=2.497*10^-28*(3.022*10^26 - 3.484*10^27*e - 1.691*10^22*MCasub1 + 1.46*10^22*MCcsub1 - 1.878*10^23*MCfsub1 + 1.672*10^23*MCgsub1)
c	=1.664*10^-28*(-1.763*10^27 + 1.149*10^28*e + 3.067*10^22*MCasub1 + 7.242*10^22*MCcsub1 + 5.003*10^23*MCfsub1 - 4.694*10^23*MCgsub1)
d	=8.322*10^-29*(-1.602*10^26 + 2.864*10^27*e - 1.564*10^22*MCasub1 - 1.315*10^23*MCcsub1 + 4.098*10^23*MCfsub1 - 2.505*10^23*MCgsub1)
e	exogenous variable
f'	=4.116*10^-27*(-3.349*10^25 + 8.773*10^25*j + 2.522*10^21*MCasub2 - 9.815*10^20*MCcsub2 + 9.678*10^21*MCfsub2 - 9.347*10^21*MCgsub2)
g	=4.116*10^-27*(2.493*10^25 - 2.113*10^26*j - 1.026*10^21*MCasub2 + 8.854*10^20*MCcsub2 - 1.139*10^22*MCfsub2 + 1.014*10^22*MCgsub2)
h	=2.744*10^-27*(-1.454*10^26 + 6.967*10^26*j + 1.86*10^21*MCasub2 + 4.393*10^21*MCcsub2 + 3.035*10^22*MCfsub2 - 2.847*10^22*MCgsub2)
I	=1.372*10^-27*(-1.321*10^25 + 1.737*10^26*j - 9.488*10^20*MCasub2 - 7.974*10^21*MCcsub2 + 2.486*10^22*MCfsub2 - 1.519*10^22*MCgsub2)
j	exogenous variable
k	=7.269*10^-28*(-2.363*10^26 + 1.428*10^22*MCasub3 - 5.558*10^21*MCcsub3 + 5.481*10^22*MCfsub3 - 5.293*10^22*MCgsub3 + 4.968*10^26*o)
l	=7.269*10^-28*(1.758*10^26 - 5.808*10^21*MCasub3 + 5.014*10^21*MCcsub3 - 6.451*10^22*MCfsub3 + 5.742*10^22*MCgsub3 - 1.197*10^27*o)
m	=4.846*10^-28*(-1.026*10^27 + 1.053*10^22*MCasub3 + 2.488*10^22*MCcsub3 + 1.719*10^23*MCfsub3 - 1.613*10^23*MCgsub3 + 3.946*10^27*o)
n	=2.423*10^-28*(-9.321*10^25 - 5.373*10^21*MCasub3 - 4.516*10^22*MCcsub3 + 1.408*10^23*MCfsub3 - 8.605*10^22*MCgsub3 + 9.837*10^26*o)
o	exogenous variable
p	=5.723*10^-28*(-2.26*10^26 + 1.814*10^22*MCasub4 - 7.059*10^21*MCcsub4 + 6.961*10^22*MCfsub4 - 6.723*10^22*MCgsub4 + 6.31*10^26*t)
q	=5.723*10^-28*(1.682*10^26 - 7.376*10^21*MCasub4 + 6.368*10^21*MCcsub4 - 8.193*10^22*MCfsub4 + 7.293*10^22*MCgsub4 - 1.52*10^27*t)
r	=3.815*10^-28*(-9.813*10^26 + 1.338*10^22*MCasub4 + 3.16*10^22*MCcsub4 + 2.183*10^23*MCfsub4 - 2.048*10^23*MCgsub4 + 5.011*10^27*t)
s	=1.908*10^-28*(-8.915*10^25 - 6.824*10^21*MCasub4 - 5.736*10^22*MCcsub4 + 1.788*10^23*MCfsub4 - 1.093*10^23*MCgsub4 + 1.249*10^27*t)
t	exogenous variable
u	=1.542*10^-28*(-1.554*10^27 + 6.729*10^22*MCasub5 - 2.619*10^22*MCcsub5 + 2.583*10^23*MCfsub5 - 2.495*10^23*MCgsub5 + 2.341*10^27*y)
v	=1.542*10^-28*(1.157*10^27 - 2.737*10^22*MCasub5 + 2.363*10^22*MCcsub5 - 3.04*10^23*MCfsub5 + 2.706*10^23*MCgsub5 - 5.64*10^27*y)
w	=1.028*10^-28*(-6.75*10^27 + 4.964*10^22*MCasub5 + 1.172*10^23*MCcsub5 + 8.099*10^23*MCfsub5 - 7.599*10^23*MCgsub5 + 1.859*10^28*y)
x	=5.141*10^-29*(-6.133*10^26 - 2.532*10^22*MCasub5 - 2.128*10^23*MCcsub5 + 6.633*10^23*MCfsub5 - 4.055*10^23*MCgsub5 + 4.636*10^27*y)
y	exogenous variable

Quarter 17. 1st Quarter, 1993.

a	=1.066*10^-27*(-4.362*10^25 - 3.52*10^26*e + 6.254*10^21*MCasub1 - 8.652*10^20*MCcsub1 + 4.506*10^21*MCfsub1 - 6.48*10^21*MCgsub1)
b	=8.199*10^-29*(3.578*10^26 - 9.924*10^26*e + 3.189*10^21*MCasub1 - 1.563*10^22*MCcsub1 - 1.615*10^23*MCfsub1 + 1.459*10^23*MCgsub1)
c	=8.199*10^-29*(-2.593*10^27 + 5.005*10^27*e - 2.919*10^22*MCasub1 + 2.571*10^23*MCcsub1 + 3.2*10^23*MCfsub1 - 3.449*10^23*MCgsub1)
d	=8.199*10^-29*(2.835*10^25 - 3.699*10^26*e - 6.66*10^22*MCasub1 - 6.464*10^22*MCcsub1 + 1.834*10^23*MCfsub1 - 5.44*10^22*MCgsub1)
e	exogenous variable
f'	=4.945*10^-29*(-1.318*10^27 - 7.588*10^27*j + 1.348*10^23*MCasub2 - 1.865*10^22*MCcsub2 + 9.713*10^22*MCfsub2 - 1.397*10^23*MCgsub2)
g	=4.945*10^-29*(8.318*10^26 - 1.646*10^27*j + 5.287*10^21*MCasub2 - 2.592*10^22*MCcsub2 - 2.678*10^23*MCfsub2 + 2.42*10^23*MCgsub2)
h	=4.945*10^-29*(-6.028*10^27 + 8.298*10^27*j - 4.84*10^22*MCasub2 + 4.264*10^23*MCcsub2 + 5.306*10^23*MCfsub2 - 5.718*10^23*MCgsub2)
I	=4.945*10^-29*(6.591*10^25 - 6.133*10^26*j - 1.104*10^23*MCasub2 - 1.072*10^23*MCcsub2 + 3.041*10^23*MCfsub2 - 9.019*10^22*MCgsub2)
j	exogenous variable
k	=6.143*10^-28*(-1.476*10^26 + 1.085*10^22*MCasub3 - 1.501*10^21*MCcsub3 + 7.819*10^21*MCfsub3 - 1.124*10^22*MCgsub3 - 6.109*10^26*o)
l	=4.725*10^-29*(1.211*10^27 + 5.533*10^21*MCasub3 - 2.713*10^22*MCcsub3 - 2.803*10^23*MCfsub3 + 2.532*10^23*MCgsub3 - 1.722*10^27*o)
m	=4.725*10^-29*(-8.774*10^27 - 5.066*10^22*MCasub3 + 4.462*10^23*MCcsub3 + 5.553*10^23*MCfsub3 - 5.985*10^23*MCgsub3 + 8.685*10^27*o)
n	=4.725*10^-29*(9.593*10^25 - 1.156*10^23*MCasub3 - 1.122*10^23*MCcsub3 + 3.183*10^23*MCfsub3 - 9.439*10^22*MCgsub3 - 6.419*10^26*o)
o	exogenous variable
p	=1.484*10^-27*(-4.41*10^25 + 4.491*10^21*MCasub4 - 6.212*10^20*MCcsub4 + 3.236*10^21*MCfsub4 - 4.653*10^21*MCgsub4 - 2.528*10^26*t)
q	=1.142*10^-28*(3.618*10^26 + 2.29*10^21*MCasub4 - 1.123*10^22*MCcsub4 - 1.16*10^23*MCfsub4 + 1.048*10^23*MCgsub4 - 7.126*10^26*t)
r	=7.993*10^-28*(-3.746*10^26 - 2.995*10^21*MCasub4 + 2.638*10^22*MCcsub4 + 3.282*10^22*MCfsub4 - 3.538*10^22*MCgsub4 + 5.134*10^26*t)
s	=1.142*10^-28*(2.867*10^25 - 4.782*10^22*MCasub4 - 4.642*10^22*MCcsub4 + 1.317*10^23*MCfsub4 - 3.906*10^22*MCgsub4 - 2.656*10^26*t)
t	exogenous variable
u	=3.243*10^-30*(-2.833*10^28 + 2.056*10^24*MCasub5 - 2.844*10^23*MCcsub5 + 1.481*10^24*MCfsub5 - 2.13*10^24*MCgsub5 - 1.157*10^29*y)
v	=3.243*10^-30*(1.788*10^28 + 8.063*10^22*MCasub5 - 3.953*10^23*MCcsub5 - 4.084*10^24*MCfsub5 + 3.69*10^24*MCgsub5 - 2.509*10^28*y)
w	=2.27*10^-29*(-1.851*10^28 - 1.054*10^23*MCasub5 + 9.289*10^23*MCcsub5 + 1.156*10^24*MCfsub5 - 1.246*10^24*MCgsub5 + 1.808*10^28*y)
x	=3.243*10^-30*(1.417*10^27 - 1.684*10^24*MCasub5 - 1.635*10^24*MCcsub5 + 4.638*10^24*MCfsub5 - 1.375*10^24*MCgsub5 - 9.353*10^27*y)
y	exogenous variable

Quarter 18. 2nd Quarter, 1993.

a	=2.695*10^-30*(-2.198*10^28 - 1.274*10^29*e + 2.353*10^24*MCasub1 + 4.688*10^22*MCcsub1 + 1.913*10^24*MCfsub1 - 2.657*10^24*MCgsub1)
b	=1.348*10^-30*(2.728*10^28 - 2.635*10^28*e - 1.481*10^24*MCasub1 - 8.457*10^23*MCcsub1 - 6.146*10^24*MCfsub1 + 6.416*10^24*MCgsub1)
c	=2.695*10^-30*(-6.681*10^28 + 8.016*10^28*e + 8.805*10^23*MCasub1 + 5.24*10^24*MCcsub1 + 5.885*10^24*MCfsub1 - 6.97*10^24*MCgsub1)
d	=3.423*10^-28*(-3.699*10^25 - 2.094*10^26*e - 5.265*10^21*MCasub1 - 9.648*10^21*MCcsub1 + 2.794*10^22*MCfsub1 - 1.024*10^22*MCgsub1)
e	exogenous variable
f	=6.441*10^-29*(-1.276*10^27 - 5.332*10^27*j + 9.846*10^22*MCasub2 + 1.962*10^21*MCcsub2 + 8.007*10^22*MCfsub2 - 1.112*10^23*MCgsub2)
g	=3.221*10^-29*(1.583*10^27 - 1.103*10^27*j - 6.198*10^22*MCasub2 - 3.539*10^22*MCcsub2 - 2.572*10^23*MCfsub2 + 2.685*10^23*MCgsub2)
h	=1.288*10^-29*(-1.939*10^28 + 1.677*10^28*j + 1.842*10^23*MCasub2 + 1.096*10^24*MCcsub2 + 1.231*10^24*MCfsub2 - 1.458*10^24*MCgsub2)
I	=1.636*10^-27*(-1.073*10^25 - 4.381*10^25*j - 1.102*10^21*MCasub2 - 2.019*10^21*MCcsub2 + 5.845*10^21*MCfsub2 - 2.142*10^21*MCgsub2)
j	exogenous variable
k	=2.842*10^-28*(-3.536*10^26 + 2.231*10^22*MCasub3 + 4.445*10^20*MCcsub3 + 1.814*10^22*MCfsub3 - 2.519*10^22*MCgsub3 - 1.208*10^27*o)
l	=7.106*10^-29*(8.779*10^26 - 2.809*10^22*MCasub3 - 1.604*10^22*MCcsub3 - 1.166*10^23*MCfsub3 + 1.217*10^23*MCgsub3 - 4.997*10^26*o)
m	=5.685*10^-30*(-5.374*10^28 + 4.175*10^23*MCasub3 + 2.485*10^24*MCcsub3 + 2.79*10^24*MCfsub3 - 3.305*10^24*MCgsub3 + 3.801*10^28*o)
n	=2.888*10^-27*(-7.438*10^24 - 6.241*10^20*MCasub3 - 1.144*10^21*MCcsub3 + 3.311*10^21*MCfsub3 - 1.213*10^21*MCgsub3 - 2.482*10^25*o)
o	exogenous variable
p	=1.027*10^-29*(-7.078*10^27 + 6.175*10^23*MCasub4 + 1.23*10^22*MCcsub4 + 5.022*10^23*MCfsub4 - 6.972*10^23*MCgsub4 - 3.344*10^28*t)
q	=5.135*10^-30*(8.787*10^27 - 3.887*10^23*MCasub4 - 2.22*10^23*MCcsub4 - 1.613*10^24*MCfsub4 + 1.684*10^24*MCgsub4 - 6.915*10^27*t)
r	=1.027*10^-29*(-2.152*10^28 + 2.311*10^23*MCasub4 + 1.375*10^24*MCcsub4 + 1.544*10^24*MCfsub4 - 1.829*10^24*MCgsub4 + 2.104*10^28*t)
s	=1.304*10^-27*(-1.191*10^25 - 1.382*10^21*MCasub4 - 2.532*10^21*MCcsub4 + 7.332*10^21*MCfsub4 - 2.686*10^21*MCgsub4 - 5.495*10^25*t)
t	exogenous variable
u	=1.924*10^-21*(-5.853*10^19 + 3.296*10^15*MCasub5 + 6.566*10^13*MCcsub5 + 2.68*10^15*MCfsub5 - 3.721*10^15*MCgsub5 - 1.785*10^20*y)
v	=4.811*10^-22*(1.453*10^20 - 4.149*10^15*MCasub5 - 2.369*10^15*MCcsub5 - 1.722*10^16*MCfsub5 + 1.797*10^16*MCgsub5 - 7.381*10^19*y)
w	=9.622*10^-22*(-3.558*10^20 + 2.467*10^15*MCasub5 + 1.468*10^16*MCcsub5 + 1.648*10^16*MCfsub5 - 1.952*10^16*MCgsub5 + 2.246*10^20*y)
x	=4.888*10^-19*(-4.925*10^16 - 3.687*10^12*MCasub5 - 6.757*10^12*MCcsub5 + 1.956*10^13*MCfsub5 - 7.168*10^12*MCgsub5 - 1.466*10^17*y)
y	exogenous variable

Quarter 19. 3rd Quarter, 1993.

a	=2.134*10^-28*(-2.797*10^26 - 1.324*10^27*e + 3.44*10^22*MCasub1 + 9.852*10^21*MCcsub1 + 4.006*10^22*MCfsub1 - 6.343*10^22*MCgsub1)
b	=2.667*10^-29*(1.041*10^27 - 5.657*10^27*e - 5.582*10^22*MCasub1 - 8.535*10^22*MCcsub1 - 3.85*10^23*MCfsub1 + 4.485*10^23*MCgsub1)
c	=5.334*10^-29*(-2.609*10^27 + 6.199*10^27*e - 1.556*10^22*MCasub1 + 2.602*10^23*MCcsub1 + 2.319*10^23*MCfsub1 - 2.819*10^23*MCgsub1)
d	=4.267*10^-28*(-1.595*10^25 + 1.862*10^26*e - 6.588*10^21*MCasub1 - 7.418*10^21*MCcsub1 + 2.454*10^22*MCfsub1 - 9.346*10^21*MCgsub1)
e	exogenous variable
f	=5.478*10^-28*(-1.44*10^26 - 5.157*10^26*j + 1.34*10^22*MCasub2 + 3.837*10^21*MCcsub2 + 1.56*10^22*MCfsub2 - 2.471*10^22*MCgsub2)
g	=6.848*10^-29*(5.363*10^26 - 2.203*10^27*j - 2.174*10^22*MCasub2 - 3.324*10^22*MCcsub2 - 1.5*10^23*MCfsub2 + 1.747*10^23*MCgsub2)
h	=1.37*10^-28*(-1.343*10^27 + 2.415*10^27*j - 6.06*10^21*MCasub2 + 1.014*10^23*MCcsub2 + 9.031*10^22*MCfsub2 - 1.098*10^23*MCgsub2)
l	=1.096*10^-27*(-8.211*10^24 + 7.253*10^25*j - 2.566*10^21*MCasub2 - 2.889*10^21*MCcsub2 + 9.559*10^21*MCfsub2 - 3.64*10^21*MCgsub2)
j	exogenous variable
k	=2.488*10^-29*(-3.873*10^27 + 2.949*10^23*MCasub3 + 8.447*10^22*MCcsub3 + 3.435*10^23*MCfsub3 - 5.439*10^23*MCgsub3 - 1.135*10^28*o)
l	=3.111*10^-30*(1.442*10^28 - 4.786*10^23*MCasub3 - 7.319*10^23*MCcsub3 - 3.301*10^24*MCfsub3 + 3.845*10^24*MCgsub3 - 4.85*10^28*o)
m	=6.221*10^-30*(-3.612*10^28 - 1.334*10^23*MCasub3 + 2.231*10^24*MCcsub3 + 1.988*10^24*MCfsub3 - 2.417*10^24*MCgsub3 + 5.316*10^28*o)
n	=4.977*10^-29*(-2.208*10^26 - 5.649*10^22*MCasub3 - 6.361*10^22*MCcsub3 + 2.104*10^23*MCfsub3 - 8.014*10^22*MCgsub3 + 1.597*10^27*o)
o	exogenous variable
p	=1.995*10^-29*(-3.337*10^27 + 3.68*10^23*MCasub4 + 1.054*10^23*MCcsub4 + 4.285*10^23*MCfsub4 - 6.786*10^23*MCgsub4 - 1.417*10^28*t)
q	=4.986*10^-30*(6.213*10^27 - 2.986*10^23*MCasub4 - 4.565*10^23*MCcsub4 - 2.059*10^24*MCfsub4 + 2.399*10^24*MCgsub4 - 3.026*10^28*t)
r	=9.973*10^-30*(-1.556*10^28 - 8.322*10^22*MCasub4 + 1.392*10^24*MCcsub4 + 1.24*10^24*MCfsub4 - 1.508*10^24*MCgsub4 + 3.316*10^28*t)
s	=1.596*10^-28*(-4.756*10^25 - 1.762*10^22*MCasub4 - 1.984*10^22*MCcsub4 + 6.564*10^22*MCfsub4 - 2.5*10^22*MCgsub4 + 4.98*10^26*t)
t	exogenous variable
u	=3.201*10^-29*(-4.53*10^27 + 2.293*10^23*MCasub5 + 6.567*10^22*MCcsub5 + 2.67*10^23*MCfsub5 - 4.228*10^23*MCgsub5 - 8.827*10^27*y)
v	=4.001*10^-30*(1.687*10^28 - 3.721*10^23*MCasub5 - 5.69*10^23*MCcsub5 - 2.567*10^24*MCfsub5 + 2.99*10^24*MCgsub5 - 3.771*10^28*y)
w	=8.002*10^-30*(-4.225*10^28 - 1.037*10^23*MCasub5 + 1.735*10^24*MCcsub5 + 1.546*10^24*MCfsub5 - 1.879*10^24*MCgsub5 + 4.133*10^28*y)
x	=6.402*10^-29*(-2.582*10^26 - 4.392*10^22*MCasub5 - 4.945*10^22*MCcsub5 + 1.636*10^23*MCfsub5 - 6.23*10^22*MCgsub5 + 1.241*10^27*y)
y	exogenous variable

Quarter 20. 4th Quarter, 1993.

a	=1.345*10^-29*(-9.719*10^27 - 2.785*10^28*e + 1.046*10^24*MCasub1 + 1.562*10^23*MCcsub1 + 1.182*10^24*MCfsub1 - 1.675*10^24*MCgsub1)
b	=1.076*10^-28*(6.442*10^26 - 1.073*10^27*e - 4.815*10^22*MCasub1 - 2.897*10^22*MCcsub1 - 1.235*10^23*MCfsub1 + 1.536*10^23*MCgsub1)
c	=4.035*10^-29*(-4.333*10^27 + 6.69*10^27*e + 5.935*10^22*MCasub1 + 3.808*10^23*MCcsub1 + 3.06*10^23*MCfsub1 - 4.301*10^23*MCgsub1)
d	=4.035*10^-29*(-3.913*10^26 + 7.88*10^26*e - 4.461*10^22*MCasub1 - 5.631*10^22*MCcsub1 + 2.389*10^23*MCfsub1 - 1.094*10^23*MCgsub1)
e	exogenous variable
f	=1.011*10^-28*(-1.785*10^27 - 3.707*10^27*j + 1.392*10^23*MCasub2 + 2.08*10^22*MCcsub2 + 1.574*10^23*MCfsub2 - 2.23*10^23*MCgsub2)
g	=2.021*10^-28*(4.734*10^26 - 5.714*10^26*j - 2.564*10^22*MCasub2 - 1.542*10^22*MCcsub2 - 6.576*10^22*MCfsub2 + 8.18*10^22*MCgsub2)
h	=3.032*10^-28*(-7.96*10^26 + 8.905*10^26*j + 7.9*10^21*MCasub2 + 5.069*10^22*MCcsub2 + 4.072*10^22*MCfsub2 - 5.724*10^22*MCgsub2)
I	=9.095*10^-28*(-2.396*10^25 + 3.496*10^25*j - 1.979*10^21*MCasub2 - 2.498*10^21*MCcsub2 + 1.06*10^22*MCfsub2 - 4.855*10^21*MCgsub2)
j	exogenous variable
k	=1.423*10^-30*(-1.474*10^29 + 9.886*10^24*MCasub3 + 1.477*10^24*MCcsub3 + 1.118*10^25*MCfsub3 - 1.584*10^25*MCgsub3 - 2.632*10^29*o)
l	=2.846*10^-30*(3.909*10^28 - 1.82*10^24*MCasub3 - 1.095*10^24*MCcsub3 - 4.67*10^24*MCfsub3 + 5.809*10^24*MCgsub3 - 4.058*10^28*o)
m	=1.423*10^-30*(-1.972*10^29 + 1.683*10^24*MCasub3 + 1.08*10^25*MCcsub3 + 8.676*10^24*MCfsub3 - 1.22*10^25*MCgsub3 + 1.897*10^29*o)
n	=1.423*10^-30*(-1.781*10^28 - 1.265*10^24*MCasub3 - 1.597*10^24*MCcsub3 + 6.774*10^24*MCfsub3 - 3.103*10^24*MCgsub3 + 2.234*10^28*o)
o	exogenous variable
p	=4.205*10^-29*(-4.244*10^27 + 3.346*10^23*MCasub4 + 4.998*10^22*MCcsub4 + 3.782*10^23*MCfsub4 - 5.36*10^23*MCgsub4 - 8.909*10^27*t)
q	=3.364*10^-28*(2.813*10^26 - 1.54*10^22*MCasub4 - 9.267*10^21*MCcsub4 - 3.951*10^22*MCfsub4 + 4.915*10^22*MCgsub4 - 3.433*10^26*t)
r	=1.261*10^-28*(-1.892*10^27 + 1.899*10^22*MCasub4 + 1.218*10^23*MCcsub4 + 9.787*10^22*MCfsub4 - 1.376*10^23*MCgsub4 + 2.14*10^27*t)
s	=3.784*10^-28*(-5.696*10^25 - 4.757*10^21*MCasub4 - 6.004*10^21*MCcsub4 + 2.547*10^22*MCfsub4 - 1.167*10^22*MCgsub4 + 8.402*10^25*t)
t	exogenous variable
u	=1.969*10^-30*(-1.558*10^29 + 7.145*10^24*MCasub5 + 1.067*10^24*MCcsub5 + 8.077*10^24*MCfsub5 - 1.145*10^25*MCgsub5 - 1.903*10^29*y)
v	=1.26*10^-28*(1.291*10^27 - 4.112*10^22*MCasub5 - 2.474*10^22*MCcsub5 - 1.055*10^23*MCfsub5 + 1.312*10^23*MCgsub5 - 9.165*10^26*y)
w	=2.559*10^-29*(-1.603*10^28 + 9.357*10^22*MCasub5 + 6.004*10^23*MCcsub5 + 4.823*10^23*MCfsub5 - 6.78*10^23*MCgsub5 + 1.055*10^28*y)
x	=1.969*10^-30*(-1.882*10^28 - 9.143*10^23*MCasub5 - 1.154*10^24*MCcsub5 + 4.896*10^24*MCfsub5 - 2.242*10^24*MCgsub5 + 1.615*10^28*y)
y	exogenous variable

Quarter 21. 1st Quarter, 1994.

a	=3.478*10^-29*(-2.458*10^27 - 1.29*10^28*e + 2.546*10^23*MCasub1 - 4.373*10^22*MCcsub1 + 3.894*10^23*MCfsub1 - 4.272*10^23*MCgsub1)
b	=3.478*10^-29*(1.889*10^27 + 3.146*10^26*e - 8.964*10^22*MCasub1 - 3.027*10^22*MCcsub1 - 4.752*10^23*MCfsub1 + 4.621*10^23*MCgsub1)
c	=3.478*10^-29*(-5.336*10^27 + 7.927*10^27*e + 3.414*10^22*MCasub1 + 4.255*10^23*MCcsub1 + 4.945*10^23*MCfsub1 - 5.786*10^23*MCgsub1)
d	=3.478*10^-29*(-1.64*10^27 - 3.697*10^27*e - 1.939*10^22*MCasub1 - 7.524*10^22*MCcsub1 + 5.476*10^23*MCfsub1 - 3.376*10^23*MCgsub1)
e	exogenous variable
f'	=4.027*10^-29*(-2.907*10^27 - 1.114*10^28*j + 2.199*10^23*MCasub2 - 3.777*10^22*MCcsub2 + 3.363*10^23*MCfsub2 - 3.69*10^23*MCgsub2)
g	=4.027*10^-29*(2.234*10^27 + 2.717*10^26*j - 7.743*10^22*MCasub2 - 2.614*10^22*MCcsub2 - 4.104*10^23*MCfsub2 + 3.991*10^23*MCgsub2)
h	=4.027*10^-29*(-6.31*10^27 + 6.846*10^27*j + 2.949*10^22*MCasub2 + 3.675*10^23*MCcsub2 + 4.271*10^23*MCfsub2 - 4.997*10^23*MCgsub2)
I	=4.027*10^-29*(-1.939*10^27 - 3.193*10^27*j - 1.675*10^22*MCasub2 - 6.498*10^22*MCcsub2 + 4.73*10^23*MCfsub2 - 2.916*10^23*MCgsub2)
j	exogenous variable
k	=8.36*10^-23*(-1.568*10^21 + 1.059*10^17*MCasub3 - 1.819*10^16*MCcsub3 + 1.62*10^17*MCfsub3 - 1.777*10^17*MCgsub3 - 5.365*10^21*o)
l	=8.36*10^-23*(1.205*10^21 - 3.73*10^16*MCasub3 - 1.259*10^16*MCcsub3 - 1.977*10^17*MCfsub3 + 1.923*10^17*MCgsub3 + 1.309*10^20*o)
m	=8.36*10^-23*(-3.403*10^21 + 1.421*10^16*MCasub3 + 1.77*10^17*MCcsub3 + 2.058*10^17*MCfsub3 - 2.407*10^17*MCgsub3 + 3.298*10^21*o)
n	=8.36*10^-23*(-1.046*10^21 - 8.068*10^15*MCasub3 - 3.13*10^16*MCcsub3 + 2.278*10^17*MCfsub3 - 1.405*10^17*MCgsub3 - 1.538*10^21*o)
o	exogenous variable
p	=1.697*10^-29*(-6.468*10^27 + 5.217*10^23*MCasub4 - 8.961*10^22*MCcsub4 + 7.979*10^23*MCfsub4 - 8.755*10^23*MCgsub4 - 2.643*10^28*t)
q	=1.697*10^-29*(4.971*10^27 - 1.837*10^23*MCasub4 - 6.203*10^22*MCcsub4 - 9.738*10^23*MCfsub4 + 9.47*10^23*MCgsub4 + 6.447*10^26*t)
r	=1.697*10^-29*(-1.404*10^28 + 6.997*10^22*MCasub4 + 8.719*10^23*MCcsub4 + 1.013*10^24*MCfsub4 - 1.186*10^24*MCgsub4 + 1.624*10^28*t)
s	=4.922*10^-28*(-1.488*10^26 - 1.37*10^21*MCasub4 - 5.317*10^21*MCcsub4 + 3.87*10^22*MCfsub4 - 2.385*10^22*MCgsub4 - 2.613*10^26*t)
t	exogenous variable
u	=3.192*10^-30*(-3.937*10^28 + 2.774*10^24*MCasub5 - 4.765*10^23*MCcsub5 + 4.243*10^24*MCfsub5 - 4.655*10^24*MCgsub5 - 1.405*10^29*y)
v	=3.192*10^-30*(3.026*10^28 - 9.768*10^23*MCasub5 - 3.298*10^23*MCcsub5 - 5.178*10^24*MCfsub5 + 5.035*10^24*MCgsub5 + 3.428*10^27*y)
w	=3.192*10^-30*(-8.547*10^28 + 3.72*10^23*MCasub5 + 4.636*10^24*MCcsub5 + 5.389*10^24*MCfsub5 - 6.304*10^24*MCgsub5 + 8.637*10^28*y)
x	=3.192*10^-30*(-2.627*10^28 - 2.113*10^23*MCasub5 - 8.198*10^23*MCcsub5 + 5.967*10^24*MCfsub5 - 3.678*10^24*MCgsub5 - 4.029*10^28*y)
y	exogenous variable

Quarter 22. 2nd Quarter, 1994.

a	=3.442*10^-29*(-3.477*10^27 - 1.791*10^28*e + 3.62*10^23*MCasub1 - 2.306*10^23*MCcsub1 + 1.11*10^24*MCfsub1 - 9.896*10^23*MCgsub1)
b	=6.884*10^-29*(1.335*10^27 + 2.015*10^27*e - 9.857*10^22*MCasub1 + 7.89*10^22*MCcsub1 - 5.419*10^23*MCfsub1 + 4.648*10^23*MCgsub1)
c	=6.884*10^-29*(-2.795*10^27 + 2.206*10^27*e + 6.847*10^22*MCasub1 + 1.067*10^23*MCcsub1 + 5.192*10^23*MCfsub1 - 4.917*10^23*MCgsub1)
d	=4.13*10^-28*(-2.136*10^26 - 5.743*10^26*e + 8.831*10^21*MCasub1 - 1.97*10^22*MCcsub1 + 9.462*10^22*MCfsub1 - 6.827*10^22*MCgsub1)
e	exogenous variable
f	=9.801*10^-29*(-1.771*10^27 - 6.288*10^27*j + 1.271*10^23*MCasub2 - 8.097*10^22*MCcsub2 + 3.899*10^23*MCfsub2 - 3.475*10^23*MCgsub2)
g	=1.96*10^-28*(6.795*10^26 + 7.077*10^26*j - 3.462*10^22*MCasub2 + 2.771*10^22*MCcsub2 - 1.903*10^23*MCfsub2 + 1.632*10^23*MCgsub2)
h	=9.801*10^-28*(-2.846*10^26 + 1.55*10^26*j + 4.809*10^21*MCasub2 + 7.493*10^21*MCcsub2 + 3.647*10^22*MCfsub2 - 3.454*10^22*MCgsub2)
l	=1.176*10^-27*(-1.087*10^26 - 2.017*10^26*j + 3.101*10^21*MCasub2 - 6.918*10^21*MCcsub2 + 3.323*10^22*MCfsub2 - 2.398*10^22*MCgsub2)
j	exogenous variable
k	=2.246*10^-30*(-8.68*10^28 + 5.547*10^24*MCasub3 - 3.533*10^24*MCcsub3 + 1.701*10^25*MCfsub3 - 1.517*10^25*MCgsub3 - 2.744*10^29*o)
l	=4.492*10^-30*(3.331*10^28 - 1.511*10^24*MCasub3 + 1.209*10^24*MCcsub3 - 8.304*10^24*MCfsub3 + 7.123*10^24*MCgsub3 + 3.088*10^28*o)
m	=4.492*10^-30*(-6.977*10^28 + 1.049*10^24*MCasub3 + 1.635*10^24*MCcsub3 + 7.957*10^24*MCfsub3 - 7.536*10^24*MCgsub3 + 3.381*10^28*o)
n	=2.695*10^-29*(-5.331*10^27 + 1.353*10^23*MCasub3 - 3.019*10^23*MCcsub3 + 1.45*10^24*MCfsub3 - 1.046*10^24*MCgsub3 - 8.801*10^27*o)
o	exogenous variable
p	=2.304*10^-30*(-7.137*10^28 + 5.406*10^24*MCasub4 - 3.444*10^24*MCcsub4 + 1.658*10^25*MCfsub4 - 1.478*10^25*MCgsub4 - 2.675*10^29*t)
q	=4.609*10^-30*(2.739*10^28 - 1.472*10^24*MCasub4 + 1.178*10^24*MCcsub4 - 8.094*10^24*MCfsub4 + 6.943*10^24*MCgsub4 + 3.01*10^28*t)
r	=4.609*10^-30*(-5.737*10^28 + 1.023*10^24*MCasub4 + 1.594*10^24*MCcsub4 + 7.755*10^24*MCfsub4 - 7.345*10^24*MCgsub4 + 3.295*10^28*t)
s	=2.765*10^-29*(-4.383*10^27 + 1.319*10^23*MCasub4 - 2.942*10^23*MCcsub4 + 1.413*10^24*MCfsub4 - 1.02*10^24*MCgsub4 - 8.578*10^27*t)
t	exogenous variable
u	=8.018*10^-21*(-3.441*10^19 + 1.554*10^15*MCasub5 - 9.898*10^14*MCcsub5 + 4.766*10^15*MCfsub5 - 4.248*10^15*MCgsub5 - 7.687*10^19*y)
v	=1.604*10^-20*(1.32*10^19 - 4.232*10^14*MCasub5 + 3.387*10^14*MCcsub5 - 2.326*10^15*MCfsub5 + 1.995*10^15*MCgsub5 + 8.65*10^18*y)
w	=1.604*10^-20*(-2.766*10^19 + 2.939*10^14*MCasub5 + 4.58*10^14*MCcsub5 + 2.229*10^15*MCfsub5 - 2.111*10^15*MCgsub5 + 9.471*10^18*y)
x	=9.622*10^-20*(-2.113*10^18 + 3.791*10^13*MCasub5 - 8.456*10^13*MCcsub5 + 4.062*10^14*MCfsub5 - 2.931*10^14*MCgsub5 - 2.465*10^18*y)
y	exogenous variable

Quarter 23. 3rd Quarter, 1994.

a	=1.181*10^-21*(-5.172*10^19 - 1.508*10^18*e + 7.066*10^15*MCasub1 + 8.571*10^14*MCcsub1 + 1.001*10^16*MCfsub1 - 1.411*10^16*MCgsub1)
b	=7.089*10^-21*(7.994*10^18 - 6.711*10^19*e - 4.005*10^14*MCasub1 - 6.348*10^14*MCcsub1 - 1.907*10^15*MCfsub1 + 2.351*10^15*MCgsub1)
c	=1.418*10^-20*(-1.198*10^19 + 3.165*10^19*e + 3.791*10^13*MCasub1 + 1.371*10^15*MCcsub1 + 3.069*10^14*MCfsub1 - 8.298*10^14*MCgsub1)
d	=3.544*10^-21*(-1.784*10^19 + 1.213*10^20*e - 4.605*10^13*MCasub1 + 2.289*10^14*MCcsub1 + 5.591*10^15*MCfsub1 - 4.454*10^15*MCgsub1)
e	exogenous variable
f'	=9.23*10^-23*(-9.615*10^20 - 1.931*10^19*j + 9.045*10^16*MCasub2 + 1.097*10^16*MCcsub2 + 1.281*10^17*MCfsub2 - 1.806*10^17*MCgsub2)
g	=5.538*10^-22*(1.486*10^20 - 8.59*10^20*j - 5.127*10^15*MCasub2 - 8.125*10^15*MCcsub2 - 2.441*10^16*MCfsub2 + 3.009*10^16*MCgsub2)
h	=1.108*10^-21*(-2.227*10^20 + 4.051*10^20*j + 4.853*10^14*MCasub2 + 1.755*10^16*MCcsub2 + 3.928*10^15*MCfsub2 - 1.062*10^16*MCgsub2)
I	=2.769*10^-22*(-3.317*10^20 + 1.553*10^21*j - 5.895*10^14*MCasub2 + 2.93*10^15*MCcsub2 + 7.157*10^16*MCfsub2 - 5.701*10^16*MCgsub2)
j	exogenous variable
k	=5.373*10^-30*(-1.853*10^28 + 1.554*10^24*MCasub3 + 1.885*10^23*MCcsub3 + 2.201*10^24*MCfsub3 - 3.103*10^24*MCgsub3 - 3.317*10^26*o)
l	=3.224*10^-29*(2.864*10^27 - 8.807*10^22*MCasub3 - 1.396*10^23*MCcsub3 - 4.193*10^23*MCfsub3 + 5.169*10^23*MCgsub3 - 1.476*10^28*o)
m	=6.447*10^-29*(-4.29*10^27 + 8.337*10^21*MCasub3 + 3.015*10^23*MCcsub3 + 6.748*10^22*MCfsub3 - 1.825*10^23*MCgsub3 + 6.959*10^27*o)
n	=1.612*10^-29*(-6.391*10^27 - 1.013*10^22*MCasub3 + 5.033*10^22*MCcsub3 + 1.229*10^24*MCfsub3 - 9.795*10^23*MCgsub3 + 2.668*10^28*o)
o	exogenous variable
p	=5.37*10^-22*(-1.457*10^20 + 1.555*10^16*MCasub4 + 1.886*10^15*MCcsub4 + 2.202*10^16*MCfsub4 - 3.104*10^16*MCgsub4 - 3.318*10^18*t)
q	=4.603*10^-22*(1.576*10^20 - 6.168*10^15*MCasub4 - 9.775*10^15*MCcsub4 - 2.936*10^16*MCfsub4 + 3.62*10^16*MCgsub4 - 1.033*10^21*t)
r	=9.206*10^-22*(-2.362*10^20 + 5.839*10^14*MCasub4 + 2.111*10^16*MCcsub4 + 4.726*10^15*MCfsub4 - 1.278*10^16*MCgsub4 + 4.874*10^20*t)
s	=2.301*10^-22*(-3.518*10^20 - 7.092*10^14*MCasub4 + 3.525*10^15*MCcsub4 + 8.61*10^16*MCfsub4 - 6.86*10^16*MCgsub4 + 1.869*10^21*t)
t	exogenous variable
u	=5.907*10^-21*(-2.083*10^19 + 1.413*10^15*MCasub5 + 1.714*10^14*MCcsub5 + 2.002*10^15*MCfsub5 - 2.822*10^15*MCgsub5 - 3.017*10^17*y)
v	=3.544*10^-20*(3.22*10^18 - 8.01*10^13*MCasub5 - 1.27*10^14*MCcsub5 - 3.813*10^14*MCfsub5 + 4.701*10^14*MCgsub5 - 1.342*10^19*y)
w	=7.089*10^-20*(-4.824*10^18 + 7.583*10^12*MCasub5 + 2.742*10^14*MCcsub5 + 6.137*10^13*MCfsub5 - 1.66*10^14*MCgsub5 + 6.329*10^18*y)
x	=1.772*10^-20*(-7.185*10^18 - 9.211*10^12*MCasub5 + 4.577*10^13*MCcsub5 + 1.118*10^15*MCfsub5 - 8.908*10^14*MCgsub5 + 2.427*10^19*y)
y	exogenous variable

Quarter 24. 4th Quarter, 1994.

a	=6.68*10^-30*(-3.894*10^28 + 1.1*10^29*e + 9.799*10^23*MCasub1 + 3.203*10^24*MCcsub1 + 2.296*10^24*MCfsub1 - 3.85*10^24*MCgsub1)
b	=9.352*10^-29*(2.281*10^27 - 1.194*10^28*e - 7.075*10^20*MCasub1 - 2.398*10^23*MCcsub1 - 1.544*10^23*MCfsub1 + 2.409*10^23*MCgsub1)
c	=6.68*10^-30*(-2.864*10^28 + 9.993*10^28*e - 1.826*10^23*MCasub1 + 3.208*10^24*MCcsub1 + 3.162*10^23*MCfsub1 - 1.408*10^24*MCgsub1)
d	=2.672*10^-29*(-1.037*10^28 + 4.661*10^28*e - 9.418*10^22*MCasub1 + 9.439*10^23*MCcsub1 + 8.588*10^23*MCfsub1 - 1.009*10^24*MCgsub1)
e	exogenous variable
f	=5.119*10^-29*(-6.496*10^27 + 1.435*10^28*j + 1.279*10^23*MCasub2 + 4.18*10^23*MCcsub2 + 2.996*10^23*MCfsub2 - 5.024*10^23*MCgsub2)
g	=7.167*10^-28*(3.805*10^26 - 1.557*10^27*j - 9.233*10^19*MCasub2 - 3.129*10^22*MCcsub2 - 2.015*10^22*MCfsub2 + 3.144*10^22*MCgsub2)
h	=5.119*10^-29*(-4.778*10^27 + 1.304*10^28*j - 2.383*10^22*MCasub2 + 4.186*10^23*MCcsub2 + 4.126*10^22*MCfsub2 - 1.837*10^23*MCgsub2)
I	=2.048*10^-28*(-1.73*10^27 + 6.083*10^27*j - 1.229*10^22*MCasub2 + 1.232*10^23*MCcsub2 + 1.121*10^23*MCfsub2 - 1.316*10^23*MCgsub2)
j	exogenous variable
k	=3.969*10^-28*(-1.09*10^27 + 1.649*10^22*MCasub3 + 5.391*10^22*MCcsub3 + 3.864*10^22*MCfsub3 - 6.48*10^22*MCgsub3 + 1.851*10^27*o)
l	=1.502*10^-28*(2.362*10^27 - 4.406*10^20*MCasub3 - 1.493*10^23*MCcsub3 - 9.614*10^22*MCfsub3 + 1.5*10^23*MCgsub3 - 7.433*10^27*o)
m	=1.073*10^-29*(-2.966*10^28 - 1.137*10^23*MCasub3 + 1.998*10^24*MCcsub3 + 1.969*10^23*MCfsub3 - 8.768*10^23*MCgsub3 + 6.223*10^28*o)
n	=2.145*10^-28*(-2.147*10^27 - 1.173*10^22*MCasub3 + 1.176*10^23*MCcsub3 + 1.07*10^23*MCfsub3 - 1.256*10^23*MCgsub3 + 5.806*10^27*o)
o	exogenous variable
p	=1.044*10^-29*(-3.147*10^28 + 6.271*10^23*MCasub4 + 2.05*10^24*MCcsub4 + 1.469*10^24*MCfsub4 - 2.464*10^24*MCgsub4 + 7.037*10^28*t)
q	=1.462*10^-28*(1.843*10^27 - 4.527*10^20*MCasub4 - 1.534*10^23*MCcsub4 - 9.879*10^22*MCfsub4 + 1.542*10^23*MCgsub4 - 7.637*10^27*t)
r	=1.044*10^-29*(-2.315*10^28 - 1.168*10^23*MCasub4 + 2.053*10^24*MCcsub4 + 2.023*10^23*MCfsub4 - 9.01*10^23*MCgsub4 + 6.395*10^28*t)
s	=4.176*10^-29*(-8.38*10^27 - 6.027*10^22*MCasub4 + 6.04*10^23*MCcsub4 + 5.495*10^23*MCfsub4 - 6.454*10^23*MCgsub4 + 2.983*10^28*t)
t	exogenous variable
u	=9.17*10^-30*(-5.272*10^28 + 7.139*10^23*MCasub5 + 2.333*10^24*MCcsub5 + 1.672*10^24*MCfsub5 - 2.805*10^24*MCgsub5 + 8.01*10^28*y)
v	=1.284*10^-28*(3.088*10^27 - 5.154*10^20*MCasub5 - 1.747*10^23*MCcsub5 - 1.125*10^23*MCfsub5 + 1.755*10^23*MCgsub5 - 8.694*10^27*y)
w	=9.17*10^-30*(-3.878*10^28 - 1.33*10^23*MCasub5 + 2.337*10^24*MCcsub5 + 2.303*10^23*MCfsub5 - 1.026*10^24*MCgsub5 + 7.28*10^28*y)
x	=7.336*10^-29*(-7.02*10^27 - 3.43*10^22*MCasub5 + 3.438*10^23*MCcsub5 + 3.128*10^23*MCfsub5 - 3.673*10^23*MCgsub5 + 1.698*10^28*y)
y	exogenous variable

Quarter 25. 1st Quarter, 1995.

a	=2.529*10^-29*(-3.342*10^28 + 3.475*10^28*e + 9.984*10^23*MCasub1 + 2.897*10^24*MCcsub1 + 3.408*10^24*MCfsub1 - 5.018*10^24*MCgsub1)
b	=5.059*10^-29*(1.706*10^28 - 3.053*10^28*e - 3.915*10^23*MCasub1 - 1.595*10^24*MCcsub1 - 1.82*10^24*MCfsub1 + 2.641*10^24*MCgsub1)
c	=2.529*10^-29*(-3.634*10^28 + 6.937*10^28*e + 6.059*10^23*MCasub1 + 3.608*10^24*MCcsub1 + 3.028*10^24*MCfsub1 - 4.757*10^24*MCgsub1)
d	=2.529*10^-29*(-3.884*10^28 + 6.464*10^28*e + 8.129*10^23*MCasub1 + 3.428*10^24*MCcsub1 + 4.458*10^24*MCfsub1 - 6.044*10^24*MCgsub1)
e	exogenous variable
f'	=8.774*10^-28*(-1.317*10^27 + 1.002*10^27*j + 2.878*10^22*MCasub2 + 8.35*10^22*MCcsub2 + 9.826*10^22*MCfsub2 - 1.447*10^23*MCgsub2)
g	=1.755*10^-27*(6.72*10^26 - 8.8*10^26*j - 1.129*10^22*MCasub2 - 4.599*10^22*MCcsub2 - 5.247*10^22*MCfsub2 + 7.613*10^22*MCgsub2)
h	=8.774*10^-28*(-1.432*10^27 + 2*10^27*j + 1.747*10^22*MCasub2 + 1.04*10^23*MCcsub2 + 8.729*10^22*MCfsub2 - 1.371*10^23*MCgsub2)
I	=8.774*10^-28*(-1.53*10^27 + 1.864*10^27*j + 2.344*10^22*MCasub2 + 9.882*10^22*MCcsub2 + 1.285*10^23*MCfsub2 - 1.742*10^23*MCgsub2)
j	exogenous variable
k	=9.747*10^-29*(-1.654*10^28 + 2.591*10^23*MCasub3 + 7.517*10^23*MCcsub3 + 8.845*10^23*MCfsub3 - 1.302*10^24*MCgsub3 + 9.019*10^27*o)
l	=1.949*10^-28*(8.441*10^27 - 1.016*10^23*MCasub3 - 4.14*10^23*MCcsub3 - 4.723*10^23*MCfsub3 + 6.853*10^23*MCgsub3 - 7.922*10^27*o)
m	=9.747*10^-29*(-1.798*10^28 + 1.572*10^23*MCasub3 + 9.363*10^23*MCcsub3 + 7.858*10^23*MCfsub3 - 1.235*10^24*MCgsub3 + 1.8*10^28*o)
n	=9.747*10^-29*(-1.922*10^28 + 2.11*10^23*MCasub3 + 8.896*10^23*MCcsub3 + 1.157*10^24*MCfsub3 - 1.569*10^24*MCgsub3 + 1.678*10^28*o)
o	exogenous variable
p	=3.388*10^-29*(-3.036*10^28 + 7.454*10^23*MCasub4 + 2.162*10^24*MCcsub4 + 2.545*10^24*MCfsub4 - 3.747*10^24*MCgsub4 + 2.594*10^28*t)
q	=6.776*10^-29*(1.549*10^28 - 2.923*10^23*MCasub4 - 1.191*10^24*MCcsub4 - 1.359*10^24*MCfsub4 + 1.971*10^24*MCgsub4 - 2.279*10^28*t)
r	=3.388*10^-29*(-3.301*10^28 + 4.524*10^23*MCasub4 + 2.694*10^24*MCcsub4 + 2.26*10^24*MCfsub4 - 3.552*10^24*MCgsub4 + 5.179*10^28*t)
s	=3.388*10^-29*(-3.528*10^28 + 6.069*10^23*MCasub4 + 2.559*10^24*MCcsub4 + 3.328*10^24*MCfsub4 - 4.512*10^24*MCgsub4 + 4.826*10^28*t)
t	exogenous variable
u	=6.379*10^-20*(-3.013*10^19 + 3.959*10^14*MCasub5 + 1.149*10^15*MCcsub5 + 1.352*10^15*MCfsub5 - 1.99*10^15*MCgsub5 + 1.378*10^19*y)
v	=1.276*10^-19*(1.537*10^19 - 1.552*10^14*MCasub5 - 6.326*10^14*MCcsub5 - 7.217*10^14*MCfsub5 + 1.047*10^15*MCgsub5 - 1.21*10^19*y)
w	=6.379*10^-20*(-3.275*10^19 + 2.403*10^14*MCasub5 + 1.431*10^15*MCcsub5 + 1.201*10^15*MCfsub5 - 1.886*10^15*MCgsub5 + 2.751*10^19*y)
x	=6.379*10^-20*(-3.501*10^19 + 3.224*10^14*MCasub5 + 1.359*10^15*MCcsub5 + 1.768*10^15*MCfsub5 - 2.397*10^15*MCgsub5 + 2.563*10^19*y)
y	exogenous variable

Quarter 26. 2nd Quarter, 1995.

a	=2.524*10^-28*(1.693*10^27 + 8.99*10^27*e - 1.575*10^23*MCasub1 - 9.554*10^21*MCcsub1 - 4.001*10^23*MCfsub1 + 4.574*10^23*MCgsub1)
b	=3.408*10^-27*(-1.304*10^26 - 7.99*10^26*e + 1.271*10^22*MCasub1 + 1.613*10^20*MCcsub1 + 2.855*10^22*MCfsub1 - 3.298*10^22*MCgsub1)
c	=2.524*10^-28*(8.539*10^26 + 9.732*10^27*e - 1.35*10^23*MCasub1 + 5.31*10^22*MCcsub1 - 2.975*10^23*MCfsub1 + 3.241*10^23*MCgsub1)
d	=3.787*10^-28*(1.471*10^27 + 8.12*10^27*e - 1.441*10^23*MCasub1 - 1.768*10^22*MCcsub1 - 3.025*10^23*MCfsub1 + 3.689*10^23*MCgsub1)
e	exogenous variable
f	=4.428*10^-28*(1.245*10^27 + 5.126*10^27*j - 8.98*10^22*MCasub2 - 5.447*10^21*MCcsub2 - 2.281*10^23*MCfsub2 + 2.608*10^23*MCgsub2)
g	=5.977*10^-27*(-9.586*10^25 - 4.556*10^26*j + 7.248*10^21*MCasub2 + 9.198*10^19*MCcsub2 + 1.628*10^22*MCfsub2 - 1.88*10^22*MCgsub2)
h	=8.412*10^-27*(3.305*10^25 + 2.921*10^26*j - 4.051*10^21*MCasub2 + 1.593*10^21*MCcsub2 - 8.929*10^21*MCfsub2 + 9.726*10^21*MCgsub2)
I	=6.641*10^-28*(1.081*10^27 + 4.63*10^27*j - 8.215*10^22*MCasub2 - 1.008*10^22*MCcsub2 - 1.725*10^23*MCfsub2 + 2.104*10^23*MCgsub2)
j	exogenous variable
k	=6.68*10^-29*(1.151*10^28 - 5.952*10^23*MCasub3 - 3.611*10^22*MCcsub3 - 1.512*10^24*MCfsub3 + 1.729*10^24*MCgsub3 + 3.397*10^28*o)
l	=4.239*10^-26*(-1.886*10^25 + 1.022*10^21*MCasub3 + 1.297*10^19*MCcsub3 + 2.296*10^21*MCfsub3 - 2.652*10^21*MCgsub3 - 6.424*10^25*o)
m	=1.269*10^-27*(3.056*10^26 - 2.685*10^22*MCasub3 + 1.056*10^22*MCcsub3 - 5.918*10^22*MCfsub3 + 6.446*10^22*MCgsub3 + 1.936*10^27*o)
n	=1.002*10^-28*(9.998*10^27 - 5.445*10^23*MCasub3 - 6.682*10^22*MCcsub3 - 1.143*10^24*MCfsub3 + 1.394*10^24*MCgsub3 + 3.068*10^28*o)
o	exogenous variable
p	=4.466*10^-29*(1.136*10^28 - 8.902*10^23*MCasub4 - 5.4*10^22*MCcsub4 - 2.262*10^24*MCfsub4 + 2.586*10^24*MCgsub4 + 5.081*10^28*t)
q	=2.01*10^-28*(-2.623*10^27 + 2.155*10^23*MCasub4 + 2.735*10^21*MCcsub4 + 4.842*10^23*MCfsub4 - 5.592*10^23*MCgsub4 - 1.355*10^28*t)
r	=1.385*10^-27*(1.848*10^26 - 2.461*10^22*MCasub4 + 9.681*10^21*MCcsub4 - 5.425*10^22*MCfsub4 + 5.909*10^22*MCgsub4 + 1.774*10^27*t)
s	=6.7*10^-29*(9.865*10^27 - 8.144*10^23*MCasub4 - 9.993*10^22*MCcsub4 - 1.71*10^24*MCfsub4 + 2.085*10^24*MCgsub4 + 4.589*10^28*t)
t	exogenous variable
u	=1.185*10^-29*(7.644*10^28 - 3.356*10^24*MCasub5 - 2.036*10^23*MCcsub5 - 8.527*10^24*MCfsub5 + 9.749*10^24*MCgsub5 + 1.916*10^29*y)
v	=5.331*10^-29*(-1.765*10^28 + 8.127*10^23*MCasub5 + 1.031*10^22*MCcsub5 + 1.826*10^24*MCfsub5 - 2.109*10^24*MCgsub5 - 5.108*10^28*y)
w	=1.185*10^-29*(3.855*10^28 - 2.877*10^24*MCasub5 + 1.132*10^24*MCcsub5 - 6.341*10^24*MCfsub5 + 6.907*10^24*MCgsub5 + 2.074*10^29*y)
x	=8.884*10^-29*(1.328*10^28 - 6.141*10^23*MCasub5 - 7.536*10^22*MCcsub5 - 1.289*10^24*MCfsub5 + 1.572*10^24*MCgsub5 + 3.461*10^28*y)
y	exogenous variable

Quarter 27. 3rd Quarter, 1995.

a	=-0.675893-0.82993* e+0.0000885629*MCasub1+0.0000108097*MCcsub1+0.000108747*MCfsub1-0.000164701*MCgsub1
b	=0.599066+0.247579*e-0.0000743063*MCasub1-0.000013552*MCcsub1-0.0000973218*MCfsub1+0.000146697*MCgsub1
c	=-0.651597+0.288643*e+0.0000568952*MCasub1+0.0000307201*MCcsub1+0.0000718541*MCfsub1-0.000117612*MCgsub1
d	=((-0.613829792700946) - 0.506278472594939* e + 0.0000769787284408508* MCasub1+ 7.09538562792401*10^-6* MCcsub1 + 0.000108995420257198*MCfsub1-0.000153638074508475*MCgsub1)
e	exogenous variable
f'	=-0.833126-0.82993*j+0.0000885629*MCasub2+0.0000108097*MCcsub2+0.000108747*MCfsub2-0.000164701*MCgsub2
g	=0.738427+0.247579*j-0.0000743063*MCasub2-0.000013552*MCcsub2-0.0000973218*MCfsub2+0.000146697*MCgsub2
h	=-0.803178+0.288643*j+0.0000568952*MCasub2+0.0000307201*MCcsub2+0.0000718541*MCfsub2-0.000117612*MCgsub2
I	=((-0.756625493279187) - 0.506278472594939* j + 0.0000769787284408508*MCasub2+ 7.09538562792401*10^-6* MCcsub2 + 0.000108995420257198*MCfsub2 - 0.000153638074508475*MCgsub2)
j	exogenous variable
k	=-1.17303+0.0000885629*MCasub3+0.0000108097*MCcsub3+0.000108747*MCfsub3-0.000164701*MCgsub3-0.82993*o
l	=1.0397-0.0000743063*MCasub3-0.000013552*MCcsub3-0.0000973218*MCfsub3+0.000146697*MCgsub3+0.247579* o
m	=-1.13087+0.0000568952*MCasub3+0.0000307201*MCcsub3+0.0000718541*MCfsub3-0.000117612*MCgsub3+0.288643*o
n	=((-1.06531974988933) + 0.0000769787284408508*MCasub3+7.09538562792401*10^-6*MCcsub3+0.000108995420257198*MCfsub3 - 0.000153638074508475*MCgsub3-0.506278472594939* o)
o	exogenous variable
p	=-0.802483+0.0000885629*MCasub4+0.0000108097*MCcsub4+0.000108747*MCfsub4-0.000164701*MCgsub4-0.82993*t
q	=0.711267-0.0000743063*MCasub4-0.000013552*MCcsub4-0.0000973218*MCfsub4+0.000146697*MCgsub4+0.247579*t
r	=-0.773637+0.0000568952*MCasub4+0.0000307201*MCcsub4+0.0000718541*MCfsub4-0.000117612*MCgsub4+0.288643*t
s	=((-0.728796121371952) + 0.0000769787284408508*MCasub4+7.09538562792401*10^-6*MCcsub4+0.000108995420257198*MCfsub4-0.000153638074508475*MCgsub4 -0.506278472594939*t)
t	exogenous variable
u	=-1.53511+0.0000885629*MCasub5+0.0000108097*MCcsub5+0.000108747*MCfsub5-0.000164701*MCgsub5-0.82993*y
v	=1.36062-0.0000743063* MCasub5-0.000013552*MCcsub5-0.0000973218*MCfsub5+0.000146697*MCgsub5+0.247579*y
w	=-1.47993+0.0000568952*MCasub5+0.0000307201*MCcsub5+0.0000718541*MCfsub5-0.000117612*MCgsub5+0.288643*y
x	=(-1.3941485511724) + 0.0000769787284408508*MCasub5+7.09538562792401*10^-6*MCcsub5 + 0.000108995420257198*MCfsub5 - 0.000153638074508475*MCgsub5-0.506278472594939*y
y	exogenous variable

Quarter 28. 4th Quarter, 1995.

a	=2.401*10^-28*(8.874*10^26 + 2.451*10^26*e - 6.538*10^22*MCasub1 - 3.633*10^22*MCcsub1 - 9.874*10^22*MCfsub1 + 1.43*10^23*MCgsub1)
b	=1.2*10^-28*(-1.482*10^27 - 5.097*10^27*e + 1.411*10^23*MCasub1 + 2.172*10^22*MCcsub1 + 1.517*10^23*MCfsub1 - 2.187*10^23*MCgsub1)
c	=1.56*10^-27*(-5.779*10^24 + 6.327*10^26*e - 9.813*10^21*MCasub1 + 1.134*10^22*MCcsub1 - 1.452*10^22*MCfsub1 + 1.337*10^22*MCgsub1)
d	=1.5*10^-27*(1.088*10^26 + 1.645*10^26*e - 9.944*10^21*MCasub1 - 7.053*10^21*MCcsub1 - 4.048*10^21*MCfsub1 + 1.401*10^22*MCgsub1)
e	exogenous variable
f	=4.049*10^-29*(6.692*10^27 + 1.453*10^27*j - 3.877*10^23*MCasub2 - 2.154*10^23*MCcsub2 - 5.854*10^23*MCfsub2 + 8.481*10^23*MCgsub2)
g	=1.012*10^-29*(-2.235*10^28 - 6.044*10^28*j + 1.673*10^24*MCasub2 + 2.576*10^23*MCcsub2 + 1.799*10^24*MCfsub2 - 2.593*10^24*MCgsub2)
h	=3.948*10^-28*(-2.905*10^25 + 2.501*10^27*j - 3.879*10^22*MCasub2 + 4.482*10^22*MCcsub2 - 5.74*10^22*MCfsub2 + 5.285*10^22*MCgsub2)
I	=3.796*10^-28*(5.467*10^26 + 6.501*10^26*j - 3.931*10^22*MCasub2 - 2.788*10^22*MCcsub2 - 1.6*10^22*MCfsub2 + 5.537*10^22*MCgsub2)
j	exogenous variable
k	=2.693*10^-29*(1.362*10^28 - 5.829*10^23*MCasub3 - 3.239*10^23*MCcsub3 - 8.802*10^23*MCfsub3 + 1.275*10^24*MCgsub3 + 2.185*10^27*o)
l	=2.693*10^-29*(-1.137*10^28 + 6.289*10^23*MCasub3 + 9.681*10^22*MCcsub3 + 6.764*10^23*MCfsub3 - 9.747*10^23*MCgsub3 - 2.272*10^28*o)
m	=1.05*10^-27*(-1.478*10^25 - 1.458*10^22*MCasub3 + 1.685*10^22*MCcsub3 - 2.158*10^22*MCfsub3 + 1.987*10^22*MCgsub3 + 9.401*10^26*o)
n	=4.039*10^-29*(6.955*10^27 - 3.694*10^23*MCasub3 - 2.62*10^23*MCcsub3 - 1.504*10^23*MCfsub3 + 5.203*10^23*MCgsub3 + 6.109*10^27*o)
o	exogenous variable
p	=5.061*10^-30*(5.646*10^28 - 3.101*10^24*MCasub4 - 1.723*10^24*MCcsub4 - 4.683*10^24*MCfsub4 + 6.785*10^24*MCgsub4 + 1.163*10^28*t)
q	=5.061*10^-30*(-4.714*10^28 + 3.346*10^24*MCasub4 + 5.151*10^23*MCcsub4 + 3.599*10^24*MCfsub4 - 5.186*10^24*MCgsub4 - 1.209*10^29*t)
r	=1.974*10^-28*(-6.129*10^25 - 7.758*10^22*MCasub4 + 8.963*10^22*MCcsub4 - 1.148*10^23*MCfsub4 + 1.057*10^23*MCgsub4 + 5.002*10^27*t)
s	=7.592*10^-30*(2.883*10^28 - 1.965*10^24*MCasub4 - 1.394*10^24*MCcsub4 - 8.001*10^23*MCfsub4 + 2.769*10^24*MCgsub4 + 3.25*10^28*t)
t	exogenous variable
u	=9.55*10^-30*(5.456*10^28 - 1.644*10^24*MCasub5 - 9.134*10^23*MCcsub5 - 2.482*10^24*MCfsub5 + 3.596*10^24*MCgsub5 + 6.163*10^27*y)
v	=9.55*10^-30*(-4.555*10^28 + 1.773*10^24*MCasub5 + 2.73*10^23*MCcsub5 + 1.907*10^24*MCfsub5 - 2.749*10^24*MCgsub5 - 6.407*10^28*y)
w	=3.724*10^-28*(-5.923*10^25 - 4.112*10^22*MCasub5 + 4.75*10^22*MCcsub5 - 6.085*10^22*MCfsub5 + 5.603*10^22*MCgsub5 + 2.651*10^27*y)
x	=1.432*10^-29*(2.786*10^28 - 1.042*10^24*MCasub5 - 7.388*10^23*MCcsub5 - 4.24*10^23*MCfsub5 + 1.467*10^24*MCgsub5 + 1.723*10^28*y)
y	exogenous variable

Quarter 29. 1st Quarter, 1996.

a	=2.408*10^-29*(5.581*10^27 - 1.949*10^28*e - 1.273*10^23*MCasub1 - 6.915*10^23*MCcsub1 - 2.574*10^23*MCfsub1 + 7.323*10^23*MCgsub1)
b	=1.204*10^-29*(-8.572*10^27 - 1.249*10^28*e + 5.308*10^23*MCasub1 + 5.937*10^23*MCcsub1 + 3.332*10^23*MCfsub1 - 9.294*10^23*MCgsub1)
c	=2.408*10^-29*(-3.857*10^27 + 3.258*10^28*e - 3.278*10^23*MCasub1 + 8.037*10^23*MCcsub1 - 5.803*10^23*MCfsub1 + 3.421*10^23*MCgsub1)
d	=1.204*10^-29*(8.662*10^27 - 1.553*10^28*e - 4.849*10^23*MCasub1 - 1.252*10^24*MCcsub1 + 5.147*10^23*MCfsub1 + 6.884*10^23*MCgsub1)
e	exogenous variable
f'	=2.674*10^-29*(6.766*10^27 - 1.755*10^28*j - 1.147*10^23*MCasub2 - 6.228*10^23*MCcsub2 - 2.318*10^23*MCfsub2 + 6.595*10^23*MCgsub2)
g	=2.674*10^-29*(-5.196*10^27 - 5.624*10^27*j + 2.39*10^23*MCasub2 + 2.673*10^23*MCcsub2 + 1.5*10^23*MCfsub2 - 4.185*10^23*MCgsub2)
h	=2.674*10^-29*(-4.677*10^27 + 2.934*10^28*j - 2.952*10^23*MCasub2 + 7.238*10^23*MCcsub2 - 5.226*10^23*MCfsub2 + 3.081*10^23*MCgsub2)
I	=2.674*10^-29*(5.251*10^27 - 6.992*10^27*j - 2.183*10^23*MCasub2 - 5.638*10^23*MCcsub2 + 2.318*10^23*MCfsub2 + 3.1*10^23*MCgsub2)
j	exogenous variable
k	=1.113*10^-29*(2.137*10^28 - 2.754*10^23*MCasub3 - 1.496*10^24*MCcsub3 - 5.568*10^23*MCfsub3 + 1.584*10^24*MCgsub3 - 4.215*10^28*o)
l	=1.113*10^-29*(-1.641*10^28 + 5.741*10^23*MCasub3 + 6.421*10^23*MCcsub3 + 3.604*10^23*MCfsub3 - 1.005*10^24*MCgsub3 - 1.351*10^28*o)
m	=4.772*10^-30*(-3.446*10^28 - 1.654*10^24*MCasub3 + 4.056*10^24*MCcsub3 - 2.929*10^24*MCfsub3 + 1.727*10^24*MCgsub3 + 1.644*10^29*o)
n	=3.34*10^-29*(5.528*10^27 - 1.748*10^23*MCasub3 - 4.514*10^23*MCcsub3 + 1.855*10^23*MCfsub3 + 2.482*10^23*MCgsub3 - 5.598*10^27*o)
o	exogenous variable
p	=6.832*10^-22*(2.343*10^20 - 4.488*10^15*MCasub4 - 2.438*10^16*MCcsub4 - 9.075*10^15*MCfsub4 + 2.582*10^16*MCgsub4 - 6.87*10^20*t)
q	=8.539*10^-23*(-1.44*10^21 + 7.485*10^16*MCasub4 + 8.372*10^16*MCcsub4 + 4.699*10^16*MCfsub4 - 1.311*10^17*MCgsub4 - 1.761*10^21*t)
r	=3.416*10^-22*(-3.239*10^20 - 2.311*10^16*MCasub4 + 5.666*10^16*MCcsub4 - 4.091*10^16*MCfsub4 + 2.412*10^16*MCgsub4 + 2.297*10^21*t)
s	=8.539*10^-23*(1.455*10^21 - 6.837*10^16*MCasub4 - 1.766*10^17*MCcsub4 + 7.258*10^16*MCfsub4 + 9.708*10^16*MCgsub4 - 2.19*10^21*t)
t	exogenous variable
u	=1.392*10^-30*(2.114*10^29 - 2.203*10^24*MCasub5 - 1.197*10^25*MCcsub5 - 4.455*10^24*MCfsub5 + 1.267*10^25*MCgsub5 - 3.372*10^29*y)
v	=1.392*10^-30*(-1.624*10^29 + 4.593*10^24*MCasub5 + 5.137*10^24*MCcsub5 + 2.883*10^24*MCfsub5 - 8.041*10^24*MCgsub5 - 1.081*10^29*y)
w	=1.392*10^-30*(-1.461*10^29 - 5.672*10^24*MCasub5 + 1.391*10^25*MCcsub5 - 1.004*10^25*MCfsub5 + 5.92*10^24*MCgsub5 + 5.637*10^29*y)
x	=1.392*10^-30*(1.641*10^29 - 4.195*10^24*MCasub5 - 1.083*10^25*MCcsub5 + 4.453*10^24*MCfsub5 + 5.956*10^24*MCgsub5 - 1.343*10^29*y)
y	exogenous variable

Quarter 30. 2nd Quarter, 1996.

a	=4.532*10^-30*(3.66*10^28 - 1.811*10^28*e - 2.202*10^24*MCasub1 - 2.978*10^24*MCcsub1 - 2.207*10^24*MCfsub1 + 5.167*10^24*MCgsub1)
b	=4.532*10^-30*(-3.589*10^28 - 1.088*10^29*e + 2.833*10^24*MCasub1 + 1.918*10^24*MCcsub1 + 1.745*10^24*MCfsub1 - 4.32*10^24*MCgsub1)
c	=4.532*10^-30*(1.705*10^28 + 2.39*10^29*e - 3.667*10^24*MCasub1 + 1.041*10^24*MCcsub1 - 3.25*10^24*MCfsub1 + 4.842*10^24*MCgsub1)
d	=7.479*10^-29*(1.681*10^27 + 2.631*10^27*e - 1.488*10^23*MCasub1 - 1.579*10^23*MCcsub1 - 1.507*10^21*MCfsub1 + 2.063*10^23*MCgsub1)
e	exogenous variable
f	=6.519*10^-23*(3.269*10^21 - 1.259*10^21*j - 1.531*10^17*MCasub2 - 2.07*10^17*MCcsub2 - 1.534*10^17*MCfsub2 + 3.592*10^17*MCgsub2)
g	=6.519*10^-23*(-3.206*10^21 - 7.564*10^21*j + 1.97*10^17*MCasub2 + 1.333*10^17*MCcsub2 + 1.213*10^17*MCfsub2 - 3.004*10^17*MCgsub2)
h	=6.519*10^-23*(1.523*10^21 + 1.661*10^22*j - 2.549*10^17*MCasub2 + 7.237*10^16*MCcsub2 - 2.259*10^17*MCfsub2 + 3.366*10^17*MCgsub2)
l	=6.454*10^-21*(2.503*10^19 + 3.049*10^19*j - 1.724*10^15*MCasub2 - 1.829*10^15*MCcsub2 - 1.746*10^13*MCfsub2 + 2.39*10^15*MCgsub2)
j	exogenous variable
k	=3.833*10^-22*(6.956*10^20 - 2.603*10^16*MCasub3 - 3.521*10^16*MCcsub3 - 2.609*10^16*MCfsub3 + 6.109*10^16*MCgsub3 - 2.141*10^20*o)
l	=1.917*10^-21*(-1.364*10^20 + 6.7*10^15*MCasub3 + 4.535*10^15*MCcsub3 + 4.127*10^15*MCfsub3 - 1.022*10^16*MCgsub3 - 2.573*10^20*o)
m	=3.833*10^-22*(3.241*10^20 - 4.335*10^16*MCasub3 + 1.231*10^16*MCcsub3 - 3.842*10^16*MCfsub3 + 5.725*10^16*MCgsub3 + 2.825*10^21*o)
n	=1.265*10^-20*(1.598*10^19 - 8.797*10^14*MCasub3 - 9.334*10^14*MCcsub3 - 8.907*10^12*MCfsub3 + 1.219*10^15*MCgsub3 + 1.555*10^19*o)
o	exogenous variable
p	=2.231*10^-29*(9.248*10^27 - 4.472*10^23*MCasub4 - 6.048*10^23*MCcsub4 - 4.482*10^23*MCfsub4 + 1.05*10^24*MCgsub4 - 3.679*10^27*t)
q	=2.231*10^-29*(-9.068*10^27 + 5.755*10^23*MCasub4 + 3.895*10^23*MCcsub4 + 3.545*10^23*MCfsub4 - 8.776*10^23*MCgsub4 - 2.21*10^28*t)
r	=2.231*10^-29*(4.309*10^27 - 7.448*10^23*MCasub4 + 2.114*10^23*MCcsub4 - 6.601*10^23*MCfsub4 + 9.835*10^23*MCgsub4 + 4.854*10^28*t)
s	=2.209*10^-27*(7.08*10^25 - 5.038*10^21*MCasub4 - 5.345*10^21*MCcsub4 - 5.101*10^19*MCfsub4 + 6.983*10^21*MCgsub4 + 8.907*10^25*t)
t	exogenous variable
u	=1.478*10^-29*(2.125*10^28 - 6.751*10^23*MCasub5 - 9.129*10^23*MCcsub5 - 6.766*10^23*MCfsub5 + 1.584*10^24*MCgsub5 - 5.553*10^27*y)
v	=7.391*10^-29*(-4.168*10^27 + 1.737*10^23*MCasub5 + 1.176*10^23*MCcsub5 + 1.07*10^23*MCfsub5 - 2.649*10^23*MCgsub5 - 6.671*10^27*y)
w	=7.391*10^-30*(1.98*10^28 - 2.249*10^24*MCasub5 + 6.383*10^23*MCcsub5 - 1.993*10^24*MCfsub5 + 2.969*10^24*MCgsub5 + 1.465*10^29*y)
x	=1.22*10^-28*(1.952*10^27 - 9.125*10^22*MCasub5 - 9.682*10^22*MCcsub5 - 9.239*10^20*MCfsub5 + 1.265*10^23*MCgsub5 + 1.613*10^27*y)
y	exogenous variable

Quarter 31. 3rd Quarter, 1996.

a	=1.809*10^-29*(2.463*10^27 - 1.864*10^28*e + 1.601*10^22*MCasub1 - 3.494*10^23*MCcsub1 - 2.835*10^23*MCfsub1 + 4.574*10^23*MCgsub1)
b	=3.619*10^-29*(-1.723*10^27 - 6.683*10^27*e + 1.271*10^23*MCasub1 + 1.156*10^23*MCcsub1 + 7.648*10^22*MCfsub1 - 2.077*10^23*MCgsub1)
c	=9.046*10^-29*(-5.776*10^26 + 5.825*10^27*e - 4.648*10^22*MCasub1 + 9.918*10^22*MCcsub1 - 6.745*10^22*MCfsub1 + 5.212*10^22*MCgsub1)
d	=5.609*10^-28*(1.012*10^26 + 9.303*10^25*e - 1.141*10^22*MCasub1 - 1.688*10^22*MCcsub1 + 7.55*10^21*MCfsub1 + 1.419*10^22*MCgsub1)
e	exogenous variable
f'	=2.435*10^-30*(2.412*10^28 - 1.385*10^29*j + 1.189*10^23*MCasub2 - 2.596*10^24*MCcsub2 - 2.106*10^24*MCfsub2 + 3.399*10^24*MCgsub2)
g	=4.87*10^-30*(-1.687*10^28 - 4.966*10^28*j + 9.446*10^23*MCasub2 + 8.588*10^23*MCcsub2 + 5.682*10^23*MCfsub2 - 1.543*10^24*MCgsub2)
h	=2.435*10^-30*(-2.828*10^28 + 2.164*10^29*j - 1.727*10^24*MCasub2 + 3.685*10^24*MCcsub2 - 2.506*10^24*MCfsub2 + 1.936*10^24*MCgsub2)
I	=2.435*10^-30*(3.072*10^28 + 2.143*10^28*j - 2.628*10^24*MCasub2 - 3.888*10^24*MCcsub2 + 1.739*10^24*MCfsub2 + 3.268*10^24*MCgsub2)
j	exogenous variable
k	=1.782*10^-30*(4.652*10^28 + 1.625*10^23*MCasub3 - 3.547*10^24*MCcsub3 - 2.878*10^24*MCfsub3 + 4.644*10^24*MCgsub3 - 1.893*10^29*o)
l	=3.564*10^-30*(-3.254*10^28 + 1.291*10^24*MCasub3 + 1.173*10^24*MCcsub3 + 7.764*10^23*MCfsub3 - 2.109*10^24*MCgsub3 - 6.786*10^28*o)
m	=1.782*10^-30*(-5.455*10^28 - 2.359*10^24*MCasub3 + 5.035*10^24*MCcsub3 - 3.424*10^24*MCfsub3 + 2.646*10^24*MCgsub3 + 2.957*10^29*o)
n	=1.782*10^-30*(5.926*10^28 - 3.591*10^24*MCasub3 - 5.312*10^24*MCcsub3 + 2.376*10^24*MCfsub3 + 4.466*10^24*MCgsub3 + 2.928*10^28*o)
o	exogenous variable
p	=8.706*10^-31*(7.685*10^28 + 3.327*10^23*MCasub4 - 7.26*10^24*MCcsub4 - 5.89*10^24*MCfsub4 + 9.506*10^24*MCgsub4 - 3.874*10^29*t)
q	=1.741*10^-30*(-5.375*10^28 + 2.642*10^24*MCasub4 + 2.402*10^24*MCcsub4 + 1.589*10^24*MCfsub4 - 4.317*10^24*MCgsub4 - 1.389*10^29*t)
r	=2.612*10^-30*(-3.004*10^28 - 1.61*10^24*MCasub4 + 3.435*10^24*MCcsub4 - 2.336*10^24*MCfsub4 + 1.805*10^24*MCgsub4 + 2.018*10^29*t)
s	=8.706*10^-31*(9.789*10^28 - 7.351*10^24*MCasub4 - 1.087*10^25*MCcsub4 + 4.864*10^24*MCfsub4 + 9.141*10^24*MCgsub4 + 5.993*10^28*t)
t	exogenous variable
u	=7.618*10^-31*(1.233*10^29 + 3.802*10^23*MCasub5 - 8.298*10^24*MCcsub5 - 6.732*10^24*MCfsub5 + 1.086*10^25*MCgsub5 - 4.427*10^29*y)
v	=1.524*10^-30*(-8.621*10^28 + 3.019*10^24*MCasub5 + 2.745*10^24*MCcsub5 + 1.816*10^24*MCfsub5 - 4.933*10^24*MCgsub5 - 1.587*10^29*y)
w	=7.618*10^-31*(-1.445*10^29 - 5.519*10^24*MCasub5 + 1.178*10^25*MCcsub5 - 8.01*10^24*MCfsub5 + 6.189*10^24*MCgsub5 + 6.918*10^29*y)
x	=7.618*10^-31*(1.57*10^29 - 8.401*10^24*MCasub5 - 1.243*10^25*MCcsub5 + 5.559*10^24*MCfsub5 + 1.045*10^25*MCgsub5 + 6.849*10^28*y)
y	exogenous variable

Quarter 32. 4th Quarter, 1996.

a	=4.511*10^-30*(7.386*10^27 - 8.175*10^28*e - 9.398*10^22*MCasub1 - 1.321*10^24*MCcsub1 - 1.478*10^24*MCfsub1 + 2.37*10^24*MCgsub1)
b	=2.932*10^-29*(-1.364*10^27 - 1.069*10^28*e + 1.624*10^23*MCasub1 + 3.5*10^22*MCcsub1 + 1.358*10^23*MCfsub1 - 2.366*10^23*MCgsub1)
c	=9.023*10^-30*(-1.327*10^28 + 1.12*10^29*e - 6.628*10^23*MCasub1 + 2.58*10^24*MCcsub1 - 1.612*10^24*MCfsub1 + 6.355*10^23*MCgsub1)
d	=2.256*10^-30*(3.562*10^28 - 1.541*10^29*e - 1.458*10^24*MCasub1 - 7.138*10^24*MCcsub1 + 4.311*10^24*MCfsub1 + 1.762*10^24*MCgsub1)
e	exogenous variable
f'	=8.862*10^-30*(6.423*10^27 - 4.162*10^28*j - 4.784*10^22*MCasub2 - 6.723*10^23*MCcsub2 - 7.525*10^23*MCfsub2 + 1.206*10^24*MCgsub2)
g	=4.431*10^-30*(-1.542*10^28 - 7.072*10^28*j + 1.075*10^24*MCasub2 + 2.316*10^23*MCcsub2 + 8.99*10^23*MCfsub2 - 1.566*10^24*MCgsub2)
h	=8.862*10^-30*(-2.308*10^28 + 1.14*10^29*j - 6.748*10^23*MCasub2 + 2.626*10^24*MCcsub2 - 1.641*10^24*MCfsub2 + 6.47*10^23*MCgsub2)
I	=4.431*10^-30*(3.097*10^28 - 7.846*10^28*j - 7.424*10^23*MCasub2 - 3.633*10^24*MCcsub2 + 2.195*10^24*MCfsub2 + 8.968*10^23*MCgsub2)
j	exogenous variable
k	=8.99*10^-31*(7.526*10^28 - 4.716*10^23*MCasub3 - 6.627*10^24*MCcsub3 - 7.418*10^24*MCfsub3 + 1.189*10^25*MCgsub3 - 4.102*10^29*o)
l	=4.495*10^-31*(-1.807*10^29 + 1.059*10^25*MCasub3 + 2.283*10^24*MCcsub3 + 8.861*10^24*MCfsub3 - 1.543*10^25*MCgsub3 - 6.971*10^29*o)
m	=1.798*10^-30*(-1.352*10^29 - 3.326*10^24*MCasub3 + 1.294*10^25*MCcsub3 - 8.09*10^24*MCfsub3 + 3.189*10^24*MCgsub3 + 5.621*10^29*o)
n	=4.495*10^-31*(3.629*10^29 - 7.317*10^24*MCasub3 - 3.582*10^25*MCcsub3 + 2.163*10^25*MCfsub3 + 8.84*10^24*MCgsub3 - 7.734*10^29*o)
o	exogenous variable
p	=9.504*10^-30*(5.463*10^27 - 4.461*10^22*MCasub4 - 6.268*10^23*MCcsub4 - 7.017*10^23*MCfsub4 + 1.125*10^24*MCgsub4 - 3.88*10^28*t)
q	=4.752*10^-30*(-1.312*10^28 + 1.002*10^24*MCasub4 + 2.159*10^23*MCcsub4 + 8.382*10^23*MCfsub4 - 1.46*10^24*MCgsub4 - 6.594*10^28*t)
r	=9.504*10^-30*(-1.963*10^28 - 6.293*10^23*MCasub4 + 2.449*10^24*MCcsub4 - 1.53*10^24*MCfsub4 + 6.033*10^23*MCgsub4 + 1.063*10^29*t)
s	=4.752*10^-30*(2.634*10^28 - 6.922*10^23*MCasub4 - 3.388*10^24*MCcsub4 + 2.046*10^24*MCfsub4 + 8.362*10^23*MCgsub4 - 7.316*10^28*t)
t	exogenous variable
u	=1.103*10^-21*(7.379*10^19 - 3.843*10^14*MCasub5 - 5.4*10^15*MCcsub5 - 6.045*10^15*MCfsub5 + 9.689*10^15*MCgsub5 - 3.343*10^20*y)
v	=5.516*10^-22*(-1.772*10^20 + 8.632*10^15*MCasub5 + 1.86*10^15*MCcsub5 + 7.221*10^15*MCfsub5 - 1.258*10^16*MCgsub5 - 5.68*10^20*y)
w	=2.206*10^-21*(-1.326*10^20 - 2.71*10^15*MCasub5 + 1.055*10^16*MCcsub5 - 6.592*10^15*MCfsub5 + 2.599*10^15*MCgsub5 + 4.58*10^20*y)
x	=5.516*10^-22*(3.558*10^20 - 5.963*10^15*MCasub5 - 2.919*10^16*MCcsub5 + 1.763*10^16*MCfsub5 + 7.204*10^15*MCgsub5 - 6.303*10^20*y)
y	exogenous variable

Appendix 5: Optimization program for elasticity estimates

Quarter 1. 1st Quarter, 1989.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =4.187*10^-28*(-3.048*10^25 - 4.954*10^26*e + 1.138*10^22*MCasub1 - 2.92*10^21*MCcsub1 - 6.144*10^21*MCfsub1 + 2.551*10^20*MCgsub1)

b p2/q1 =4.885*10^-28*(9.553*10^25 - 8.586*10^26*e + 7.782*10^21*MCasub1 - 1.423*10^22*MCcsub1 - 1.761*10^22*MCfsub1 + 1.6*10^22*MCgsub1)

c p3/q1 =6.978*10^-28*(-4.806*10^26 + 2.914*10^27*e - 2.4*10^22*MCasub1 + 6.776*10^22*MCcsub1 + 3.495*10^22*MCfsub1 - 3.813*10^22*MCgsub1)

d p4/q1 =8.373*10^-27*(-7.32*10^24 + 2.08*10^25*e - 1.005*10^21*MCasub1 + 4.937*10^20*MCcsub1 + 2.232*10^21*MCfsub1 - 1.103*10^21*MCgsub1)

f P1/q2 =2.254*10^-28*(-7.368*10^25 - 9.203*10^26*j + 2.114*10^22*MCasub2 - 5.425*10^21*MCcsub2 - 1.141*10^22*MCfsub2 + 4.739*10^20*MCgsub2)

g p2/q2 =2.629*10^-28*(2.31*10^26 - 1.595*10^27*j + 1.446*10^22*MCasub2 - 2.644*10^22*MCcsub2 - 3.272*10^22*MCfsub2 + 2.972*10^22*MCgsub2)

h p3/q2 =3.756*10^-28*(-1.162*10^27 + 5.414*10^27*j - 4.459*10^22*MCasub2 + 1.259*10^23*MCcsub2 + 6.493*10^22*MCfsub2 - 7.084*10^22*MCgsub2)

i p4/q2 =1.127*10^-27*(-7.078*10^25 + 1.546*10^26*j - 7.468*10^21*MCasub2 + 3.669*10^21*MCcsub2 + 1.659*10^22*MCfsub2 - 8.198*10^21*MCgsub2)

k P1/q3 =4.009*10^-22*(-5.128*10^19 + 1.189*10^16*MCasub3 - 3.049*10^15*MCcsub3 - 6.416*10^15*MCfsub3 + 2.664*10^14*MCgsub3 - 5.173*10^20*o)

l p2/q3 =4.678*10^-22*(1.607*10^20 + 8.126*10^15*MCasub3 - 1.486*10^16*MCcsub3 - 1.839*10^16*MCfsub3 + 1.67*10^16*MCgsub3 - 8.966*10^20*o)

m p3/q3 =6.682*10^-22*(-8.086*10^20 - 2.506*10^16*MCasub3 + 7.075*10^16*MCcsub3 + 3.649*10^16*MCfsub3 - 3.982*10^16*MCgsub3 + 3.043*10^21*o)

n p4/q3 =4.009*10^-21*(-2.463*10^19 - 2.099*10^15*MCasub3 + 1.031*10^15*MCcsub3 + 4.662*10^15*MCfsub3 - 2.304*10^15*MCgsub3 + 4.344*10^19*o)

p P1/q4 =1.243*10^-21*(-1.277*10^19 + 3.834*10^15*MCasub4 - 9.837*10^14*MCcsub4 - 2.07*10^15*MCfsub4 + 8.593*10^13*MCgsub4 - 1.669*10^20*t)

q p2/q4 =1.45*10^-21*(4.002*10^19 + 2.621*10^15*MCasub4 - 4.794*10^15*MCcsub4 - 5.932*10^15*MCfsub4 + 5.389*10^15*MCgsub4 - 2.892*10^20*t)
r p3/q4 =2.072*10^-21*(-2.014*10^20 - 8.084*10^15*MCasub4 + 2.282*10^16*MCcsub4 + 1.177*10^16*MCfsub4 - 1.285*10^16*MCgsub4 + 9.816*10^20*t)
s p4/q4 =2.486*10^-20*(-3.066*10^18 - 3.385*10^14*MCasub4 + 1.663*10^14*MCcsub4 + 7.52*10^14*MCfsub4 - 3.716*10^14*MCgsub4 + 7.007*10^18*t)
u P1/q5 =5.082*10^-29*(-5.62*10^26 + 9.376*10^22*MCasub5 - 2.406*10^22*MCcsub5 - 5.061*10^22*MCfsub5 + 2.101*10^21*MCgsub5 - 4.081*10^27*y)
v p2/q5 =5.93*10^-29*(1.762*10^27 + 6.411*10^22*MCasub5 - 1.172*10^23*MCcsub5 - 1.451*10^23*MCfsub5 + 1.318*10^23*MCgsub5 - 7.073*10^27*y)
w p3/q5 =8.471*10^-29*(-8.863*10^27 - 1.977*10^23*MCasub5 + 5.581*10^23*MCcsub5 + 2.879*10^23*MCfsub5 - 3.141*10^23*MCgsub5 + 2.401*10^28*y)
x p4/q5 =2.541*10^-28*(-5.399*10^26 - 3.311*10^22*MCasub5 + 1.627*10^22*MCcsub5 + 7.356*10^22*MCfsub5 - 3.635*10^22*MCgsub5 + 6.854*10^26*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)

mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11846.65
P2	15416.4
P3	19086.69
P4	14733.55
P5	26519.23

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	341,622
Csub1	97,391
Fsub1	203,833
Gsub1	144,852
Asub2	262,998
Csub2	267,224
Fsub2	387,792
Gsub2	664,688
Asub3	37,038
Csub3	57,610
Fsub3	44,652
Gsub3	82,393

asub4 119,719
Csub4 61,215
fsub4 201,750
gsub4 218,322
asub5 84,980
Csub5 4,458
fsub5 78,969
gsub5 103,231

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)

Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08

o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 2. 2nd Quarter, 1989.

----------COEFFICIENTS OF DEMAND----------
a P1/q1 =3.063*10^-29*(-7.943*10^26 - 3.968*10^27*e + 1.139*10^23*MCasub1 + 1.565*10^22*MCcsub1 - 9.698*10^21*MCfsub1 - 5.047*10^22*MCgsub1)

b p2/q1 =1.531*10^-29*(2.235*10^27 - 1.431*10^28*e + 1.071*10^23*MCasub1 - 2.748*10^23*MCcsub1 - 4.041*10^23*MCfsub1 + 3.765*10^23*MCgsub1)

c p3/q1 =1.531*10^-29*(-1.601*10^28 + 8.169*10^28*e - 5.798*10^23*MCasub1 + 2.081*10^24*MCcsub1 + 1.167*10^24*MCfsub1 - 1.268*10^24*MCgsub1)

d p4/q1 =2.45*10^-28*(-2.113*10^26 - 3.404*10^26*e - 1.963*10^22*MCasub1 + 8.825*10^21*MCcsub1 + 5.605*10^22*MCfsub1 - 2.678*10^22*MCgsub1)

f P1/q2 =7.646*10^-29*(-4.25*10^26 - 1.59*10^27*j + 4.564*10^22*MCasub2 + 6.27*10^21*MCcsub2 - 3.885*10^21*MCfsub2 - 2.022*10^22*MCgsub2)

g p2/q2 =3.823*10^-29*(1.196*10^27 - 5.731*10^27*j + 4.292*10^22*MCasub2 - 1.101*10^23*MCcsub2 - 1.619*10^23*MCfsub2 + 1.508*10^23*MCgsub2)

h p3/q2 =3.823*10^-29*(-8.566*10^27 + 3.272*10^28*j - 2.323*10^23*MCasub2 + 8.336*10^23*MCcsub2 + 4.673*10^23*MCfsub2 - 5.081*10^23*MCgsub2)

i p4/q2 =6.117*10^-28*(-1.13*10^26 - 1.364*10^26*j - 7.863*10^21*MCasub2 + 3.535*10^21*MCcsub2 + 2.245*10^22*MCfsub2 - 1.073*10^22*MCgsub2)

k P1/q3 =4.379*10^-30*(-8.921*10^27 + 7.969*10^23*MCasub3 + 1.095*10^23*MCcsub3 - 6.783*10^22*MCfsub3 - 3.53*10^23*MCgsub3 - 2.776*10^28*o)

l p2/q3 =2.19*10^-30*(2.51*10^28 + 7.494*10^23*MCasub3 - 1.922*10^24*MCcsub3 - 2.827*10^24*MCfsub3 + 2.633*10^24*MCgsub3 - 1.001*10^29*o)

m p3/q3 =2.19*10^-30*(-1.798*10^29 - 4.055*10^24*MCasub3 + 1.455*10^25*MCcsub3 + 8.16*10^24*MCfsub3 - 8.872*10^24*MCgsub3 + 5.714*10^29*o)

n p4/q3 =1.752*10^-29*(-4.746*10^27 - 2.746*10^23*MCasub3 + 1.234*10^23*MCcsub3 + 7.84*10^23*MCfsub3 - 3.746*10^23*MCgsub3 - 4.762*10^27*o)

p P1/q4 =2.736*10^-29*(-1.058*10^27 + 1.276*10^23*MCasub4 + 1.752*10^22*MCcsub4 - 1.086*10^22*MCfsub4 - 5.651*10^22*MCgsub4 - 4.443*10^27*t)

q p2/q4 =1.368*10^-29*(2.978*10^27 + 1.2*10^23*MCasub4 - 3.076*10^23*MCcsub4 - 4.524*10^23*MCfsub4 + 4.215*10^23*MCgsub4 - 1.602*10^28*t)

r p3/q4 =1.368*10^-29*(-2.133*10^28 - 6.492*10^23*MCasub4 + 2.33*10^24*MCcsub4 + 1.306*10^24*MCfsub4 - 1.42*10^24*MCgsub4 + 9.146*10^28*t)

s p4/q4 =1.094*10^-28*(-5.631*10^26 - 4.395*10^22*MCasub4 + 1.976*10^22*MCcsub4 + 1.255*10^23*MCfsub4 - 5.996*10^22*MCgsub4 - 7.622*10^26*t)

u P1/q5 =2.87*10^-30*(-1.745*10^28 + 1.216*10^24*MCasub5 + 1.67*10^23*MCcsub5 - 1.035*10^23*MCfsub5 - 5.387*10^23*MCgsub5 - 4.235*10^28*y)

v p2/q5 =1.435*10^-30*(4.909*10^28 + 1.143*10^24*MCasub5 - 2.933*10^24*MCcsub5 - 4.313*10^24*MCfsub5 + 4.018*10^24*MCgsub5 - 1.527*10^29*y)

w p3/q5 =1.435*10^-30*(-3.518*10^29 - 6.188*10^24*MCasub5 + 2.221*10^25*MCcsub5 + 1.245*10^25*MCfsub5 - 1.354*10^25*MCgsub5 + 8.719*10^29*y)
x p4/q5 =1.148*10^-29*(-9.284*10^27 - 4.19*10^23*MCasub5 + 1.884*10^23*MCcsub5 + 1.196*10^24*MCfsub5 - 5.715*10^23*MCgsub5 - 7.266*10^27*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)

ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11442.7
P2	15282.74
P3	18372.51
P4	13618.31
P5	23555.34

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	374,662
Csub1	105,812
Fsub1	206,327
Gsub1	192,085
Asub2	349,842
Csub2	333,591
Fsub2	454,969
Gsub2	805,776
Asub3	32,150
Csub3	69,627
Fsub3	41,479
Gsub3	86,198
asub4	123,933
Csub4	62,039
fsub4	228,347
gsub4	255,135
asub5	92,304
Csub5	4,016
fsub5	91,915
gsub5	113,333

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------

MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2

XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 3. 3rd Quarter, 1989.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =2.138*10^-29*(-1.11*10^27 - 6.99*10^27*e + 1.712*10^23*MCasub1 + 1.801*10^22*MCcsub1 - 8.959*10^21*MCfsub1 - 8.403*10^22*MCgsub1)

b p2/q1 =2.138*10^-29*(2.103*10^27 - 1.619*10^28*e + 1.844*10^23*MCasub1 - 2.402*10^23*MCcsub1 - 4.064*10^23*MCfsub1 + 2.799*10^23*MCgsub1)

c p3/q1 =6.413*10^-29*(-3.47*10^27 + 1.966*10^28*e - 2.186*10^23*MCasub1 + 4.459*10^23*MCcsub1 + 2.568*10^23*MCfsub1 - 1.831*10^23*MCgsub1)

d p4/q1 =1.069*10^-28*(-6.574*10^26 + 1.563*10^27*e - 7.815*10^22*MCasub1 + 3.193*10^22*MCcsub1 + 1.736*10^23*MCfsub1 - 7.035*10^22*MCgsub1)

f P1/q2 =2.493*10^-29*(-1.301*10^27 - 5.993*10^27*j + 1.468*10^23*MCasub2 + 1.545*10^22*MCcsub2 - 7.682*10^21*MCfsub2 - 7.205*10^22*MCgsub2)

g p2/q2 =2.493*10^-29*(2.465*10^27 - 1.388*10^28*j + 1.581*10^23*MCasub2 - 2.06*10^23*MCcsub2 - 3.484*10^23*MCfsub2 + 2.4*10^23*MCgsub2)

h p3/q2 =2.493*10^-29*(-1.22*10^28 + 5.057*10^28*j - 5.624*10^23*MCasub2 + 1.147*10^24*MCcsub2 + 6.605*10^23*MCfsub2 - 4.711*10^23*MCgsub2)
i p4/q2 =4.238*10^-28*(-2.267*10^26 + 3.942*10^26*j - 1.971*10^22*MCasub2 + 8.053*10^21*MCcsub2 + 4.377*10^22*MCfsub2 - 1.774*10^22*MCgsub2)
k P1/q3 =1.364*10^-29*(-2.693*10^27 + 2.683*10^23*MCasub3 + 2.823*10^22*MCcsub3 - 1.404*10^22*MCfsub3 - 1.317*10^23*MCgsub3 - 1.095*10^28*o)
l p2/q3 =6.82*10^-30*(1.021*10^28 + 5.78*10^23*MCasub3 - 7.53*10^23*MCcsub3 - 1.274*10^24*MCfsub3 + 8.772*10^23*MCgsub3 - 5.074*10^28*o)
m p3/q3 =2.046*10^-29*(-1.684*10^28 - 6.853*10^23*MCasub3 + 1.398*10^24*MCcsub3 + 8.048*10^23*MCfsub3 - 5.741*10^23*MCgsub3 + 6.163*10^28*o)
n p4/q3 =1.364*10^-29*(-7.977*10^27 - 6.124*10^23*MCasub3 + 2.502*10^23*MCcsub3 + 1.36*10^24*MCfsub3 - 5.512*10^23*MCgsub3 + 1.225*10^28*o)
p P1/q4 =4.944*10^-30*(-5.951*10^27 + 7.403*10^23*MCasub4 + 7.789*10^22*MCcsub4 - 3.874*10^22*MCfsub4 - 3.633*10^23*MCgsub4 - 3.022*10^28*t)
q p2/q4 =2.472*10^-30*(2.255*10^28 + 1.595*10^24*MCasub4 - 2.077*10^24*MCcsub4 - 3.514*10^24*MCfsub4 + 2.42*10^24*MCgsub4 - 1.4*10^29*t)
r p3/q4 =2.472*10^-30*(-1.116*10^29 - 5.672*10^24*MCasub4 + 1.157*10^25*MCcsub4 + 6.661*10^24*MCfsub4 - 4.751*10^24*MCgsub4 + 5.101*10^29*t)
s p4/q4 =2.472*10^-29*(-3.525*10^27 - 3.379*10^23*MCasub4 + 1.381*10^23*MCcsub4 + 7.505*10^23*MCfsub4 - 3.042*10^23*MCgsub4 + 6.759*10^27*t)
u P1/q5 =1.073*10^-29*(-4.328*10^27 + 3.41*10^23*MCasub5 + 3.588*10^22*MCcsub5 - 1.784*10^22*MCfsub5 - 1.674*10^23*MCgsub5 - 1.392*10^28*y)
v p2/q5 =1.073*10^-29*(8.201*10^27 + 3.673*10^23*MCasub5 - 4.785*10^23*MCcsub5 - 8.094*10^23*MCfsub5 + 5.574*10^23*MCgsub5 - 3.224*10^28*y)
w p3/q5 =1.073*10^-29*(-4.06*10^28 - 1.306*10^24*MCasub5 + 2.664*10^24*MCcsub5 + 1.534*10^24*MCfsub5 - 1.094*10^24*MCgsub5 + 1.175*10^29*y)
x p4/q5 =1.073*10^-29*(-1.282*10^28 - 7.783*10^23*MCasub5 + 3.18*10^23*MCcsub5 + 1.728*10^24*MCfsub5 - 7.006*10^23*MCgsub5 + 1.557*10^28*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa	=IF(a>=0,-0.00000001,a)
bb	=IF(b>=0,-0.00000001,b)
cc	=IF(c_>=0,-0.00000001,c_)
dd	=IF(d>=0,-0.00000001,d)
ee	=IF(e>=0,-0.00000001,e)
ff	=IF(f>=0,-0.00000001,f)
gg	=IF(g>=0,-0.00000001,g)
hh	=IF(h>=0,-0.00000001,h)
ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11533.8
P2	15768.99
P3	17858.27
P4	14303.84
P5	22583.6

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	359,326
Csub1	128,651
Fsub1	211,244
Gsub1	180,406
Asub2	365,529
Csub2	243,589
Fsub2	424,418
Gsub2	751,663
Asub3	44,666
Csub3	70,706
Fsub3	48,051
Gsub3	101,032
asub4	135,222
Csub4	52,631
fsub4	212,169
gsub4	264,151
asub5	101,272
Csub5	5,577
fsub5	82,402
gsub5	115,555

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1	**=+Gsub1+Fsub1+Csub1+Asub1**
tseg2	**=+Gsub2+Fsub2+Csub2+Asub2**
tseg3	**=+Gsub3+Fsub3+Csub3+Asub3**
tseg4	**=+gsub4+fsub4+Csub4+asub4**
tseg5	**=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------

Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)

Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447

MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4

XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 4. 4th Quarter, 1989.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =6.338*10^-29*(-3.667*10^26 - 2.314*10^27*e + 6.879*10^22*MCasub1 + 8.957*10^21*MCcsub1 + 2.625*10^20*MCfsub1 - 4.516*10^22*MCgsub1)

b p2/q1 =1.584*10^-29*(6.068*10^27 - 2.926*10^28*e + 1.635*10^23*MCasub1 - 8.898*10^23*MCcsub1 - 6.073*10^23*MCfsub1 + 7.9*10^23*MCgsub1)

c p3/q1 =1.584*10^-29*(-3.017*10^28 + 1.196*10^29*e - 7.78*10^23*MCasub1 + 4.401*10^24*MCcsub1 + 1.495*10^24*MCfsub1 - 2.416*10^24*MCgsub1)

d p4/q1 =3.169*10^-29*(-2.921*10^27 + 1.266*10^27*e - 1.631*10^23*MCasub1 + 2.234*10^23*MCcsub1 + 5.094*10^23*MCfsub1 - 3.081*10^23*MCgsub1)

f P1/q2 =1.952*10^-28*(-1.733*10^26 - 7.516*10^26*j + 2.234*10^22*MCasub2 + 2.909*10^21*MCcsub2 + 8.525*10^19*MCfsub2 - 1.466*10^22*MCgsub2)

g p2/q2 =4.879*10^-29*(2.867*10^27 - 9.501*10^27*j + 5.31*10^22*MCasub2 - 2.89*10^23*MCcsub2 - 1.972*10^23*MCfsub2 + 2.565*10^23*MCgsub2)

h p3/q2 =4.879*10^-29*(-1.425*10^28 + 3.883*10^28*j - 2.527*10^23*MCasub2 + 1.429*10^24*MCcsub2 + 4.856*10^23*MCfsub2 - 7.844*10^23*MCgsub2)

i p4/q2 =9.758*10^-29*(-1.38*10^27 + 4.111*10^26*j - 5.296*10^22*MCasub2 + 7.255*10^22*MCcsub2 + 1.654*10^23*MCfsub2 - 1*10^23*MCgsub2)

k P1/q3 =8.542*10^-29*(-4.107*10^26 + 5.104*10^22*MCasub3 + 6.646*10^21*MCcsub3 + 1.948*10^20*MCfsub3 - 3.35*10^22*MCgsub3 - 1.717*10^27*o)

l p2/q3 =4.271*10^-29*(3.398*10^27 + 6.066*10^22*MCasub3 - 3.301*10^23*MCcsub3 - 2.253*10^23*MCfsub3 + 2.931*10^23*MCgsub3 - 1.085*10^28*o)

m p3/q3 =4.271*10^-29*(-1.689*10^28 - 2.886*10^23*MCasub3 + 1.633*10^24*MCcsub3 + 5.547*10^23*MCfsub3 - 8.961*10^23*MCgsub3 + 4.435*10^28*o)

n p4/q3 =8.542*10^-29*(-1.635*10^27 - 6.05*10^22*MCasub3 + 8.288*10^22*MCcsub3 + 1.89*10^23*MCfsub3 - 1.143*10^23*MCgsub3 + 4.696*10^26*o)
p P1/q4 =3.025*10^-29*(-9.755*10^26 + 1.441*10^23*MCasub4 + 1.877*10^22*MCcsub4 + 5.5*10^20*MCfsub4 - 9.461*10^22*MCgsub4 - 4.849*10^27*t)
q p2/q4 =7.563*10^-30*(1.614*10^28 + 3.426*10^23*MCasub4 - 1.864*10^24*MCcsub4 - 1.272*10^24*MCfsub4 + 1.655*10^24*MCgsub4 - 6.13*10^28*t)
r p3/q4 =7.563*10^-30*(-8.025*10^28 - 1.63*10^24*MCasub4 + 9.22*10^24*MCcsub4 + 3.133*10^24*MCfsub4 - 5.061*10^24*MCgsub4 + 2.505*10^29*t)
s p4/q4 =1.513*10^-29*(-7.769*10^27 - 3.417*10^23*MCasub4 + 4.681*10^23*MCcsub4 + 1.067*10^24*MCfsub4 - 6.454*10^23*MCgsub4 + 2.652*10^27*t)
u P1/q5 =2.492*10^-29*(-2.522*10^27 + 1.749*10^23*MCasub5 + 2.278*10^22*MCcsub5 + 6.676*10^20*MCfsub5 - 1.148*10^23*MCgsub5 - 5.886*10^27*y)
v p2/q5 =1.246*10^-29*(2.086*10^28 + 2.079*10^23*MCasub5 - 1.132*10^24*MCcsub5 - 7.722*10^23*MCfsub5 + 1.005*10^24*MCgsub5 - 3.72*10^28*y)
w p3/q5 =1.246*10^-29*(-1.037*10^29 - 9.894*10^23*MCasub5 + 5.596*10^24*MCcsub5 + 1.902*10^24*MCfsub5 - 3.072*10^24*MCgsub5 + 1.52*10^29*y)
x p4/q5 =2.492*10^-29*(-1.004*10^28 - 2.074*10^23*MCasub5 + 2.841*10^23*MCcsub5 + 6.477*10^23*MCfsub5 - 3.917*10^23*MCgsub5 + 1.61*10^27*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)

ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11163.4
P2	16242.88
P3	16850.15
P4	14174.27
P5	30184.79

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	315,377
Csub1	85,255
Fsub1	153,583
Gsub1	148,809
Asub2	305,455
Csub2	231,420
Fsub2	306,549
Gsub2	512,975

Asub3 47,875
Csub3 54,576
Fsub3 42,193
Gsub3 83,997
asub4 111,484
Csub4 57,752
fsub4 182,598
gsub4 182,337
asub5 92,695
Csub5 14,082
fsub5 77,381
gsub5 93,193

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)

Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 5. 1st Quarter, 1990.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =3.366*10^-29*(-2.777*10^26 - 4.991*10^27*e + 1.283*10^23*MCasub1 - 5.387*10^22*MCcsub1 - 1.301*10^22*MCfsub1 - 3.719*10^22*MCgsub1)

b p2/q1 =1.683*10^-28*(3.558*10^26 - 1.704*10^27*e + 6.434*10^21*MCasub1 - 4.381*10^22*MCcsub1 - 3.753*10^22*MCfsub1 + 4.393*10^22*MCgsub1)

c p3/q1 =8.414*10^-29*(-4.95*10^27 + 1.736*10^28*e - 9.743*10^22*MCasub1 + 6.326*10^23*MCcsub1 + 2.043*10^23*MCfsub1 - 3.085*10^23*MCgsub1)

d p4/q1 =5.048*10^-29*(-1.405*10^27 - 1.724*10^27*e - 7.489*10^22*MCasub1 + 7.979*10^22*MCcsub1 + 2.494*10^23*MCfsub1 - 1.321*10^23*MCgsub1)

f P1/q2 =2.88*10^-28*(-4.448*10^25 - 5.832*10^26*j + 1.499*10^22*MCasub2 - 6.295*10^21*MCcsub2 - 1.521*10^21*MCfsub2 - 4.345*10^21*MCgsub2)

g p2/q2 =2.88*10^-28*(2.849*10^26 - 9.955*10^26*j + 3.759*10^21*MCasub2 - 2.559*10^22*MCcsub2 - 2.193*10^22*MCfsub2 + 2.566*10^22*MCgsub2)

h p3/q2 =1.44*10^-28*(-3.964*10^27 + 1.014*10^28*j - 5.692*10^22*MCasub2 + 3.696*10^23*MCcsub2 + 1.194*10^23*MCfsub2 - 1.802*10^23*MCgsub2)

i p4/q2 =4.321*10^-28*(-2.25*10^26 - 2.015*10^26*j - 8.75*10^21*MCasub2 + 9.323*10^21*MCcsub2 + 2.915*10^22*MCfsub2 - 1.543*10^22*MCgsub2)

k P1/q3 =1.056*10^-29*(-1.381*10^27 + 4.086*10^23*MCasub3 - 1.716*10^23*MCcsub3 - 4.146*10^22*MCfsub3 - 1.185*10^23*MCgsub3 - 1.59*10^28*o)

l p2/q3 =1.056*10^-29*(8.845*10^27 + 1.025*10^23*MCasub3 - 6.978*10^23*MCcsub3 - 5.978*10^23*MCfsub3 + 6.997*10^23*MCgsub3 - 2.714*10^28*o)

m p3/q3 =5.282*10^-30*(-1.231*10^29 - 1.552*10^24*MCasub3 + 1.008*10^25*MCcsub3 + 3.254*10^24*MCfsub3 - 4.914*10^24*MCgsub3 + 2.765*10^29*o)

n p4/q3 =1.585*10^-29*(-6.984*10^27 - 2.386*10^23*MCasub3 + 2.542*10^23*MCcsub3 + 7.947*10^23*MCfsub3 - 4.207*10^23*MCgsub3 - 5.493*10^27*o)

p P1/q4 =3.071*10^-29*(-3.721*10^26 + 1.405*10^23*MCasub4 - 5.903*10^22*MCcsub4 - 1.426*10^22*MCfsub4 - 4.075*10^22*MCgsub4 - 5.469*10^27*t)

q p2/q4 =3.071*10^-29*(2.383*10^27 + 3.525*10^22*MCasub4 - 2.4*10^23*MCcsub4 - 2.056*10^23*MCfsub4 + 2.407*10^23*MCgsub4 - 9.336*10^27*t)

r p3/q4 =1.536*10^-29*(-3.316*10^28 - 5.338*10^23*MCasub4 + 3.466*10^24*MCcsub4 + 1.119*10^24*MCfsub4 - 1.69*10^24*MCgsub4 + 9.51*10^28*t)

s p4/q4 =4.607*10^-29*(-1.882*10^27 - 8.206*10^22*MCasub4 + 8.744*10^22*MCcsub4 + 2.733*10^23*MCfsub4 - 1.447*10^23*MCgsub4 - 1.889*10^27*t)

u P1/q5 =6.95*10^-30*(-3.283*10^27 + 6.211*10^23*MCasub5 - 2.609*10^23*MCcsub5 - 6.303*10^22*MCfsub5 - 1.801*10^23*MCgsub5 - 2.417*10^28*y)
v p2/q5 =6.95*10^-30*(2.103*10^28 + 1.558*10^23*MCasub5 - 1.061*10^24*MCcsub5 - 9.087*10^23*MCfsub5 + 1.064*10^24*MCgsub5 - 4.126*10^28*y)
w p3/q5 =3.475*10^-30*(-2.926*10^29 - 2.359*10^24*MCasub5 + 1.532*10^25*MCcsub5 + 4.947*10^24*MCfsub5 - 7.47*10^24*MCgsub5 + 4.203*10^29*y)
x p4/q5 =1.042*10^-29*(-1.661*10^28 - 3.627*10^23*MCasub5 + 3.864*10^23*MCcsub5 + 1.208*10^24*MCfsub5 - 6.396*10^23*MCgsub5 - 8.35*10^27*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)

ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11486.83
P2	15745.69
P3	17927.1
P4	14043.64
P5	28041.24

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	336,769
Csub1	85,031
Fsub1	169,238
Gsub1	180,062
Asub2	323,708
Csub2	245,399
Fsub2	355,644
Gsub2	636,437
Asub3	48,106
Csub3	51,453
Fsub3	39,112
Gsub3	77,682
asub4	108,388
Csub4	55,791
fsub4	210,264
gsub4	219,400
asub5	88,574
Csub5	14,366

fsub5 91,591
gsub5 118,393

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)

Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1=+P1_-MCasub1

XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 6. 2nd Quarter, 1990.

----------COEFFICIENTS OF DEMAND----------
a P1/q1 =1.664*10^-29*(-1.324*10^27 - 9.455*10^27*e + 2.231*10^23*MCasub1 + 2.384*10^22*MCcsub1 - 4.319*10^22*MCfsub1 - 9.459*10^22*MCgsub1)
b p2/q1 =5.546*10^-30*(5.139*10^27 - 1.782*10^28*e + 4.216*10^22*MCasub1 - 5.025*10^23*MCcsub1 - 7.431*10^23*MCfsub1 + 7.799*10^23*MCgsub1)
c p3/q1 =5.546*10^-30*(-6.326*10^28 + 1.624*10^29*e - 9.403*10^23*MCasub1 + 7.043*10^24*MCcsub1 + 2.201*10^24*MCfsub1 - 3.089*10^24*MCgsub1)
d p4/q1 =1.664*10^-29*(4.282*10^26 - 2.344*10^28*e - 1.155*10^23*MCasub1 - 3.702*10^23*MCcsub1 + 5.593*10^23*MCfsub1 - 1.088*10^23*MCgsub1)

f P1/q2 =2.233*10^-28*(-1.312*10^26 - 7.045*10^26*j + 1.663*10^22*MCasub2 + 1.777*10^21*MCcsub2 - 3.218*10^21*MCfsub2 - 7.048*10^21*MCgsub2)
g p2/q2 =7.442*10^-29*(5.089*10^26 - 1.328*10^27*j + 3.141*10^21*MCasub2 - 3.744*10^22*MCcsub2 - 5.537*10^22*MCfsub2 + 5.811*10^22*MCgsub2)
h p3/q2 =7.442*10^-29*(-6.265*10^27 + 1.21*10^28*j - 7.006*10^22*MCasub2 + 5.248*10^23*MCcsub2 + 1.64*10^23*MCfsub2 - 2.302*10^23*MCgsub2)
i p4/q2 =1.563*10^-27*(6.059*10^24 - 2.495*10^26*j - 1.23*10^21*MCasub2 - 3.941*10^21*MCcsub2 + 5.954*10^21*MCfsub2 - 1.158*10^21*MCgsub2)
k P1/q3 =5.875*10^-29*(-5.69*10^26 + 6.318*10^22*MCasub3 + 6.751*10^21*MCcsub3 - 1.223*10^22*MCfsub3 - 2.678*10^22*MCgsub3 - 2.677*10^27*o)
l p2/q3 =1.958*10^-29*(2.208*10^27 + 1.194*10^22*MCasub3 - 1.423*10^23*MCcsub3 - 2.104*10^23*MCfsub3 + 2.208*10^23*MCgsub3 - 5.047*10^27*o)
m p3/q3 =1.958*10^-29*(-2.718*10^28 - 2.663*10^23*MCasub3 + 1.994*10^24*MCcsub3 + 6.232*10^23*MCfsub3 - 8.746*10^23*MCgsub3 + 4.598*10^28*o)
n p4/q3 =5.875*10^-29*(1.84*10^26 - 3.272*10^22*MCasub3 - 1.048*10^23*MCcsub3 + 1.584*10^23*MCfsub3 - 3.081*10^22*MCgsub3 - 6.637*10^27*o)
p P1/q4 =4.89*10^-30*(-5.424*10^27 + 7.59*10^23*MCasub4 + 8.111*10^22*MCcsub4 - 1.469*10^23*MCfsub4 - 3.218*10^23*MCgsub4 - 3.217*10^28*t)
q p2/q4 =1.63*10^-30*(2.104*10^28 + 1.434*10^23*MCasub4 - 1.709*10^24*MCcsub4 - 2.528*10^24*MCfsub4 + 2.653*10^24*MCgsub4 - 6.064*10^28*t)
r p3/q4 =1.63*10^-30*(-2.591*10^29 - 3.199*10^24*MCasub4 + 2.396*10^25*MCcsub4 + 7.487*10^24*MCfsub4 - 1.051*10^25*MCgsub4 + 5.524*10^29*t)
s p4/q4 =4.89*10^-30*(1.754*10^27 - 3.931*10^23*MCasub4 - 1.26*10^24*MCcsub4 + 1.903*10^24*MCfsub4 - 3.702*10^23*MCgsub4 - 7.974*10^28*t)
u P1/q5 =3.654*10^-29*(-1.364*10^27 + 1.016*10^23*MCasub5 + 1.086*10^22*MCcsub5 - 1.966*10^22*MCfsub5 - 4.306*10^22*MCgsub5 - 4.305*10^27*y)
v p2/q5 =1.34*10^-28*(4.812*10^26 + 1.745*10^21*MCasub5 - 2.08*10^22*MCcsub5 - 3.076*10^22*MCfsub5 + 3.228*10^22*MCgsub5 - 7.378*10^26*y)
w p3/q5 =1.218*10^-29*(-6.516*10^28 - 4.281*10^23*MCasub5 + 3.207*10^24*MCcsub5 + 1.002*10^24*MCfsub5 - 1.406*10^24*MCgsub5 + 7.393*10^28*y)
x p4/q5 =3.654*10^-29*(4.411*10^26 - 5.26*10^22*MCasub5 - 1.686*10^23*MCcsub5 + 2.546*10^23*MCfsub5 - 4.954*10^22*MCgsub5 - 1.067*10^28*y)
y p5/q5 =+y
e p5/q1 =+e

j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)
ww =IF(w>=0,-0.00000001,w)
xx =IF(x>=0,-0.00000001,x)
yy =IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------
P1 12131.22

P2	16123.48
P3	18403.81
P4	14602.52
P5	27444.65

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	376,397
Csub1	82,658
Fsub1	170,484
Gsub1	195,366
Asub2	364,097
Csub2	254,159
Fsub2	388,505
Gsub2	745,505
Asub3	43,228
Csub3	51,088
Fsub3	59,782
Gsub3	87,547
asub4	133,626
Csub4	51,941
fsub4	214,292
gsub4	230,441
asub5	108,382
Csub5	12,376
fsub5	94,954
gsub5	115,452

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1	**=+Gsub1+Fsub1+Csub1+Asub1**
tseg2	**=+Gsub2+Fsub2+Csub2+Asub2**
tseg3	**=+Gsub3+Fsub3+Csub3+Asub3**
tseg4	**=+gsub4+fsub4+Csub4+asub4**
tseg5	**=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471

MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3

XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 7. 3rd Quarter, 1990.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =3.113*10^-22*(-9.191*10^19 - 5.051*10^20*e + 1.329*10^16*MCasub1 + 1.928*10^15*MCcsub1 + 1.884*10^15*MCfsub1 - 9.279*10^15*MCgsub1)

b p2/q1 =6.225*10^-22*(2.096*10^19 - 1.721*10^20*e + 7.05*10^14*MCasub1 - 1.276*10^15*MCcsub1 - 7.784*10^15*MCfsub1 + 6.571*10^15*MCgsub1)

c p3/q1 =1.038*10^-22*(-2.663*10^21 + 7.12*10^21*e - 6.027*10^16*MCasub1 + 2.908*10^17*MCcsub1 + 1.21*10^17*MCfsub1 - 1.249*10^17*MCgsub1)

d p4/q1 =4.15*10^-22*(9.211*10^19 - 7.929*10^20*e - 5.841*10^15*MCasub1 - 2.306*10^16*MCcsub1 + 2.134*10^16*MCfsub1 - 2.797*10^14*MCgsub1)

f P1/q2 =4.795*10^-28*(-8.159*10^25 - 3.279*10^26*j + 8.628*10^21*MCasub2 + 1.251*10^21*MCcsub2 + 1.223*10^21*MCfsub2 - 6.023*10^21*MCgsub2)

g p2/q2 =4.795*10^-27*(3.721*10^24 - 2.235*10^25*j + 9.153*10^19*MCasub2 - 1.657*10^20*MCcsub2 - 1.011*10^21*MCfsub2 + 8.531*10^20*MCgsub2)

h p3/q2 =1.598*10^-28*(-2.364*10^27 + 4.622*10^27*j - 3.912*10^22*MCasub2 + 1.888*10^23*MCcsub2 + 7.855*10^22*MCfsub2 - 8.105*10^22*MCgsub2)

i p4/q2 =1.598*10^-28*(3.271*10^26 - 2.059*10^27*j - 1.517*10^22*MCasub2 - 5.989*10^22*MCcsub2 + 5.542*10^22*MCfsub2 - 7.262*10^20*MCgsub2)

k P1/q3 =4.835*10^-29*(-9.131*10^26 + 8.556*10^22*MCasub3 + 1.241*10^22*MCcsub3 + 1.213*10^22*MCfsub3 - 5.973*10^22*MCgsub3 - 3.251*10^27*o)

```
l p2/q3     =4.835*10^-28*(4.164*10^25 + 9.077*10^20*MCasub3 - 1.643*10^21*MCcsub3 - 1.002*10^22*MCfsub3 +
            8.46*10^21*MCgsub3 - 2.216*10^26*o)
m p3/q3     =1.612*10^-29*(-2.646*10^28 - 3.88*10^23*MCasub3 + 1.872*10^24*MCcsub3 + 7.79*10^23*MCfsub3 -
            8.037*10^23*MCgsub3 + 4.583*10^28*o)
n p4/q3     =1.612*10^-29*(3.66*10^27 - 1.504*10^23*MCasub3 - 5.939*10^23*MCcsub3 + 5.496*10^23*MCfsub3 -
            7.201*10^21*MCgsub3 - 2.042*10^28*o)
p P1/q4     =3.08*10^-29*(-1.166*10^27 + 1.343*10^23*MCasub4 + 1.948*10^22*MCcsub4 + 1.904*10^22*MCfsub4 -
            9.377*10^22*MCgsub4 - 5.104*10^27*t)
q p2/q4     =3.08*10^-28*(5.317*10^25 + 1.425*10^21*MCasub4 - 2.58*10^21*MCcsub4 - 1.573*10^22*MCfsub4 +
            1.328*10^22*MCgsub4 - 3.479*10^26*t)
r p3/q4     =1.027*10^-29*(-3.378*10^28 - 6.091*10^23*MCasub4 + 2.939*10^24*MCcsub4 + 1.223*10^24*MCfsub4 -
            1.262*10^24*MCgsub4 + 7.195*10^28*t)
s p4/q4     =5.133*10^-30*(9.348*10^27 - 4.722*10^23*MCasub4 - 1.865*10^24*MCcsub4 + 1.726*10^24*MCfsub4 -
            2.261*10^22*MCgsub4 - 6.41*10^28*t)
u P1/q5     =1.976*10^-29*(-3.12*10^27 + 2.094*10^23*MCasub5 + 3.036*10^22*MCcsub5 + 2.967*10^22*MCfsub5 -
            1.462*10^23*MCgsub5 - 7.956*10^27*y)
v p2/q5     =1.976*10^-28*(1.423*10^26 + 2.221*10^21*MCasub5 - 4.021*10^21*MCcsub5 - 2.452*10^22*MCfsub5 +
            2.07*10^22*MCgsub5 - 5.423*10^26*y)
w p3/q5     =6.587*10^-30*(-9.041*10^28 - 9.494*10^23*MCasub5 + 4.581*10^24*MCcsub5 + 1.906*10^24*MCfsub5 -
            1.967*10^24*MCgsub5 + 1.122*10^29*y)
x p4/q5     =2.635*10^-29*(3.127*10^27 - 9.2*10^22*MCasub5 - 3.633*10^23*MCcsub5 + 3.362*10^23*MCfsub5 -
            4.405*10^21*MCgsub5 - 1.249*10^28*y)
y p5/q5     =+y
e p5/q1     =+e
j p5/q2     =+jj
o p5/q3     =+o
t p5/q4     =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa          =IF(a>=0,-0.00000001,a)
bb          =IF(b>=0,-0.00000001,b)
cc          =IF(c_>=0,-0.00000001,c_)
dd          =IF(d>=0,-0.00000001,d)
```

ee	=IF(e>=0,-0.00000001,e)
ff	=IF(f>=0,-0.00000001,f)
gg	=IF(g>=0,-0.00000001,g)
hh	=IF(h>=0,-0.00000001,h)
ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11746.86
P2	16065.32
P3	18128.1
P4	14746.11
P5	25316.48

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	338,148
Csub1	77,491
Fsub1	178,772
Gsub1	190,532

Asub2 376,375
Csub2 215,406
Fsub2 344,341
Gsub2 653,796
Asub3 42,358
Csub3 50,377
Fsub3 67,142
Gsub3 84,772
asub4 123,469
Csub4 41,299
fsub4 194,261
gsub4 224,881
asub5 102,833
Csub5 11,642
fsub5 79,332
gsub5 111,395

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)

Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593

MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 8. 4th Quarter, 1990.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =8.785*10^-30*(-1.117*10^27 - 2.744*10^28*e + 5.97*10^23*MCasub1 - 2.157*10^23*MCcsub1 - 2.118*10^22*MCfsub1 - 2.642*10^23*MCgsub1)

b p2/q1 =1.757*10^-29*(-3.508*10^26 - 4.698*10^27*e - 2.832*10^22*MCasub1 + 1.172*10^23*MCcsub1 - 3.222*10^23*MCfsub1 + 2.634*10^23*MCgsub1)

c p3/q1 =1.757*10^-29*(-1.578*10^28 + 4.064*10^28*e - 2.468*10^23*MCasub1 + 1.566*10^24*MCcsub1 + 1.373*10^24*MCfsub1 - 1.338*10^24*MCgsub1)

d p4/q1 =1.757*10^-29*(3.691*10^27 - 2.317*10^28*e - 1.288*10^23*MCasub1 - 7.8*10^23*MCcsub1 + 3.857*10^23*MCfsub1 + 2.064*10^23*MCgsub1)

f P1/q2 =1.093*10^-26*(-1.212*10^24 - 2.207*10^25*j + 4.8*10^20*MCasub2 - 1.734*10^20*MCcsub2 - 1.703*10^19*MCfsub2 - 2.125*10^20*MCgsub2)

g p2/q2 =3.078*10^-28*(-2.702*10^25 - 2.682*10^26*j - 1.617*10^21*MCasub2 + 6.692*10^21*MCcsub2 - 1.84*10^22*MCfsub2 + 1.504*10^22*MCgsub2)

h p3/q2 =3.078*10^-28*(-1.215*10^27 + 2.32*10^27*j - 1.409*10^22*MCasub2 + 8.94*10^22*MCcsub2 + 7.838*10^22*MCfsub2 - 7.641*10^22*MCgsub2)

i p4/q2 =3.078*10^-28*(2.843*10^26 - 1.323*10^27*j - 7.351*10^21*MCasub2 - 4.453*10^22*MCcsub2 + 2.202*10^22*MCfsub2 + 1.178*10^22*MCgsub2)

k P1/q3 =6.059*10^-30*(-2.661*10^27 + 8.655*10^23*MCasub3 - 3.127*10^23*MCcsub3 - 3.071*10^22*MCfsub3 - 3.831*10^23*MCgsub3 - 3.979*10^28*o)

l p2/q3 =1.212*10^-29*(-8.358*10^26 - 4.106*10^22*MCasub3 + 1.7*10^23*MCcsub3 - 4.672*10^23*MCfsub3 + 3.82*10^23*MCgsub3 - 6.811*10^27*o)

m p3/q3 =2.424*10^-29*(-1.879*10^28 - 1.789*10^23*MCasub3 + 1.135*10^24*MCcsub3 + 9.952*10^23*MCfsub3 - 9.702*10^23*MCgsub3 + 2.946*10^28*o)

n p4/q3 =1.212*10^-29*(8.792*10^27 - 1.867*10^23*MCasub3 - 1.131*10^24*MCcsub3 + 5.593*10^23*MCfsub3 + 2.992*10^23*MCgsub3 - 3.359*10^28*o)

p P1/q4 =1.417*10^-27*(-8.946*10^24 + 3.702*10^21*MCasub4 - 1.338*10^21*MCcsub4 - 1.313*10^20*MCfsub4 - 1.639*10^21*MCgsub4 - 1.702*10^26*t)

q p2/q4 =3.991*10^-29*(-1.995*10^26 - 1.247*10^22*MCasub4 + 5.161*10^22*MCcsub4 - 1.419*10^23*MCfsub4 + 1.16*10^23*MCgsub4 - 2.068*10^27*t)

r p3/q4 =3.991*10^-29*(-8.97*10^27 - 1.087*10^23*MCasub4 + 6.895*10^23*MCcsub4 + 6.045*10^23*MCfsub4 - 5.893*10^23*MCgsub4 + 1.789*10^28*t)
s p4/q4 =3.991*10^-29*(2.099*10^27 - 5.669*10^22*MCasub4 - 3.434*10^23*MCcsub4 + 1.698*10^23*MCfsub4 + 9.086*10^22*MCgsub4 - 1.02*10^28*t)
u P1/q5 =9.217*10^-31*(-2.185*10^28 + 5.69*10^24*MCasub5 - 2.056*10^24*MCcsub5 - 2.019*10^23*MCfsub5 - 2.519*10^24*MCgsub5 - 2.616*10^29*y)
v p2/q5 =1.843*10^-30*(-6.864*10^27 - 2.7*10^23*MCasub5 + 1.117*10^24*MCcsub5 - 3.072*10^24*MCfsub5 + 2.511*10^24*MCgsub5 - 4.478*10^28*y)
w p3/q5 =1.843*10^-30*(-3.087*10^29 - 2.352*10^24*MCasub5 + 1.493*10^25*MCcsub5 + 1.309*10^25*MCfsub5 - 1.276*10^25*MCgsub5 + 3.874*10^29*y)
x p4/q5 =1.843*10^-30*(7.221*10^28 - 1.227*10^24*MCasub5 - 7.435*10^24*MCcsub5 + 3.677*10^24*MCfsub5 + 1.967*10^24*MCgsub5 - 2.209*10^29*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)

oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11654.85
P2	15723.43
P3	19151.13
P4	15051.37
P5	23923.06

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	304,592
Csub1	73,562
Fsub1	151,362
Gsub1	185,158
Asub2	317,133
Csub2	226,938
Fsub2	293,130
Gsub2	507,707
Asub3	48,100
Csub3	43,229
Fsub3	67,090
Gsub3	68,000
asub4	102,108
Csub4	37,752

fsub4 157,810
gsub4 187,211
asub5 106,831
Csub5 20,969
fsub5 77,027
gsub5 114,206

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)

Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**

y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 9. 1st Quarter, 1991.

----------COEFFICIENTS OF DEMAND----------
a P1/q1 =8.489*10^-29*(-2.6*10^25 - 1.567*10^27*e + 6.443*10^22*MCasub1 - 3.651*10^22*MCcsub1 - 3.493*10^21*MCfsub1 - 2.221*10^22*MCgsub1)

b p2/q1 =6.961*10^-27*(-2.68*10^24 - 8.561*10^24*e + 1.072*10^20*MCasub1 + 4.186*10^20*MCcsub1 - 7.023*10^20*MCfsub1 + 4.048*10^20*MCgsub1)

c p3/q1 =1.698*10^-28*(-1.931*10^27 + 3.847*10^27*e - 3.626*10^22*MCasub1 + 2.037*10^23*MCcsub1 + 1.321*10^23*MCfsub1 - 1.35*10^23*MCgsub1)

d p4/q1 =8.489*10^-29*(1.195*10^27 - 6.084*10^27*e - 6.255*10^22*MCasub1 - 2.05*10^23*MCcsub1 + 7.582*10^22*MCfsub1 + 8.989*10^22*MCgsub1)

f P1/q2 =2.284*10^-28*(-1.364*10^25 - 5.825*10^26*j + 2.394*10^22*MCasub2 - 1.357*10^22*MCcsub2 - 1.298*10^21*MCfsub2 - 8.253*10^21*MCgsub2)

g p2/q2 =9.366*10^-27*(-2.812*10^24 - 6.363*10^24*j + 7.97*10^19*MCasub2 + 3.111*10^20*MCcsub2 - 5.22*10^20*MCfsub2 + 3.008*10^20*MCgsub2)

h p3/q2 =1.828*10^-27*(-2.533*10^26 + 3.574*10^26*j - 3.369*10^21*MCasub2 + 1.892*10^22*MCcsub2 + 1.227*10^22*MCfsub2 - 1.254*10^22*MCgsub2)

i p4/q2 =2.284*10^-28*(6.27*10^26 - 2.261*10^27*j - 2.325*10^22*MCasub2 - 7.617*10^22*MCcsub2 + 2.818*10^22*MCfsub2 + 3.34*10^22*MCgsub2)

k P1/q3 =2.214*10^-29*(-1.715*10^26 + 2.47*10^23*MCasub3 - 1.4*10^23*MCcsub3 - 1.339*10^22*MCfsub3 - 8.514*10^22*MCgsub3 - 6.009*10^27*o)

l p2/q3 =1.816*10^-27*(-1.768*10^25 + 4.111*10^20*MCasub3 + 1.605*10^21*MCcsub3 - 2.692*10^21*MCfsub3 + 1.552*10^21*MCgsub3 - 3.282*10^25*o)

m p3/q3 =4.429*10^-29*(-1.274*10^28 - 1.39*10^23*MCasub3 + 7.808*10^23*MCcsub3 + 5.063*10^23*MCfsub3 - 5.174*10^23*MCgsub3 + 1.475*10^28*o)

n p4/q3 =2.214*10^-29*(7.886*10^27 - 2.398*10^23*MCasub3 - 7.858*10^23*MCcsub3 + 2.907*10^23*MCfsub3 + 3.446*10^23*MCgsub3 - 2.332*10^28*o)

p P1/q4 =3.348*10^-29*(-7.98*10^25 + 1.634*10^23*MCasub4 - 9.259*10^22*MCcsub4 - 8.859*10^21*MCfsub4 - 5.632*10^22*MCgsub4 - 3.975*10^27*t)

q p2/q4 =2.745*10^-27*(-8.226*10^24 + 2.719*10^20*MCasub4 + 1.061*10^21*MCcsub4 - 1.781*10^21*MCfsub4 + 1.026*10^21*MCgsub4 - 2.171*10^25*t)

r p3/q4 =6.695*10^-29*(-5.928*10^27 - 9.196*10^22*MCasub4 + 5.165*10^23*MCcsub4 + 3.349*10^23*MCfsub4 - 3.422*10^23*MCgsub4 + 9.756*10^27*t)

s p4/q4 =3.348*10^-29*(3.668*10^27 - 1.586*10^23*MCasub4 - 5.198*10^23*MCcsub4 + 1.923*10^23*MCfsub4 + 2.279*10^23*MCgsub4 - 1.543*10^28*t)

u P1/q5 =1.431*10^-29*(-3.441*10^26 + 3.822*10^23*MCasub5 - 2.166*10^23*MCcsub5 - 2.072*10^22*MCfsub5 - 1.317*10^23*MCgsub5 - 9.299*10^27*y)

v p2/q5 =4.342*10^-26*(-9.586*10^23 + 1.719*10^19*MCasub5 + 6.711*10^19*MCcsub5 - 1.126*10^20*MCfsub5 + 6.49*10^19*MCgsub5 - 1.373*10^24*y)

w p3/q5 =2.862*10^-29*(-2.556*10^28 - 2.151*10^23*MCasub5 + 1.208*10^24*MCcsub5 + 7.835*10^23*MCfsub5 - 8.006*10^23*MCgsub5 + 2.282*10^28*y)
x p4/q5 =1.431*10^-29*(1.582*10^28 - 3.711*10^23*MCasub5 - 1.216*10^24*MCcsub5 + 4.498*10^23*MCfsub5 + 5.332*10^23*MCgsub5 - 3.609*10^28*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)

ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11738.39
P2	16572.04
P3	20204.1
P4	14208.6
P5	26187.97

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	278,030
Csub1	50,556
Fsub1	168,588
Gsub1	166,562
Asub2	304,095
Csub2	214,939
Fsub2	251,955
Gsub2	489,213
Asub3	44,302
Csub3	35,836
Fsub3	62,571
Gsub3	59,766
asub4	89,438
Csub4	40,736
fsub4	136,512
gsub4	171,028
asub5	72,376
Csub5	17,169
fsub5	67,085
gsub5	100,614

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------

MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2

XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 10. 2nd Quarter, 1991.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =6.239*10^-28*(-1.643*10^25 - 2.928*10^26*e + 6.992*10^21*MCasub1 - 2.575*10^21*MCcsub1 + 2.72*10^20*MCfsub1 - 3.234*10^21*MCgsub1)

b p2/q1 =1.609*10^-27*(-6.057*10^24 - 4.049*10^25*e - 1.15*10^20*MCasub1 + 1.354*10^21*MCcsub1 - 2.458*10^21*MCfsub1 + 1.755*10^21*MCgsub1)

c p3/q1 =3.612*10^-28*(-6.672*10^26 + 1.611*10^27*e - 7.27*10^21*MCasub1 + 7.475*10^22*MCcsub1 + 2.827*10^22*MCfsub1 - 3.67*10^22*MCgsub1)

d p4/q1 =3.284*10^-29*(2.039*10^27 - 1.212*10^28*e - 8.538*10^22*MCasub1 - 4.334*10^23*MCcsub1 + 2.495*10^23*MCfsub1 + 8.882*10^22*MCgsub1)

f P1/q2 =1.11*10^-28*(-1.289*10^26 - 1.646*10^27*j + 3.932*10^22*MCasub2 - 1.448*10^22*MCcsub2 + 1.529*10^21*MCfsub2 - 1.819*10^22*MCgsub2)

g p2/q2 =5.437*10^-27*(-2.501*10^24 - 1.198*10^25*j - 3.403*10^19*MCasub2 + 4.006*10^20*MCcsub2 - 7.273*10^20*MCfsub2 + 5.195*10^20*MCgsub2)

h p3/q2 =4.069*10^-28*(-8.264*10^26 + 1.43*10^27*j - 6.454*10^21*MCasub2 + 6.637*10^22*MCcsub2 + 2.51*10^22*MCfsub2 - 3.258*10^22*MCgsub2)
i p4/q2 =1.11*10^-28*(8.417*10^26 - 3.588*10^27*j - 2.527*10^22*MCasub2 - 1.283*10^23*MCcsub2 + 7.384*10^22*MCfsub2 + 2.629*10^22*MCgsub2)
k P1/q3 =1.35*10^-29*(-1.234*10^27 + 3.232*10^23*MCasub3 - 1.191*10^23*MCcsub3 + 1.257*10^22*MCfsub3 - 1.495*10^23*MCgsub3 - 1.353*10^28*o)
l p2/q3 =6.614*10^-28*(-2.394*10^25 - 2.798*10^20*MCasub3 + 3.293*10^21*MCcsub3 - 5.979*10^21*MCfsub3 + 4.27*10^21*MCgsub3 - 9.85*10^25*o)
m p3/q3 =7.424*10^-29*(-5.274*10^27 - 3.537*10^22*MCasub3 + 3.637*10^23*MCcsub3 + 1.376*10^23*MCfsub3 - 1.786*10^23*MCgsub3 + 7.84*10^27*o)
n p4/q3 =1.35*10^-29*(8.058*10^27 - 2.077*10^23*MCasub3 - 1.054*10^24*MCcsub3 + 6.07*10^23*MCfsub3 + 2.161*10^23*MCgsub3 - 2.95*10^28*o)
p P1/q4 =2.84*10^-30*(-4.333*10^27 + 1.536*10^24*MCasub4 - 5.658*10^23*MCcsub4 + 5.976*10^22*MCfsub4 - 7.105*10^23*MCgsub4 - 6.432*10^28*t)
q p2/q4 =1.392*10^-28*(-8.406*10^25 - 1.33*10^21*MCasub4 + 1.565*10^22*MCcsub4 - 2.842*10^22*MCfsub4 + 2.03*10^22*MCgsub4 - 4.681*10^26*t)
r p3/q4 =3.124*10^-29*(-9.259*10^27 - 8.406*10^22*MCasub4 + 8.643*10^23*MCcsub4 + 3.269*10^23*MCfsub4 - 4.243*10^23*MCgsub4 + 1.863*10^28*t)
s p4/q4 =2.84*10^-30*(2.829*10^28 - 9.873*10^23*MCasub4 - 5.011*10^24*MCcsub4 + 2.885*10^24*MCfsub4 + 1.027*10^24*MCgsub4 - 1.402*10^29*t)
u P1/q5 =2.715*10^-30*(-9.503*10^27 + 1.607*10^24*MCasub5 - 5.919*10^23*MCcsub5 + 6.251*10^22*MCfsub5 - 7.433*10^23*MCgsub5 - 6.729*10^28*y)
v p2/q5 =2.661*10^-28*(-9.218*10^25 - 6.955*10^20*MCasub5 + 8.186*10^21*MCcsub5 - 1.486*10^22*MCfsub5 + 1.062*10^22*MCgsub5 - 2.449*10^26*y)
w p3/q5 =1.493*10^-29*(-4.061*10^28 - 1.759*10^23*MCasub5 + 1.808*10^24*MCcsub5 + 6.84*10^23*MCfsub5 - 8.878*10^23*MCgsub5 + 3.898*10^28*y)
x p4/q5 =2.715*10^-30*(6.205*10^28 - 1.033*10^24*MCasub5 - 5.242*10^24*MCcsub5 + 3.018*10^24*MCfsub5 + 1.074*10^24*MCgsub5 - 1.466*10^29*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa	=IF(a>=0,-0.00000001,a)
bb	=IF(b>=0,-0.00000001,b)
cc	=IF(c_>=0,-0.00000001,c_)
dd	=IF(d>=0,-0.00000001,d)
ee	=IF(e>=0,-0.00000001,e)
ff	=IF(f>=0,-0.00000001,f)
gg	=IF(g>=0,-0.00000001,g)
hh	=IF(h>=0,-0.00000001,h)
ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11296.56
P2	15760.24
P3	18353.46
P4	13559.16
P5	28426.46

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	340,952
Csub1	69,068
Fsub1	165,279
Gsub1	200,491
Asub2	356,553
Csub2	225,622
Fsub2	294,650
Gsub2	615,980
Asub3	47,383
Csub3	48,031
Fsub3	74,563
Gsub3	70,465
asub4	105,964
Csub4	47,594
fsub4	167,893
gsub4	205,314
asub5	100,120
Csub5	18,308
fsub5	72,831
gsub5	117,480

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1	**=+Gsub1+Fsub1+Csub1+Asub1**
tseg2	**=+Gsub2+Fsub2+Csub2+Asub2**
tseg3	**=+Gsub3+Fsub3+Csub3+Asub3**
tseg4	**=+gsub4+fsub4+Csub4+asub4**
tseg5	**=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------

Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)

Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447

MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4

XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 11. 3rd Quarter, 1991.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =1.223*10^-22*(-4.926*10^19 - 1.434*10^21*e + 3.392*10^16*MCasub1 - 1.326*10^16*MCcsub1 + 2.514*10^14*MCfsub1 - 1.671*10^16*MCgsub1)

b p2/q1 =2.038*10^-23*(3.391*10^19 - 1.171*10^22*e + 6.804*10^15*MCasub1 + 2.007*10^16*MCcsub1 - 2.237*10^17*MCfsub1 + 1.939*10^17*MCgsub1)

c p3/q1 =1.834*10^-22*(-1.525*10^21 + 5.958*10^21*e - 2.381*10^16*MCasub1 + 1.654*10^17*MCcsub1 + 6.587*10^16*MCfsub1 - 7.738*10^16*MCgsub1)

d p4/q1 =2.038*10^-23*(2.212*10^21 - 1.033*10^22*e - 1.308*10^17*MCasub1 - 4.857*10^17*MCcsub1 + 3.415*10^17*MCfsub1 + 8.624*10^16*MCgsub1)

f P1/q2 =1.875*10^-28*(-4.556*10^25 - 9.347*10^26*j + 2.211*10^22*MCasub2 - 8.643*10^21*MCcsub2 + 1.639*10^20*MCfsub2 - 1.09*10^22*MCgsub2)

g p2/q2 =3.125*10^-29*(3.137*10^25 - 7.637*10^27*j + 4.436*10^21*MCasub2 + 1.308*10^22*MCcsub2 - 1.459*10^23*MCfsub2 + 1.264*10^23*MCgsub2)

h p3/q2 =2.813*10^-28*(-1.41*10^27 + 3.885*10^27*j - 1.552*10^22*MCasub2 + 1.078*10^23*MCcsub2 + 4.295*10^22*MCfsub2 - 5.045*10^22*MCgsub2)

i p4/q2 =3.125*10^-29*(2.046*10^27 - 6.735*10^27*j - 8.525*10^22*MCasub2 - 3.167*10^23*MCcsub2 + 2.227*10^23*MCfsub2 + 5.623*10^22*MCgsub2)

k P1/q3 =1.195*10^-28*(-8.867*10^25 + 3.471*10^22*MCasub3 - 1.357*10^22*MCcsub3 + 2.573*10^20*MCfsub3 - 1.71*10^22*MCgsub3 - 1.467*10^27*o)

l p2/q3 =1.991*10^-29*(6.104*10^25 + 6.964*10^21*MCasub3 + 2.054*10^22*MCcsub3 - 2.289*10^23*MCfsub3 + 1.985*10^23*MCgsub3 - 1.199*10^28*o)

m p3/q3 =1.792*10^-28*(-2.745*10^27 - 2.436*10^22*MCasub3 + 1.693*10^23*MCcsub3 + 6.742*10^22*MCfsub3 - 7.919*10^22*MCgsub3 + 6.098*10^27*o)

n p4/q3 =1.991*10^-29*(3.982*10^27 - 1.338*10^23*MCasub3 - 4.971*10^23*MCcsub3 + 3.495*10^23*MCfsub3 + 8.826*10^22*MCgsub3 - 1.057*10^28*o)
p P1/q4 =2.182*10^-28*(-3.622*10^25 + 1.9*10^22*MCasub4 - 7.427*10^21*MCcsub4 + 1.409*10^20*MCfsub4 - 9.363*10^21*MCgsub4 - 8.032*10^26*t)
q p2/q4 =3.637*10^-29*(2.493*10^25 + 3.812*10^21*MCasub4 + 1.124*10^22*MCcsub4 - 1.253*10^23*MCfsub4 + 1.087*10^23*MCgsub4 - 6.563*10^27*t)
r p3/q4 =3.273*10^-28*(-1.121*10^27 - 1.334*10^22*MCasub4 + 9.266*10^22*MCcsub4 + 3.691*10^22*MCfsub4 - 4.335*10^22*MCgsub4 + 3.339*10^27*t)
s p4/q4 =3.637*10^-29*(1.626*10^27 - 7.326*10^22*MCasub4 - 2.721*10^23*MCcsub4 + 1.913*10^23*MCfsub4 + 4.832*10^22*MCgsub4 - 5.787*10^27*t)
u P1/q5 =3.041*10^-30*(-3.946*10^27 + 1.364*10^24*MCasub5 - 5.329*10^23*MCcsub5 + 1.011*10^22*MCfsub5 - 6.718*10^23*MCgsub5 - 5.763*10^28*y)
v p2/q5 =5.068*10^-31*(2.717*10^27 + 2.736*10^23*MCasub5 + 8.068*10^23*MCcsub5 - 8.994*10^24*MCfsub5 + 7.797*10^24*MCgsub5 - 4.709*10^29*y)
w p3/q5 =4.561*10^-30*(-1.222*10^29 - 9.571*10^23*MCasub5 + 6.649*10^24*MCcsub5 + 2.648*10^24*MCfsub5 - 3.111*10^24*MCgsub5 + 2.396*10^29*y)
x p4/q5 =5.068*10^-31*(1.772*10^29 - 5.257*10^24*MCasub5 - 1.953*10^25*MCcsub5 + 1.373*10^25*MCfsub5 + 3.467*10^24*MCgsub5 - 4.153*10^29*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)

ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11724.9
P2	16630.84
P3	20620.68
P4	15383.83
P5	23361.78

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	364,548
Csub1	69,817
Fsub1	188,904
Gsub1	197,882
Asub2	329,887
Csub2	188,374
Fsub2	261,875
Gsub2	524,061

Asub3 54,273
Csub3 47,448
Fsub3 69,684
Gsub3 73,565
asub4 120,260
Csub4 40,712
fsub4 193,441
gsub4 214,698
asub5 108,634
Csub5 13,918
fsub5 60,180
gsub5 124,564

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)

Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------

e	-1.90507726554869E-08
j	-9.69317285304045E-08
o	-1.44373094757685E-07
t	**-3.98188558696166E-08**
y	-0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------

XMCasub1	=+P1_-MCasub1
XMCcsub1	=+P1_-MCcsub1
XMCfsub1	=+P1_-MCfsub1
XMCgsub1	=+P1_-MCgsub1
XMCasub2	=+P2_-MCasub2
XMCcsub2	=+P2_-MCcsub2
XMCfsub2	=+P2_-MCfsub2
XMCgsub2	=+P2_-MCgsub2
XMCasub3	=+P3_-MCasub3
XMCcsub3	=+P3_-MCcsub3
XMCfsub3	=+P3_-MCfsub3
XMCgsub3	=+P3_-MCgsub3
XMCasub4	=+P4_-MCasub4
XMCcsub4	=+P4_-MCcsub4
XMCfsub4	=+P4_-MCfsub4
XMCgsub4	=+P4_-MCgsub4
XMCasub5	=+P5_-MCasub5
XMCcsub5	=+P5_-MCcsub5
XMCfsub5	=+P5_-MCfsub5
XMCgsub5	=+P5_-MCgsub5

Quarter 12. 4th Quarter, 1991.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =3.15*10^-29*(-1.547*10^26 - 9.541*10^27*e + 1.74*10^23*MCasub1 - 9.615*10^22*MCcsub1 - 2.646*10^21*MCfsub1 - 6.381*10^22*MCgsub1)

b p2/q1 =3.15*10^-29*(-6.558*10^26 - 5.033*10^27*e - 1.385*10^21*MCasub1 + 7.634*10^22*MCcsub1 - 1.229*10^23*MCfsub1 + 9.633*10^22*MCgsub1)

c p3/q1 =3.15*10^-29*(-8.307*10^27 + 3.014*10^28*e - 1.071*10^23*MCasub1 + 8.514*10^23*MCcsub1 + 3.641*10^23*MCfsub1 - 4.953*10^23*MCgsub1)

d p4/q1 =1.575*10^-28*(4.236*10^26 - 1.415*10^27*e - 2.326*10^22*MCasub1 - 7.732*10^22*MCcsub1 + 4.291*10^22*MCfsub1 + 2.641*10^22*MCgsub1)

f P1/q2 =1.98*10^-28*(-3.037*10^25 - 1.517*10^27*j + 2.768*10^22*MCasub2 - 1.529*10^22*MCcsub2 - 4.208*10^20*MCfsub2 - 1.015*10^22*MCgsub2)

g p2/q2 =1.98*10^-28*(-1.288*10^26 - 8.004*10^26*j - 2.202*10^20*MCasub2 + 1.214*10^22*MCcsub2 - 1.954*10^22*MCfsub2 + 1.532*10^22*MCgsub2)

h p3/q2 =1.98*10^-28*(-1.631*10^27 + 4.794*10^27*j - 1.703*10^22*MCasub2 + 1.354*10^23*MCcsub2 + 5.79*10^22*MCfsub2 - 7.876*10^22*MCgsub2)

i p4/q2 =9.902*10^-28*(8.317*10^25 - 2.25*10^26*j - 3.699*10^21*MCasub2 - 1.23*10^22*MCcsub2 + 6.825*10^21*MCfsub2 + 4.2*10^21*MCgsub2)

k P1/q3 =5.742*10^-30*(-1.385*10^27 + 9.547*10^23*MCasub3 - 5.275*10^23*MCcsub3 - 1.452*10^22*MCfsub3 - 3.501*10^23*MCgsub3 - 5.234*10^28*o)

l p2/q3 =1.722*10^-29*(-1.957*10^27 - 2.532*10^21*MCasub3 + 1.396*10^23*MCcsub3 - 2.247*10^23*MCfsub3 + 1.761*10^23*MCgsub3 - 9.203*10^27*o)

m p3/q3 =5.742*10^-30*(-7.437*10^28 - 5.874*10^23*MCasub3 + 4.67*10^24*MCcsub3 + 1.997*10^24*MCfsub3 - 2.717*10^24*MCgsub3 + 1.654*10^29*o)

n p4/q3 =2.871*10^-29*(3.793*10^27 - 1.276*10^23*MCasub3 - 4.242*10^23*MCcsub3 + 2.354*10^23*MCfsub3 + 1.449*10^23*MCgsub3 - 7.762*10^27*o)

p P1/q4 =7.942*10^-30*(-6.517*10^26 + 6.901*10^23*MCasub4 - 3.813*10^23*MCcsub4 - 1.049*10^22*MCfsub4 - 2.531*10^23*MCgsub4 - 3.784*10^28*t)

q p2/q4 =1.191*10^-29*(-1.842*10^27 - 3.661*10^21*MCasub4 + 2.018*10^23*MCcsub4 - 3.249*10^23*MCfsub4 + 2.547*10^23*MCgsub4 - 1.331*10^28*t)

r p3/q4 =7.942*10^-30*(-3.5*10^28 - 4.246*10^23*MCasub4 + 3.376*10^24*MCcsub4 + 1.444*10^24*MCfsub4 - 1.964*10^24*MCgsub4 + 1.195*10^29*t)

s p4/q4 =3.971*10^-29*(1.785*10^27 - 9.225*10^22*MCasub4 - 3.066*10^23*MCcsub4 + 1.702*10^23*MCfsub4 + 1.047*10^23*MCgsub4 - 5.611*10^27*t)
u P1/q5 =9.227*10^-30*(-1.073*10^27 + 5.94*10^23*MCasub5 - 3.282*10^23*MCcsub5 - 9.032*10^21*MCfsub5 - 2.178*10^23*MCgsub5 - 3.257*10^28*y)
v p2/q5 =9.227*10^-30*(-4.548*10^27 - 4.726*10^21*MCasub5 + 2.606*10^23*MCcsub5 - 4.194*10^23*MCfsub5 + 3.288*10^23*MCgsub5 - 1.718*10^28*y)
w p3/q5 =9.227*10^-30*(-5.76*10^28 - 3.655*10^23*MCasub5 + 2.906*10^24*MCcsub5 + 1.243*10^24*MCfsub5 - 1.69*10^24*MCgsub5 + 1.029*10^29*y)
x p4/q5 =4.614*10^-29*(2.937*10^27 - 7.94*10^22*MCasub5 - 2.639*10^23*MCcsub5 + 1.465*10^23*MCfsub5 + 9.014*10^22*MCgsub5 - 4.83*10^27*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)

qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)
ww =IF(w>=0,-0.00000001,w)
xx =IF(x>=0,-0.00000001,x)
yy =IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	13548.31
P2	16725.39
P3	22112.42
P4	14394.39
P5	27524.47

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	276,245
Csub1	59,560
Fsub1	158,917
Gsub1	159,493
Asub2	296,755
Csub2	211,477
Fsub2	246,277
Gsub2	480,433
Asub3	47,055
Csub3	45,403
Fsub3	72,294
Gsub3	56,916
asub4	93,512
Csub4	44,804
fsub4	168,301
gsub4	180,532

asub5 106,221
Csub5 18,299
fsub5 55,662
gsub5 110,280

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)

Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 13. 1st Quarter, 1992.

----------COEFFICIENTS OF DEMAND----------
a P1/q1 =5.881*10^-29*(-3.142*10^26 - 4.385*10^27*e + 9.433*10^22*MCasub1 - 3.182*10^22*MCcsub1 + 1.741*10^22*MCfsub1 - 5.337*10^22*MCgsub1)
b p2/q1 =5.881*10^-29*(-3.386*10^26 - 1.519*10^27*e + 5.029*10^21*MCasub1 + 5.219*10^22*MCcsub1 - 8.131*10^22*MCfsub1 + 5.272*10^22*MCgsub1)
c p3/q1 =5.881*10^-28*(-3.403*10^26 + 9.642*10^26*e - 1.882*10^21*MCasub1 + 4.021*10^22*MCcsub1 + 1.161*10^22*MCfsub1 - 2.116*10^22*MCgsub1)

d p4/q1 =5.881*10^-29*(1.343*10^27 - 4.118*10^27*e - 1.025*10^23*MCasub1 - 2.609*10^23*MCcsub1 + 1.787*10^23*MCfsub1 + 7.122*10^22*MCgsub1)

f P1/q2 =1.365*10^-28*(-2.038*10^26 - 1.89*10^27*j + 4.066*10^22*MCasub2 - 1.371*10^22*MCcsub2 + 7.506*10^21*MCfsub2 - 2.3*10^22*MCgsub2)

g p2/q2 =1.365*10^-28*(-2.196*10^26 - 6.548*10^26*j + 2.168*10^21*MCasub2 + 2.249*10^22*MCcsub2 - 3.505*10^22*MCfsub2 + 2.272*10^22*MCgsub2)

h p3/q2 =3.411*10^-28*(-8.829*10^26 + 1.662*10^27*j - 3.244*10^21*MCasub2 + 6.932*10^22*MCcsub2 + 2.001*10^22*MCfsub2 - 3.649*10^22*MCgsub2)

i p4/q2 =1.365*10^-28*(8.708*10^26 - 1.775*10^27*j - 4.418*10^22*MCasub2 - 1.125*10^23*MCcsub2 + 7.703*10^22*MCfsub2 + 3.069*10^22*MCgsub2)

k P1/q3 =2.241*10^-30*(-1.426*10^28 + 2.476*10^24*MCasub3 - 8.35*10^23*MCcsub3 + 4.57*10^23*MCfsub3 - 1.401*10^24*MCgsub3 - 1.151*10^29*o)

l p2/q3 =2.241*10^-30*(-1.537*10^28 + 1.32*10^23*MCasub3 + 1.37*10^24*MCcsub3 - 2.134*10^24*MCfsub3 + 1.384*10^24*MCgsub3 - 3.987*10^28*o)

m p3/q3 =1.121*10^-29*(-3.09*10^28 - 9.877*10^22*MCasub3 + 2.11*10^24*MCcsub3 + 6.093*10^23*MCfsub3 - 1.111*10^24*MCgsub3 + 5.061*10^28*o)

n p4/q3 =2.241*10^-30*(6.096*10^28 - 2.69*10^24*MCasub3 - 6.848*10^24*MCcsub3 + 4.69*10^24*MCfsub3 + 1.869*10^24*MCgsub3 - 1.081*10^29*o)

p P1/q4 =3.016*10^-29*(-8.365*10^26 + 1.839*10^23*MCasub4 - 6.204*10^22*MCcsub4 + 3.396*10^22*MCfsub4 - 1.041*10^23*MCgsub4 - 8.55*10^27*t)

q p2/q4 =3.016*10^-29*(-9.015*10^26 + 9.807*10^21*MCasub4 + 1.018*10^23*MCcsub4 - 1.586*10^23*MCfsub4 + 1.028*10^23*MCgsub4 - 2.963*10^27*t)

r p3/q4 =6.786*10^-28*(-4.027*10^26 - 1.631*10^21*MCasub4 + 3.485*10^22*MCcsub4 + 1.006*10^22*MCfsub4 - 1.834*10^22*MCgsub4 + 8.356*10^26*t)

s p4/q4 =9.048*10^-29*(1.192*10^27 - 6.663*10^22*MCasub4 - 1.696*10^23*MCcsub4 + 1.162*10^23*MCfsub4 + 4.629*10^22*MCgsub4 - 2.677*10^27*t)

u P1/q5 =8.809*10^-30*(-5.498*10^27 + 6.298*10^23*MCasub5 - 2.124*10^23*MCcsub5 + 1.163*10^23*MCfsub5 - 3.563*10^23*MCgsub5 - 2.928*10^28*y)

v p2/q5 =8.809*10^-30*(-5.926*10^27 + 3.358*10^22*MCasub5 + 3.485*10^23*MCcsub5 - 5.429*10^23*MCfsub5 + 3.52*10^23*MCgsub5 - 1.014*10^28*y)

w p3/q5 =2.202*10^-29*(-2.383*10^28 - 5.026*10^22*MCasub5 + 1.074*10^24*MCcsub5 + 3.1*10^23*MCfsub5 - 5.652*10^23*MCgsub5 + 2.575*10^28*y)

x p4/q5 =8.809*10^-30*(2.35*10^28 - 6.844*10^23*MCasub5 - 1.742*10^24*MCcsub5 + 1.193*10^24*MCfsub5 + 4.755*10^23*MCgsub5 - 2.749*10^28*y)

y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)
ww =IF(w>=0,-0.00000001,w)
xx =IF(x>=0,-0.00000001,x)
yy =IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11827.7
P2	17798.97
P3	20462.4
P4	16150.22
P5	31004.38

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	267,700
Csub1	56,644
Fsub1	166,464
Gsub1	175,133
Asub2	306,972
Csub2	204,165
Fsub2	271,186
Gsub2	509,372
Asub3	38,724
Csub3	54,144
Fsub3	76,858
Gsub3	61,248
asub4	88,429
Csub4	52,202
fsub4	152,379
gsub4	174,908
asub5	95,924
Csub5	14,790
fsub5	60,482
gsub5	98,309

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1	**=+Gsub1+Fsub1+Csub1+Asub1**
tseg2	**=+Gsub2+Fsub2+Csub2+Asub2**
tseg3	**=+Gsub3+Fsub3+Csub3+Asub3**
tseg4	**=+gsub4+fsub4+Csub4+asub4**

tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351

MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3

XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 14. 2nd Quarter, 1992.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =1.147*10^-29*(-2.471*10^27 - 2.074*10^28*e + 4.084*10^23*MCasub1 - 1.644*10^22*MCcsub1 + 8.114*10^22*MCfsub1 - 2.629*10^23*MCgsub1)

b p2/q1 =1.147*10^-29*(7.41*10^25 - 1.351*10^28*e - 2.154*10^22*MCasub1 + 3.874*10^22*MCcsub1 - 3.448*10^23*MCfsub1 + 3.213*10^23*MCgsub1)

c p3/q1 =2.294*10^-29*(-8.428*10^27 + 3.161*10^28*e - 4.823*10^22*MCasub1 + 1.013*10^24*MCcsub1 + 2.757*10^23*MCfsub1 - 5.239*10^23*MCgsub1)

d p4/q1 =3.442*10^-29*(1.524*10^27 - 4.129*10^27*e - 9.958*10^22*MCasub1 - 3.185*10^23*MCcsub1 + 2.356*10^23*MCfsub1 + 5.284*10^22*MCgsub1)

f P1/q2 =3.507*10^-30*(-1.208*10^28 - 6.785*10^28*j + 1.336*10^24*MCasub2 - 5.379*10^22*MCcsub2 + 2.654*10^23*MCfsub2 - 8.6*10^23*MCgsub2)

g p2/q2 =3.507*10^-30*(3.624*10^26 - 4.419*10^28*j - 7.047*10^22*MCasub2 + 1.267*10^23*MCcsub2 - 1.128*10^24*MCfsub2 + 1.051*10^24*MCgsub2)

h p3/q2 =7.014*10^-30*(-4.122*10^28 + 1.034*10^29*j - 1.578*10^23*MCasub2 + 3.315*10^24*MCcsub2 + 9.018*10^23*MCfsub2 - 1.714*10^24*MCgsub2)

i p4/q2 =1.052*10^-29*(7.452*10^27 - 1.351*10^28*j - 3.257*10^23*MCasub2 - 1.042*10^24*MCcsub2 + 7.708*10^23*MCfsub2 + 1.728*10^23*MCgsub2)

k P1/q3 =7.389*10^-28*(-6.615*10^25 + 6.34*10^21*MCasub3 - 2.553*10^20*MCcsub3 + 1.26*10^21*MCfsub3 - 4.082*10^21*MCgsub3 - 3.22*10^26*o)
l p2/q3 =6.836*10^-31*(2.145*10^27 - 3.616*10^23*MCasub3 + 6.502*10^23*MCcsub3 - 5.786*10^24*MCfsub3 + 5.392*10^24*MCgsub3 - 2.267*10^29*o)
m p3/q3 =1.367*10^-30*(-2.439*10^29 - 8.094*10^23*MCasub3 + 1.701*10^25*MCcsub3 + 4.626*10^24*MCfsub3 - 8.792*10^24*MCgsub3 + 5.306*10^29*o)
n p4/q3 =2.051*10^-30*(4.41*10^28 - 1.671*10^24*MCasub3 - 5.346*10^24*MCcsub3 + 3.955*10^24*MCfsub3 + 8.868*10^23*MCgsub3 - 6.93*10^28*o)
p P1/q4 =8.411*10^-30*(-4.768*10^27 + 5.57*10^23*MCasub4 - 2.243*10^22*MCcsub4 + 1.107*10^23*MCfsub4 - 3.586*10^23*MCgsub4 - 2.829*10^28*t)
q p2/q4 =8.411*10^-30*(1.43*10^26 - 2.938*10^22*MCasub4 + 5.284*10^22*MCcsub4 - 4.703*10^23*MCfsub4 + 4.382*10^23*MCgsub4 - 1.843*10^28*t)
r p3/q4 =1.682*10^-29*(-1.626*10^28 - 6.578*10^22*MCasub4 + 1.382*10^24*MCcsub4 + 3.76*10^23*MCfsub4 - 7.146*10^23*MCgsub4 + 4.312*10^28*t)
s p4/q4 =2.523*10^-29*(2.94*10^27 - 1.358*10^23*MCasub4 - 4.344*10^23*MCcsub4 + 3.214*10^23*MCfsub4 + 7.207*10^22*MCgsub4 - 5.632*10^27*t)
u P1/q5 =4.926*10^-30*(-1.484*10^28 + 9.511*10^23*MCasub5 - 3.83*10^22*MCcsub5 + 1.89*10^23*MCfsub5 - 6.123*10^23*MCgsub5 - 4.83*10^28*y)
v p2/q5 =4.926*10^-30*(4.452*10^26 - 5.017*10^22*MCasub5 + 9.022*10^22*MCcsub5 - 8.029*10^23*MCfsub5 + 7.482*10^23*MCgsub5 - 3.146*10^28*y)
w p3/q5 =9.852*10^-30*(-5.064*10^28 - 1.123*10^23*MCasub5 + 2.36*10^24*MCcsub5 + 6.42*10^23*MCfsub5 - 1.22*10^24*MCgsub5 + 7.362*10^28*y)
x p4/q5 =1.478*10^-29*(9.155*10^27 - 2.319*10^23*MCasub5 - 7.418*10^23*MCcsub5 + 5.488*10^23*MCfsub5 + 1.231*10^23*MCgsub5 - 9.616*10^27*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)

cc	=IF(c_>=0,-0.00000001,c_)
dd	=IF(d>=0,-0.00000001,d)
ee	=IF(e>=0,-0.00000001,e)
ff	=IF(f>=0,-0.00000001,f)
gg	=IF(g>=0,-0.00000001,g)
hh	=IF(h>=0,-0.00000001,h)
ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	11754.76
P2	17574.01
P3	20273.05
P4	16631.59
P5	30326.84

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	315,833
Csub1	73,941

Fsub1 185,928
Gsub1 211,790
Asub2 350,140
Csub2 250,924
Fsub2 344,845
Gsub2 634,612
Asub3 43,350
Csub3 67,637
Fsub3 89,408
Gsub3 90,699
asub4 100,713
Csub4 61,145
fsub4 200,431
gsub4 214,472
asub5 112,278
Csub5 16,109
fsub5 61,312
gsub5 113,432

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)

Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478

MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5

XMCgsub5 =+P5_-MCgsub5

Quarter 15. 3rd Quarter, 1992.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =3.509*10^-29*(-8.206*10^26 - 5.49*10^27*e + 1.454*10^23*MCasub1 - 3.467*10^22*MCcsub1 + 1.42*10^23*MCfsub1 - 1.844*10^23*MCgsub1)

b p2/q1 =2.34*10^-29*(4.065*10^26 - 1.101*10^28*e + 3.402*10^21*MCasub1 + 2.856*10^22*MCcsub1 - 4.129*10^23*MCfsub1 + 3.471*10^23*MCgsub1)

c p3/q1 =2.34*10^-29*(-9.115*10^27 + 3.175*10^28*e - 1.141*10^23*MCasub1 + 9.311*10^23*MCcsub1 + 7.314*10^23*MCfsub1 - 7.896*10^23*MCgsub1)

d p4/q1 =7.019*10^-29*(5.102*10^26 + 4.415*10^26*e - 4.649*10^22*MCasub1 - 1.331*10^23*MCcsub1 + 1.504*10^23*MCfsub1 - 1.325*10^22*MCgsub1)

f P1/q2 =2.061*10^-22*(-2.058*10^20 - 9.347*10^20*j + 2.476*10^16*MCasub2 - 5.904*10^15*MCcsub2 + 2.418*10^16*MCfsub2 - 3.14*10^16*MCgsub2)

g p2/q2 =1.963*10^-23*(7.138*10^20 - 1.312*10^22*j + 4.055*10^15*MCasub2 + 3.404*10^16*MCcsub2 - 4.921*10^17*MCfsub2 + 4.137*10^17*MCgsub2)

h p3/q2 =3.926*10^-23*(-8.003*10^21 + 1.892*10^22*j - 6.801*10^16*MCasub2 + 5.548*10^17*MCcsub2 + 4.359*10^17*MCfsub2 - 4.705*10^17*MCgsub2)

i p4/q2 =4.711*10^-22*(1.12*10^20 + 6.577*10^19*j - 6.925*10^15*MCasub2 - 1.983*10^16*MCcsub2 + 2.24*10^16*MCfsub2 - 1.974*10^15*MCgsub2)

k P1/q3 =9.864*10^-29*(-4.691*10^26 + 5.173*10^22*MCasub3 - 1.234*10^22*MCcsub3 + 5.053*10^22*MCfsub3 - 6.562*10^22*MCgsub3 - 1.953*10^27*o)

l p2/q3 =9.395*10^-30*(1.627*10^27 + 8.473*10^21*MCasub3 + 7.113*10^22*MCcsub3 - 1.028*10^24*MCfsub3 + 8.644*10^23*MCgsub3 - 2.742*10^28*o)

m p3/q3 =1.879*10^-29*(-1.824*10^28 - 1.421*10^23*MCasub3 + 1.159*10^24*MCcsub3 + 9.108*10^23*MCfsub3 - 9.832*10^23*MCgsub3 + 3.953*10^28*o)

n p4/q3 =2.255*10^-28*(2.553*10^26 - 1.447*10^22*MCasub3 - 4.143*10^22*MCcsub3 + 4.681*10^22*MCfsub3 - 4.126*10^21*MCgsub3 + 1.374*10^26*o)

p P1/q4 =2.411*10^-29*(-1.455*10^27 + 2.117*10^23*MCasub4 - 5.048*10^22*MCcsub4 + 2.068*10^23*MCfsub4 - 2.685*10^23*MCgsub4 - 7.992*10^27*t)

q p2/q4 =1.607*10^-29*(7.21*10^26 + 4.953*10^21*MCasub4 + 4.158*10^22*MCcsub4 - 6.011*10^23*MCfsub4 + 5.053*10^23*MCgsub4 - 1.603*10^28*t)
r p3/q4 =3.214*10^-29*(-8.083*10^27 - 8.307*10^22*MCasub4 + 6.777*10^23*MCcsub4 + 5.324*10^23*MCfsub4 - 5.747*10^23*MCgsub4 + 2.311*10^28*t)
s p4/q4 =1.929*10^-28*(2.263*10^26 - 1.692*10^22*MCasub4 - 4.844*10^22*MCcsub4 + 5.472*10^22*MCfsub4 - 4.823*10^21*MCgsub4 + 1.607*10^26*t)
u P1/q5 =1.747*10^-28*(-3.839*10^26 + 2.922*10^22*MCasub5 - 6.967*10^21*MCcsub5 + 2.854*10^22*MCfsub5 - 3.706*10^22*MCgsub5 - 1.103*10^27*y)
v p2/q5 =1.164*10^-28*(1.902*10^26 + 6.836*10^20*MCasub5 + 5.739*10^21*MCcsub5 - 8.296*10^22*MCfsub5 + 6.974*10^22*MCgsub5 - 2.212*10^27*y)
w p3/q5 =1.164*10^-28*(-4.265*10^27 - 2.293*10^22*MCasub5 + 1.871*10^23*MCcsub5 + 1.47*10^23*MCfsub5 - 1.586*10^23*MCgsub5 + 6.379*10^27*y)
x p4/q5 =3.493*10^-28*(2.387*10^26 - 9.34*10^21*MCasub5 - 2.674*10^22*MCcsub5 + 3.021*10^22*MCfsub5 - 2.663*10^21*MCgsub5 + 8.871*10^25*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)

mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	12011.51
P2	17698.29
P3	19302.98
P4	14634.6
P5	27970.73

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	287,444
Csub1	64,568
Fsub1	162,328
Gsub1	184,974
Asub2	359,751
Csub2	206,715
Fsub2	338,773
Gsub2	505,608
Asub3	51,918
Csub3	65,613
Fsub3	82,234
Gsub3	91,917

asub4 109,354
Csub4 52,331
fsub4 194,841
gsub4 226,404
asub5 106,100
Csub5 15,334
fsub5 51,425
gsub5 90,594

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)

Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08

o -1.443730947576 85E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 16. 4th Quarter, 1992.

----------COEFFICIENTS OF DEMAND----------
a P1/q1 =2.497*10^-28*(-4.061*10^26 + 1.446*10^27*e + 4.157*10^22*MCasub1 - 1.618*10^22*MCcsub1 + 1.596*10^23*MCfsub1 - 1.541*10^23*MCgsub1)

b p2/q1 =2.497*10^-28*(3.022*10^26 - 3.484*10^27*e - 1.691*10^22*MCasub1 + 1.46*10^22*MCcsub1 - 1.878*10^23*MCfsub1 + 1.672*10^23*MCgsub1)

c p3/q1 =1.664*10^-28*(-1.763*10^27 + 1.149*10^28*e + 3.067*10^22*MCasub1 + 7.242*10^22*MCcsub1 + 5.003*10^23*MCfsub1 - 4.694*10^23*MCgsub1)

d p4/q1 =8.322*10^-29*(-1.602*10^26 + 2.864*10^27*e - 1.564*10^22*MCasub1 - 1.315*10^23*MCcsub1 + 4.098*10^23*MCfsub1 - 2.505*10^23*MCgsub1)

f P1/q2 =4.116*10^-27*(-3.349*10^25 + 8.773*10^25*j + 2.522*10^21*MCasub2 - 9.815*10^20*MCcsub2 + 9.678*10^21*MCfsub2 - 9.347*10^21*MCgsub2)

g p2/q2 =4.116*10^-27*(2.493*10^25 - 2.113*10^26*j - 1.026*10^21*MCasub2 + 8.854*10^20*MCcsub2 - 1.139*10^22*MCfsub2 + 1.014*10^22*MCgsub2)

h p3/q2 =2.744*10^-27*(-1.454*10^26 + 6.967*10^26*j + 1.86*10^21*MCasub2 + 4.393*10^21*MCcsub2 + 3.035*10^22*MCfsub2 - 2.847*10^22*MCgsub2)

i p4/q2 =1.372*10^-27*(-1.321*10^25 + 1.737*10^26*j - 9.488*10^20*MCasub2 - 7.974*10^21*MCcsub2 + 2.486*10^22*MCfsub2 - 1.519*10^22*MCgsub2)

k P1/q3 =7.269*10^-28*(-2.363*10^26 + 1.428*10^22*MCasub3 - 5.558*10^21*MCcsub3 + 5.481*10^22*MCfsub3 - 5.293*10^22*MCgsub3 + 4.968*10^26*o)

l p2/q3 =7.269*10^-28*(1.758*10^26 - 5.808*10^21*MCasub3 + 5.014*10^21*MCcsub3 - 6.451*10^22*MCfsub3 + 5.742*10^22*MCgsub3 - 1.197*10^27*o)

m p3/q3 =4.846*10^-28*(-1.026*10^27 + 1.053*10^22*MCasub3 + 2.488*10^22*MCcsub3 + 1.719*10^23*MCfsub3 - 1.613*10^23*MCgsub3 + 3.946*10^27*o)

n p4/q3 =2.423*10^-28*(-9.321*10^25 - 5.373*10^21*MCasub3 - 4.516*10^22*MCcsub3 + 1.408*10^23*MCfsub3 - 8.605*10^22*MCgsub3 + 9.837*10^26*o)

p P1/q4 =5.723*10^-28*(-2.26*10^26 + 1.814*10^22*MCasub4 - 7.059*10^21*MCcsub4 + 6.961*10^22*MCfsub4 - 6.723*10^22*MCgsub4 + 6.31*10^26*t)

q p2/q4 =5.723*10^-28*(1.682*10^26 - 7.376*10^21*MCasub4 + 6.368*10^21*MCcsub4 - 8.193*10^22*MCfsub4 + 7.293*10^22*MCgsub4 - 1.52*10^27*t)

r p3/q4 =3.815*10^-28*(-9.813*10^26 + 1.338*10^22*MCasub4 + 3.16*10^22*MCcsub4 + 2.183*10^23*MCfsub4 - 2.048*10^23*MCgsub4 + 5.011*10^27*t)

s p4/q4 =1.908*10^-28*(-8.915*10^25 - 6.824*10^21*MCasub4 - 5.736*10^22*MCcsub4 + 1.788*10^23*MCfsub4 - 1.093*10^23*MCgsub4 + 1.249*10^27*t)

u P1/q5 =1.542*10^-28*(-1.554*10^27 + 6.729*10^22*MCasub5 - 2.619*10^22*MCcsub5 + 2.583*10^23*MCfsub5 - 2.495*10^23*MCgsub5 + 2.341*10^27*y)

v p2/q5 =1.542*10^-28*(1.157*10^27 - 2.737*10^22*MCasub5 + 2.363*10^22*MCcsub5 - 3.04*10^23*MCfsub5 + 2.706*10^23*MCgsub5 - 5.64*10^27*y)

w p3/q5 =1.028*10^-28*(-6.75*10^27 + 4.964*10^22*MCasub5 + 1.172*10^23*MCcsub5 + 8.099*10^23*MCfsub5 - 7.599*10^23*MCgsub5 + 1.859*10^28*y)
x p4/q5 =5.141*10^-29*(-6.133*10^26 - 2.532*10^22*MCasub5 - 2.128*10^23*MCcsub5 + 6.633*10^23*MCfsub5 - 4.055*10^23*MCgsub5 + 4.636*10^27*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)

ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	13163.19
P2	17899.15
P3	22294.6
P4	16789.66
P5	31128.64

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	227,465
Csub1	64,198
Fsub1	127,456
Gsub1	160,602
Asub2	358,526
Csub2	239,858
Fsub2	366,082
Gsub2	450,583
Asub3	54,125
Csub3	81,836
Fsub3	87,167
Gsub3	96,263
asub4	95,065
Csub4	54,958
fsub4	170,914
gsub4	196,843
asub5	103,589
Csub5	15,900
fsub5	65,026
gsub5	102,991

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------

MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2

XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 17. 1st Quarter, 1993.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =1.066*10^-27*(-4.362*10^25 - 3.52*10^26*e + 6.254*10^21*MCasub1 - 8.652*10^20*MCcsub1 + 4.506*10^21*MCfsub1 - 6.48*10^21*MCgsub1)

b p2/q1 =8.199*10^-29*(3.578*10^26 - 9.924*10^26*e + 3.189*10^21*MCasub1 - 1.563*10^22*MCcsub1 - 1.615*10^23*MCfsub1 + 1.459*10^23*MCgsub1)

c p3/q1 =8.199*10^-29*(-2.593*10^27 + 5.005*10^27*e - 2.919*10^22*MCasub1 + 2.571*10^23*MCcsub1 + 3.2*10^23*MCfsub1 - 3.449*10^23*MCgsub1)

d p4/q1 =8.199*10^-29*(2.835*10^25 - 3.699*10^26*e - 6.66*10^22*MCasub1 - 6.464*10^22*MCcsub1 + 1.834*10^23*MCfsub1 - 5.44*10^22*MCgsub1)

f P1/q2 =4.945*10^-29*(-1.318*10^27 - 7.588*10^27*j + 1.348*10^23*MCasub2 - 1.865*10^22*MCcsub2 + 9.713*10^22*MCfsub2 - 1.397*10^23*MCgsub2)

g p2/q2 =4.945*10^-29*(8.318*10^26 - 1.646*10^27*j + 5.287*10^21*MCasub2 - 2.592*10^22*MCcsub2 - 2.678*10^23*MCfsub2 + 2.42*10^23*MCgsub2)

h p3/q2 =4.945*10^-29*(-6.028*10^27 + 8.298*10^27*j - 4.84*10^22*MCasub2 + 4.264*10^23*MCcsub2 + 5.306*10^23*MCfsub2 - 5.718*10^23*MCgsub2)
i p4/q2 =4.945*10^-29*(6.591*10^25 - 6.133*10^26*j - 1.104*10^23*MCasub2 - 1.072*10^23*MCcsub2 + 3.041*10^23*MCfsub2 - 9.019*10^22*MCgsub2)
k P1/q3 =6.143*10^-28*(-1.476*10^26 + 1.085*10^22*MCasub3 - 1.501*10^21*MCcsub3 + 7.819*10^21*MCfsub3 - 1.124*10^22*MCgsub3 - 6.109*10^26*o)
l p2/q3 =4.725*10^-29*(1.211*10^27 + 5.533*10^21*MCasub3 - 2.713*10^22*MCcsub3 - 2.803*10^23*MCfsub3 + 2.532*10^23*MCgsub3 - 1.722*10^27*o)
m p3/q3 =4.725*10^-29*(-8.774*10^27 - 5.066*10^22*MCasub3 + 4.462*10^23*MCcsub3 + 5.553*10^23*MCfsub3 - 5.985*10^23*MCgsub3 + 8.685*10^27*o)
n p4/q3 =4.725*10^-29*(9.593*10^25 - 1.156*10^23*MCasub3 - 1.122*10^23*MCcsub3 + 3.183*10^23*MCfsub3 - 9.439*10^22*MCgsub3 - 6.419*10^26*o)
p P1/q4 =1.484*10^-27*(-4.41*10^25 + 4.491*10^21*MCasub4 - 6.212*10^20*MCcsub4 + 3.236*10^21*MCfsub4 - 4.653*10^21*MCgsub4 - 2.528*10^26*t)
q p2/q4 =1.142*10^-28*(3.618*10^26 + 2.29*10^21*MCasub4 - 1.123*10^22*MCcsub4 - 1.16*10^23*MCfsub4 + 1.048*10^23*MCgsub4 - 7.126*10^26*t)
r p3/q4 =7.993*10^-28*(-3.746*10^26 - 2.995*10^21*MCasub4 + 2.638*10^22*MCcsub4 + 3.282*10^22*MCfsub4 - 3.538*10^22*MCgsub4 + 5.134*10^26*t)
s p4/q4 =1.142*10^-28*(2.867*10^25 - 4.782*10^22*MCasub4 - 4.642*10^22*MCcsub4 + 1.317*10^23*MCfsub4 - 3.906*10^22*MCgsub4 - 2.656*10^26*t)
u P1/q5 =3.243*10^-30*(-2.833*10^28 + 2.056*10^24*MCasub5 - 2.844*10^23*MCcsub5 + 1.481*10^24*MCfsub5 - 2.13*10^24*MCgsub5 - 1.157*10^29*y)
v p2/q5 =3.243*10^-30*(1.788*10^28 + 8.063*10^22*MCasub5 - 3.953*10^23*MCcsub5 - 4.084*10^24*MCfsub5 + 3.69*10^24*MCgsub5 - 2.509*10^28*y)
w p3/q5 =2.27*10^-29*(-1.851*10^28 - 1.054*10^23*MCasub5 + 9.289*10^23*MCcsub5 + 1.156*10^24*MCfsub5 - 1.246*10^24*MCgsub5 + 1.808*10^28*y)
x p4/q5 =3.243*10^-30*(1.417*10^27 - 1.684*10^24*MCasub5 - 1.635*10^24*MCcsub5 + 4.638*10^24*MCfsub5 - 1.375*10^24*MCgsub5 - 9.353*10^27*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa	=IF(a>=0,-0.00000001,a)
bb	=IF(b>=0,-0.00000001,b)
cc	=IF(c_>=0,-0.00000001,c_)
dd	=IF(d>=0,-0.00000001,d)
ee	=IF(e>=0,-0.00000001,e)
ff	=IF(f>=0,-0.00000001,f)
gg	=IF(g>=0,-0.00000001,g)
hh	=IF(h>=0,-0.00000001,h)
ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	12770.81
P2	17905.48
P3	24901.21
P4	17984.89
P5	25238.08

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	230,312
Csub1	67,774
Fsub1	161,025
Gsub1	180,436
Asub2	284,385
Csub2	251,870
Fsub2	331,907
Gsub2	471,662
Asub3	49,929
Csub3	80,651
Fsub3	72,630
Gsub3	87,929
asub4	89,762
Csub4	59,443
fsub4	180,626
gsub4	204,307
asub5	91,795
Csub5	14,634
fsub5	63,104
gsub5	76,200

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1	**=+Gsub1+Fsub1+Csub1+Asub1**
tseg2	**=+Gsub2+Fsub2+Csub2+Asub2**
tseg3	**=+Gsub3+Fsub3+Csub3+Asub3**
tseg4	**=+gsub4+fsub4+Csub4+asub4**
tseg5	**=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------

Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)

Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447

MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4

XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 18. 2nd Quarter, 1993.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =2.695*10^-30*(-2.198*10^28 - 1.274*10^29*e + 2.353*10^24*MCasub1 + 4.688*10^22*MCcsub1 + 1.913*10^24*MCfsub1 - 2.657*10^24*MCgsub1)

b p2/q1 =1.348*10^-30*(2.728*10^28 - 2.635*10^28*e - 1.481*10^24*MCasub1 - 8.457*10^23*MCcsub1 - 6.146*10^24*MCfsub1 + 6.416*10^24*MCgsub1)

c p3/q1 =2.695*10^-30*(-6.681*10^28 + 8.016*10^28*e + 8.805*10^23*MCasub1 + 5.24*10^24*MCcsub1 + 5.885*10^24*MCfsub1 - 6.97*10^24*MCgsub1)

d p4/q1 =3.423*10^-28*(-3.699*10^25 - 2.094*10^26*e - 5.265*10^21*MCasub1 - 9.648*10^21*MCcsub1 + 2.794*10^22*MCfsub1 - 1.024*10^22*MCgsub1)

f P1/q2 =6.441*10^-29*(-1.276*10^27 - 5.332*10^27*j + 9.846*10^22*MCasub2 + 1.962*10^21*MCcsub2 + 8.007*10^22*MCfsub2 - 1.112*10^23*MCgsub2)

g p2/q2 =3.221*10^-29*(1.583*10^27 - 1.103*10^27*j - 6.198*10^22*MCasub2 - 3.539*10^22*MCcsub2 - 2.572*10^23*MCfsub2 + 2.685*10^23*MCgsub2)

h p3/q2 =1.288*10^-29*(-1.939*10^28 + 1.677*10^28*j + 1.842*10^23*MCasub2 + 1.096*10^24*MCcsub2 + 1.231*10^24*MCfsub2 - 1.458*10^24*MCgsub2)

i p4/q2 =1.636*10^-27*(-1.073*10^25 - 4.381*10^25*j - 1.102*10^21*MCasub2 - 2.019*10^21*MCcsub2 + 5.845*10^21*MCfsub2 - 2.142*10^21*MCgsub2)

k P1/q3 =2.842*10^-28*(-3.536*10^26 + 2.231*10^22*MCasub3 + 4.445*10^20*MCcsub3 + 1.814*10^22*MCfsub3 - 2.519*10^22*MCgsub3 - 1.208*10^27*o)

l p2/q3 =7.106*10^-29*(8.779*10^26 - 2.809*10^22*MCasub3 - 1.604*10^22*MCcsub3 - 1.166*10^23*MCfsub3 + 1.217*10^23*MCgsub3 - 4.997*10^26*o)

m p3/q3 =5.685*10^-30*(-5.374*10^28 + 4.175*10^23*MCasub3 + 2.485*10^24*MCcsub3 + 2.79*10^24*MCfsub3 - 3.305*10^24*MCgsub3 + 3.801*10^28*o)

n p4/q3 =2.888*10^-27*(-7.438*10^24 - 6.241*10^20*MCasub3 - 1.144*10^21*MCcsub3 + 3.311*10^21*MCfsub3 - 1.213*10^21*MCgsub3 - 2.482*10^25*o)
p P1/q4 =1.027*10^-29*(-7.078*10^27 + 6.175*10^23*MCasub4 + 1.23*10^22*MCcsub4 + 5.022*10^23*MCfsub4 - 6.972*10^23*MCgsub4 - 3.344*10^28*t)
q p2/q4 =5.135*10^-30*(8.787*10^27 - 3.887*10^23*MCasub4 - 2.22*10^23*MCcsub4 - 1.613*10^24*MCfsub4 + 1.684*10^24*MCgsub4 - 6.915*10^27*t)
r p3/q4 =1.027*10^-29*(-2.152*10^28 + 2.311*10^23*MCasub4 + 1.375*10^24*MCcsub4 + 1.544*10^24*MCfsub4 - 1.829*10^24*MCgsub4 + 2.104*10^28*t)
s p4/q4 =1.304*10^-27*(-1.191*10^25 - 1.382*10^21*MCasub4 - 2.532*10^21*MCcsub4 + 7.332*10^21*MCfsub4 - 2.686*10^21*MCgsub4 - 5.495*10^25*t)
u P1/q5 =1.924*10^-21*(-5.853*10^19 + 3.296*10^15*MCasub5 + 6.566*10^13*MCcsub5 + 2.68*10^15*MCfsub5 - 3.721*10^15*MCgsub5 - 1.785*10^20*y)
v p2/q5 =4.811*10^-22*(1.453*10^20 - 4.149*10^15*MCasub5 - 2.369*10^15*MCcsub5 - 1.722*10^16*MCfsub5 + 1.797*10^16*MCgsub5 - 7.381*10^19*y)
w p3/q5 =9.622*10^-22*(-3.558*10^20 + 2.467*10^15*MCasub5 + 1.468*10^16*MCcsub5 + 1.648*10^16*MCfsub5 - 1.952*10^16*MCgsub5 + 2.246*10^20*y)
x p4/q5 =4.888*10^-19*(-4.925*10^16 - 3.687*10^12*MCasub5 - 6.757*10^12*MCcsub5 + 1.956*10^13*MCfsub5 - 7.168*10^12*MCgsub5 - 1.466*10^17*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)

ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	13267.4
P2	18399.06
P3	22508.87
P4	16280.27
P5	25225.75

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	288,801
Csub1	79,786
Fsub1	169,883
Gsub1	239,908
Asub2	390,476
Csub2	331,142
Fsub2	430,382
Gsub2	661,678

Asub3 51,583
Csub3 110,826
Fsub3 88,916
Gsub3 111,686
asub4 96,893
Csub4 59,962
fsub4 238,232
gsub4 258,467
asub5 108,859
Csub5 19,514
fsub5 71,496
gsub5 100,291

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)

Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 19. 3rd Quarter, 1993.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =2.134*10^-28*(-2.797*10^26 - 1.324*10^27*e + 3.44*10^22*MCasub1 + 9.852*10^21*MCcsub1 + 4.006*10^22*MCfsub1 - 6.343*10^22*MCgsub1)

b p2/q1 =2.667*10^-29*(1.041*10^27 - 5.657*10^27*e - 5.582*10^22*MCasub1 - 8.535*10^22*MCcsub1 - 3.85*10^23*MCfsub1 + 4.485*10^23*MCgsub1)

c p3/q1 =5.334*10^-29*(-2.609*10^27 + 6.199*10^27*e - 1.556*10^22*MCasub1 + 2.602*10^23*MCcsub1 + 2.319*10^23*MCfsub1 - 2.819*10^23*MCgsub1)

d p4/q1 =4.267*10^-28*(-1.595*10^25 + 1.862*10^26*e - 6.588*10^21*MCasub1 - 7.418*10^21*MCcsub1 + 2.454*10^22*MCfsub1 - 9.346*10^21*MCgsub1)

f P1/q2 =5.478*10^-28*(-1.44*10^26 - 5.157*10^26*j + 1.34*10^22*MCasub2 + 3.837*10^21*MCcsub2 + 1.56*10^22*MCfsub2 - 2.471*10^22*MCgsub2)

g p2/q2 =6.848*10^-29*(5.363*10^26 - 2.203*10^27*j - 2.174*10^22*MCasub2 - 3.324*10^22*MCcsub2 - 1.5*10^23*MCfsub2 + 1.747*10^23*MCgsub2)

h p3/q2 =1.37*10^-28*(-1.343*10^27 + 2.415*10^27*j - 6.06*10^21*MCasub2 + 1.014*10^23*MCcsub2 + 9.031*10^22*MCfsub2 - 1.098*10^23*MCgsub2)

i p4/q2 =1.096*10^-27*(-8.211*10^24 + 7.253*10^25*j - 2.566*10^21*MCasub2 - 2.889*10^21*MCcsub2 + 9.559*10^21*MCfsub2 - 3.64*10^21*MCgsub2)

k P1/q3 =2.488*10^-29*(-3.873*10^27 + 2.949*10^23*MCasub3 + 8.447*10^22*MCcsub3 + 3.435*10^23*MCfsub3 - 5.439*10^23*MCgsub3 - 1.135*10^28*o)

l p2/q3 =3.111*10^-30*(1.442*10^28 - 4.786*10^23*MCasub3 - 7.319*10^23*MCcsub3 - 3.301*10^24*MCfsub3 + 3.845*10^24*MCgsub3 - 4.85*10^28*o)

m p3/q3 =6.221*10^-30*(-3.612*10^28 - 1.334*10^23*MCasub3 + 2.231*10^24*MCcsub3 + 1.988*10^24*MCfsub3 - 2.417*10^24*MCgsub3 + 5.316*10^28*o)

n p4/q3 =4.977*10^-29*(-2.208*10^26 - 5.649*10^22*MCasub3 - 6.361*10^22*MCcsub3 + 2.104*10^23*MCfsub3 - 8.014*10^22*MCgsub3 + 1.597*10^27*o)

p P1/q4 =1.995*10^-29*(-3.337*10^27 + 3.68*10^23*MCasub4 + 1.054*10^23*MCcsub4 + 4.285*10^23*MCfsub4 - 6.786*10^23*MCgsub4 - 1.417*10^28*t)

q p2/q4 =4.986*10^-30*(6.213*10^27 - 2.986*10^23*MCasub4 - 4.565*10^23*MCcsub4 - 2.059*10^24*MCfsub4 + 2.399*10^24*MCgsub4 - 3.026*10^28*t)

r p3/q4 =9.973*10^-30*(-1.556*10^28 - 8.322*10^22*MCasub4 + 1.392*10^24*MCcsub4 + 1.24*10^24*MCfsub4 - 1.508*10^24*MCgsub4 + 3.316*10^28*t)

s p4/q4 =1.596*10^-28*(-4.756*10^25 - 1.762*10^22*MCasub4 - 1.984*10^22*MCcsub4 + 6.564*10^22*MCfsub4 - 2.5*10^22*MCgsub4 + 4.98*10^26*t)

u P1/q5 =3.201*10^-29*(-4.53*10^27 + 2.293*10^23*MCasub5 + 6.567*10^22*MCcsub5 + 2.67*10^23*MCfsub5 - 4.228*10^23*MCgsub5 - 8.827*10^27*y)
v p2/q5 =4.001*10^-30*(1.687*10^28 - 3.721*10^23*MCasub5 - 5.69*10^23*MCcsub5 - 2.567*10^24*MCfsub5 + 2.99*10^24*MCgsub5 - 3.771*10^28*y)
w p3/q5 =8.002*10^-30*(-4.225*10^28 - 1.037*10^23*MCasub5 + 1.735*10^24*MCcsub5 + 1.546*10^24*MCfsub5 - 1.879*10^24*MCgsub5 + 4.133*10^28*y)
x p4/q5 =6.402*10^-29*(-2.582*10^26 - 4.392*10^22*MCasub5 - 4.945*10^22*MCcsub5 + 1.636*10^23*MCfsub5 - 6.23*10^22*MCgsub5 + 1.241*10^27*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)

ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	13400.31
P2	17716.8
P3	21638.97
P4	14944.62
P5	32554.93

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	276,963
Csub1	76,333
Fsub1	172,467
Gsub1	197,066
Asub2	426,028
Csub2	237,056
Fsub2	379,204
Gsub2	507,298
Asub3	56,442
Csub3	108,844
Fsub3	87,086
Gsub3	102,505
asub4	125,033
Csub4	41,595
fsub4	223,688
gsub4	215,518
asub5	113,928
Csub5	18,032

fsub5 59,365
gsub5 81,191

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)

Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1

XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 20. 4th Quarter, 1993.

----------COEFFICIENTS OF DEMAND----------
a P1/q1 =1.345*10^-29*(-9.719*10^27 - 2.785*10^28*e + 1.046*10^24*MCasub1 + 1.562*10^23*MCcsub1 + 1.182*10^24*MCfsub1 - 1.675*10^24*MCgsub1)
b p2/q1 =1.076*10^-28*(6.442*10^26 - 1.073*10^27*e - 4.815*10^22*MCasub1 - 2.897*10^22*MCcsub1 - 1.235*10^23*MCfsub1 + 1.536*10^23*MCgsub1)
c p3/q1 =4.035*10^-29*(-4.333*10^27 + 6.69*10^27*e + 5.935*10^22*MCasub1 + 3.808*10^23*MCcsub1 + 3.06*10^23*MCfsub1 - 4.301*10^23*MCgsub1)
d p4/q1 =4.035*10^-29*(-3.913*10^26 + 7.88*10^26*e - 4.461*10^22*MCasub1 - 5.631*10^22*MCcsub1 + 2.389*10^23*MCfsub1 - 1.094*10^23*MCgsub1)

f P1/q2 =1.011*10^-28*(-1.785*10^27 - 3.707*10^27*j + 1.392*10^23*MCasub2 + 2.08*10^22*MCcsub2 + 1.574*10^23*MCfsub2 - 2.23*10^23*MCgsub2)
g p2/q2 =2.021*10^-28*(4.734*10^26 - 5.714*10^26*j - 2.564*10^22*MCasub2 - 1.542*10^22*MCcsub2 - 6.576*10^22*MCfsub2 + 8.18*10^22*MCgsub2)
h p3/q2 =3.032*10^-28*(-7.96*10^26 + 8.905*10^26*j + 7.9*10^21*MCasub2 + 5.069*10^22*MCcsub2 + 4.072*10^22*MCfsub2 - 5.724*10^22*MCgsub2)
i p4/q2 =9.095*10^-28*(-2.396*10^25 + 3.496*10^25*j - 1.979*10^21*MCasub2 - 2.498*10^21*MCcsub2 + 1.06*10^22*MCfsub2 - 4.855*10^21*MCgsub2)
k P1/q3 =1.423*10^-30*(-1.474*10^29 + 9.886*10^24*MCasub3 + 1.477*10^24*MCcsub3 + 1.118*10^25*MCfsub3 - 1.584*10^25*MCgsub3 - 2.632*10^29*o)
l p2/q3 =2.846*10^-30*(3.909*10^28 - 1.82*10^24*MCasub3 - 1.095*10^24*MCcsub3 - 4.67*10^24*MCfsub3 + 5.809*10^24*MCgsub3 - 4.058*10^28*o)
m p3/q3 =1.423*10^-30*(-1.972*10^29 + 1.683*10^24*MCasub3 + 1.08*10^25*MCcsub3 + 8.676*10^24*MCfsub3 - 1.22*10^25*MCgsub3 + 1.897*10^29*o)
n p4/q3 =1.423*10^-30*(-1.781*10^28 - 1.265*10^24*MCasub3 - 1.597*10^24*MCcsub3 + 6.774*10^24*MCfsub3 - 3.103*10^24*MCgsub3 + 2.234*10^28*o)
p P1/q4 =4.205*10^-29*(-4.244*10^27 + 3.346*10^23*MCasub4 + 4.998*10^22*MCcsub4 + 3.782*10^23*MCfsub4 - 5.36*10^23*MCgsub4 - 8.909*10^27*t)
q p2/q4 =3.364*10^-28*(2.813*10^26 - 1.54*10^22*MCasub4 - 9.267*10^21*MCcsub4 - 3.951*10^22*MCfsub4 + 4.915*10^22*MCgsub4 - 3.433*10^26*t)
r p3/q4 =1.261*10^-28*(-1.892*10^27 + 1.899*10^22*MCasub4 + 1.218*10^23*MCcsub4 + 9.787*10^22*MCfsub4 - 1.376*10^23*MCgsub4 + 2.14*10^27*t)
s p4/q4 =3.784*10^-28*(-5.696*10^25 - 4.757*10^21*MCasub4 - 6.004*10^21*MCcsub4 + 2.547*10^22*MCfsub4 - 1.167*10^22*MCgsub4 + 8.402*10^25*t)
u P1/q5 =1.969*10^-30*(-1.558*10^29 + 7.145*10^24*MCasub5 + 1.067*10^24*MCcsub5 + 8.077*10^24*MCfsub5 - 1.145*10^25*MCgsub5 - 1.903*10^29*y)
v p2/q5 =1.26*10^-28*(1.291*10^27 - 4.112*10^22*MCasub5 - 2.474*10^22*MCcsub5 - 1.055*10^23*MCfsub5 + 1.312*10^23*MCgsub5 - 9.165*10^26*y)
w p3/q5 =2.559*10^-29*(-1.603*10^28 + 9.357*10^22*MCasub5 + 6.004*10^23*MCcsub5 + 4.823*10^23*MCfsub5 - 6.78*10^23*MCgsub5 + 1.055*10^28*y)
x p4/q5 =1.969*10^-30*(-1.882*10^28 - 9.143*10^23*MCasub5 - 1.154*10^24*MCcsub5 + 4.896*10^24*MCfsub5 - 2.242*10^24*MCgsub5 + 1.615*10^28*y)
y p5/q5 =+y
e p5/q1 =+e

```
j p5/q2       =+jj
o p5/q3       =+o
t p5/q4       =+t

--------------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------------------

aa            =IF(a>=0,-0.00000001,a)
bb            =IF(b>=0,-0.00000001,b)
cc            =IF(c_>=0,-0.00000001,c_)
dd            =IF(d>=0,-0.00000001,d)
ee            =IF(e>=0,-0.00000001,e)
ff            =IF(f>=0,-0.00000001,f)
gg            =IF(g>=0,-0.00000001,g)
hh            =IF(h>=0,-0.00000001,h)
ii            =IF(I>=0,-0.00000001,I)
jj            =IF(j>=0,-0.00000001,j)
kk            =IF(k>=0,-0.00000001,k)
ll            =IF(l>=0,-0.00000001,l)
mm            =IF(m>=0,-0.00000001,m)
nn            =IF(n>=0,-0.00000001,n)
oo            =IF(o>=0,-0.00000001,o)
pp            =IF(p>=0,-0.00000001,p)
qq            =IF(q>=0,-0.00000001,q)
rr            =IF(r_>=0,-0.00000001,r_)
ss            =IF(s>=0,-0.00000001,s)
tt            =IF(t>=0,-0.00000001,t)
uu            =IF(u>=0,-0.00000001,u)
vv            =IF(v>=0,-0.00000001,v)
ww            =IF(w>=0,-0.00000001,w)
xx            =IF(x>=0,-0.00000001,x)
yy            =IF(y>=0,-0.00000001,y)

----------------------KNOWN PRICES IN EACH SEGMENT-----------------------------------------------
P1            13708.9
```

P2 18921.06
P3 22002.42
P4 18715.01
P5 32167.58

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1 211,881
Csub1 72,957
Fsub1 147,965
Gsub1 199,104
Asub2 378,350
Csub2 229,607
Fsub2 358,708
Gsub2 510,710
Asub3 61,568
Csub3 109,880
Fsub3 88,205
Gsub3 110,920
asub4 93,279
Csub4 55,499
fsub4 241,272
gsub4 233,654
asub5 103,475
Csub5 22,417
fsub5 65,368
gsub5 96,188

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471

MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3

XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 21. 1st Quarter, 1994.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =3.478*10^-29*(-2.458*10^27 - 1.29*10^28*e + 2.546*10^23*MCasub1 - 4.373*10^22*MCcsub1 + 3.894*10^23*MCfsub1 - 4.272*10^23*MCgsub1)

b p2/q1 =3.478*10^-29*(1.889*10^27 + 3.146*10^26*e - 8.964*10^22*MCasub1 - 3.027*10^22*MCcsub1 - 4.752*10^23*MCfsub1 + 4.621*10^23*MCgsub1)

c p3/q1 =3.478*10^-29*(-5.336*10^27 + 7.927*10^27*e + 3.414*10^22*MCasub1 + 4.255*10^23*MCcsub1 + 4.945*10^23*MCfsub1 - 5.786*10^23*MCgsub1)

d p4/q1 =3.478*10^-29*(-1.64*10^27 - 3.697*10^27*e - 1.939*10^22*MCasub1 - 7.524*10^22*MCcsub1 + 5.476*10^23*MCfsub1 - 3.376*10^23*MCgsub1)

f P1/q2 =4.027*10^-29*(-2.907*10^27 - 1.114*10^28*j + 2.199*10^23*MCasub2 - 3.777*10^22*MCcsub2 + 3.363*10^23*MCfsub2 - 3.69*10^23*MCgsub2)

g p2/q2 =4.027*10^-29*(2.234*10^27 + 2.717*10^26*j - 7.743*10^22*MCasub2 - 2.614*10^22*MCcsub2 - 4.104*10^23*MCfsub2 + 3.991*10^23*MCgsub2)

h p3/q2 =4.027*10^-29*(-6.31*10^27 + 6.846*10^27*j + 2.949*10^22*MCasub2 + 3.675*10^23*MCcsub2 + 4.271*10^23*MCfsub2 - 4.997*10^23*MCgsub2)

i p4/q2 =4.027*10^-29*(-1.939*10^27 - 3.193*10^27*j - 1.675*10^22*MCasub2 - 6.498*10^22*MCcsub2 + 4.73*10^23*MCfsub2 - 2.916*10^23*MCgsub2)

k P1/q3 =8.36*10^-23*(-1.568*10^21 + 1.059*10^17*MCasub3 - 1.819*10^16*MCcsub3 + 1.62*10^17*MCfsub3 - 1.777*10^17*MCgsub3 - 5.365*10^21*o)

l p2/q3 =8.36*10^-23*(1.205*10^21 - 3.73*10^16*MCasub3 - 1.259*10^16*MCcsub3 - 1.977*10^17*MCfsub3 + 1.923*10^17*MCgsub3 + 1.309*10^20*o)
m p3/q3 =8.36*10^-23*(-3.403*10^21 + 1.421*10^16*MCasub3 + 1.77*10^17*MCcsub3 + 2.058*10^17*MCfsub3 - 2.407*10^17*MCgsub3 + 3.298*10^21*o)
n p4/q3 =8.36*10^-23*(-1.046*10^21 - 8.068*10^15*MCasub3 - 3.13*10^16*MCcsub3 + 2.278*10^17*MCfsub3 - 1.405*10^17*MCgsub3 - 1.538*10^21*o)
p P1/q4 =1.697*10^-29*(-6.468*10^27 + 5.217*10^23*MCasub4 - 8.961*10^22*MCcsub4 + 7.979*10^23*MCfsub4 - 8.755*10^23*MCgsub4 - 2.643*10^28*t)
q p2/q4 =1.697*10^-29*(4.971*10^27 - 1.837*10^23*MCasub4 - 6.203*10^22*MCcsub4 - 9.738*10^23*MCfsub4 + 9.47*10^23*MCgsub4 + 6.447*10^26*t)
r p3/q4 =1.697*10^-29*(-1.404*10^28 + 6.997*10^22*MCasub4 + 8.719*10^23*MCcsub4 + 1.013*10^24*MCfsub4 - 1.186*10^24*MCgsub4 + 1.624*10^28*t)
s p4/q4 =4.922*10^-28*(-1.488*10^26 - 1.37*10^21*MCasub4 - 5.317*10^21*MCcsub4 + 3.87*10^22*MCfsub4 - 2.385*10^22*MCgsub4 - 2.613*10^26*t)
u P1/q5 =3.192*10^-30*(-3.937*10^28 + 2.774*10^24*MCasub5 - 4.765*10^23*MCcsub5 + 4.243*10^24*MCfsub5 - 4.655*10^24*MCgsub5 - 1.405*10^29*y)
v p2/q5 =3.192*10^-30*(3.026*10^28 - 9.768*10^23*MCasub5 - 3.298*10^23*MCcsub5 - 5.178*10^24*MCfsub5 + 5.035*10^24*MCgsub5 + 3.428*10^27*y)
w p3/q5 =3.192*10^-30*(-8.547*10^28 + 3.72*10^23*MCasub5 + 4.636*10^24*MCcsub5 + 5.389*10^24*MCfsub5 - 6.304*10^24*MCgsub5 + 8.637*10^28*y)
x p4/q5 =3.192*10^-30*(-2.627*10^28 - 2.113*10^23*MCasub5 - 8.198*10^23*MCcsub5 + 5.967*10^24*MCfsub5 - 3.678*10^24*MCgsub5 - 4.029*10^28*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)

ee	=IF(e>=0,-0.00000001,e)
ff	=IF(f>=0,-0.00000001,f)
gg	=IF(g>=0,-0.00000001,g)
hh	=IF(h>=0,-0.00000001,h)
ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	14208.48
P2	19453.81
P3	21780.27
P4	18244.61
P5	20886.85

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	246,956
Csub1	87,889
Fsub1	147,206
Gsub1	205,024

Asub2 386,310
Csub2 274,744
Fsub2 401,648
Gsub2 568,131
Asub3 69,923
Csub3 109,733
Fsub3 82,874
Gsub3 105,965
asub4 96,467
Csub4 76,810
fsub4 221,504
gsub4 251,502
asub5 99,673
Csub5 16,039
fsub5 67,272
gsub5 88,876

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)

Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593

MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 22. 2nd Quarter, 1994.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =3.442*10^-29*(-3.477*10^27 - 1.791*10^28*e + 3.62*10^23*MCasub1 - 2.306*10^23*MCcsub1 + 1.11*10^24*MCfsub1 - 9.896*10^23*MCgsub1)

b p2/q1 =6.884*10^-29*(1.335*10^27 + 2.015*10^27*e - 9.857*10^22*MCasub1 + 7.89*10^22*MCcsub1 - 5.419*10^23*MCfsub1 + 4.648*10^23*MCgsub1)

c p3/q1 =6.884*10^-29*(-2.795*10^27 + 2.206*10^27*e + 6.847*10^22*MCasub1 + 1.067*10^23*MCcsub1 + 5.192*10^23*MCfsub1 - 4.917*10^23*MCgsub1)

d p4/q1 =4.13*10^-28*(-2.136*10^26 - 5.743*10^26*e + 8.831*10^21*MCasub1 - 1.97*10^22*MCcsub1 + 9.462*10^22*MCfsub1 - 6.827*10^22*MCgsub1)

f P1/q2 =9.801*10^-29*(-1.771*10^27 - 6.288*10^27*j + 1.271*10^23*MCasub2 - 8.097*10^22*MCcsub2 + 3.899*10^23*MCfsub2 - 3.475*10^23*MCgsub2)

g p2/q2 =1.96*10^-28*(6.795*10^26 + 7.077*10^26*j - 3.462*10^22*MCasub2 + 2.771*10^22*MCcsub2 - 1.903*10^23*MCfsub2 + 1.632*10^23*MCgsub2)

h p3/q2 =9.801*10^-28*(-2.846*10^26 + 1.55*10^26*j + 4.809*10^21*MCasub2 + 7.493*10^21*MCcsub2 + 3.647*10^22*MCfsub2 - 3.454*10^22*MCgsub2)

i p4/q2 =1.176*10^-27*(-1.087*10^26 - 2.017*10^26*j + 3.101*10^21*MCasub2 - 6.918*10^21*MCcsub2 + 3.323*10^22*MCfsub2 - 2.398*10^22*MCgsub2)

k P1/q3 =2.246*10^-30*(-8.68*10^28 + 5.547*10^24*MCasub3 - 3.533*10^24*MCcsub3 + 1.701*10^25*MCfsub3 - 1.517*10^25*MCgsub3 - 2.744*10^29*o)

l p2/q3 =4.492*10^-30*(3.331*10^28 - 1.511*10^24*MCasub3 + 1.209*10^24*MCcsub3 - 8.304*10^24*MCfsub3 + 7.123*10^24*MCgsub3 + 3.088*10^28*o)

m p3/q3 =4.492*10^-30*(-6.977*10^28 + 1.049*10^24*MCasub3 + 1.635*10^24*MCcsub3 + 7.957*10^24*MCfsub3 - 7.536*10^24*MCgsub3 + 3.381*10^28*o)

n p4/q3 =2.695*10^-29*(-5.331*10^27 + 1.353*10^23*MCasub3 - 3.019*10^23*MCcsub3 + 1.45*10^24*MCfsub3 - 1.046*10^24*MCgsub3 - 8.801*10^27*o)

p P1/q4 =2.304*10^-30*(-7.137*10^28 + 5.406*10^24*MCasub4 - 3.444*10^24*MCcsub4 + 1.658*10^25*MCfsub4 - 1.478*10^25*MCgsub4 - 2.675*10^29*t)

q p2/q4 =4.609*10^-30*(2.739*10^28 - 1.472*10^24*MCasub4 + 1.178*10^24*MCcsub4 - 8.094*10^24*MCfsub4 + 6.943*10^24*MCgsub4 + 3.01*10^28*t)

r p3/q4 =4.609*10^-30*(-5.737*10^28 + 1.023*10^24*MCasub4 + 1.594*10^24*MCcsub4 + 7.755*10^24*MCfsub4 - 7.345*10^24*MCgsub4 + 3.295*10^28*t)
s p4/q4 =2.765*10^-29*(-4.383*10^27 + 1.319*10^23*MCasub4 - 2.942*10^23*MCcsub4 + 1.413*10^24*MCfsub4 - 1.02*10^24*MCgsub4 - 8.578*10^27*t)
u P1/q5 =8.018*10^-21*(-3.441*10^19 + 1.554*10^15*MCasub5 - 9.898*10^14*MCcsub5 + 4.766*10^15*MCfsub5 - 4.248*10^15*MCgsub5 - 7.687*10^19*y)
v p2/q5 =1.604*10^-20*(1.32*10^19 - 4.232*10^14*MCasub5 + 3.387*10^14*MCcsub5 - 2.326*10^15*MCfsub5 + 1.995*10^15*MCgsub5 + 8.65*10^18*y)
w p3/q5 =1.604*10^-20*(-2.766*10^19 + 2.939*10^14*MCasub5 + 4.58*10^14*MCcsub5 + 2.229*10^15*MCfsub5 - 2.111*10^15*MCgsub5 + 9.471*10^18*y)
x p4/q5 =9.622*10^-20*(-2.113*10^18 + 3.791*10^13*MCasub5 - 8.456*10^13*MCcsub5 + 4.062*10^14*MCfsub5 - 2.931*10^14*MCgsub5 - 2.465*10^18*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)

oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	13796.1
P2	20001.48
P3	22470.48
P4	18956.59
P5	31800

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	274,556
Csub1	95,720
Fsub1	154,806
Gsub1	222,444
Asub2	466,762
Csub2	305,865
Fsub2	482,367
Gsub2	640,646
Asub3	73,338
Csub3	115,807
Fsub3	90,042
Gsub3	100,864
asub4	109,988
Csub4	92,442

fsub4 252,288
gsub4 301,743
asub5 119,414
Csub5 20,903
fsub5 74,663
gsub5 104,480

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)

Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**

y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 23. 3rd Quarter, 1994.

----------COEFFICIENTS OF DEMAND----------
a P1/q1 =1.181*10^-21*(-5.172*10^19 - 1.508*10^18*e + 7.066*10^15*MCasub1 + 8.571*10^14*MCcsub1 + 1.001*10^16*MCfsub1 - 1.411*10^16*MCgsub1)
b p2/q1 =7.089*10^-21*(7.994*10^18 - 6.711*10^19*e - 4.005*10^14*MCasub1 - 6.348*10^14*MCcsub1 - 1.907*10^15*MCfsub1 + 2.351*10^15*MCgsub1)

c p3/q1 =1.418*10^-20*(-1.198*10^19 + 3.165*10^19*e + 3.791*10^13*MCasub1 + 1.371*10^15*MCcsub1 + 3.069*10^14*MCfsub1 - 8.298*10^14*MCgsub1)

d p4/q1 =3.544*10^-21*(-1.784*10^19 + 1.213*10^20*e - 4.605*10^13*MCasub1 + 2.289*10^14*MCcsub1 + 5.591*10^15*MCfsub1 - 4.454*10^15*MCgsub1)

f P1/q2 =9.23*10^-23*(-9.615*10^20 - 1.931*10^19*j + 9.045*10^16*MCasub2 + 1.097*10^16*MCcsub2 + 1.281*10^17*MCfsub2 - 1.806*10^17*MCgsub2)

g p2/q2 =5.538*10^-22*(1.486*10^20 - 8.59*10^20*j - 5.127*10^15*MCasub2 - 8.125*10^15*MCcsub2 - 2.441*10^16*MCfsub2 + 3.009*10^16*MCgsub2)

h p3/q2 =1.108*10^-21*(-2.227*10^20 + 4.051*10^20*j + 4.853*10^14*MCasub2 + 1.755*10^16*MCcsub2 + 3.928*10^15*MCfsub2 - 1.062*10^16*MCgsub2)

i p4/q2 =2.769*10^-22*(-3.317*10^20 + 1.553*10^21*j - 5.895*10^14*MCasub2 + 2.93*10^15*MCcsub2 + 7.157*10^16*MCfsub2 - 5.701*10^16*MCgsub2)

k P1/q3 =5.373*10^-30*(-1.853*10^28 + 1.554*10^24*MCasub3 + 1.885*10^23*MCcsub3 + 2.201*10^24*MCfsub3 - 3.103*10^24*MCgsub3 - 3.317*10^26*o)

l p2/q3 =3.224*10^-29*(2.864*10^27 - 8.807*10^22*MCasub3 - 1.396*10^23*MCcsub3 - 4.193*10^23*MCfsub3 + 5.169*10^23*MCgsub3 - 1.476*10^28*o)

m p3/q3 =6.447*10^-29*(-4.29*10^27 + 8.337*10^21*MCasub3 + 3.015*10^23*MCcsub3 + 6.748*10^22*MCfsub3 - 1.825*10^23*MCgsub3 + 6.959*10^27*o)

n p4/q3 =1.612*10^-29*(-6.391*10^27 - 1.013*10^22*MCasub3 + 5.033*10^22*MCcsub3 + 1.229*10^24*MCfsub3 - 9.795*10^23*MCgsub3 + 2.668*10^28*o)

p P1/q4 =5.37*10^-22*(-1.457*10^20 + 1.555*10^16*MCasub4 + 1.886*10^15*MCcsub4 + 2.202*10^16*MCfsub4 - 3.104*10^16*MCgsub4 - 3.318*10^18*t)

q p2/q4 =4.603*10^-22*(1.576*10^20 - 6.168*10^15*MCasub4 - 9.775*10^15*MCcsub4 - 2.936*10^16*MCfsub4 + 3.62*10^16*MCgsub4 - 1.033*10^21*t)

r p3/q4 =9.206*10^-22*(-2.362*10^20 + 5.839*10^14*MCasub4 + 2.111*10^16*MCcsub4 + 4.726*10^15*MCfsub4 - 1.278*10^16*MCgsub4 + 4.874*10^20*t)

s p4/q4 =2.301*10^-22*(-3.518*10^20 - 7.092*10^14*MCasub4 + 3.525*10^15*MCcsub4 + 8.61*10^16*MCfsub4 - 6.86*10^16*MCgsub4 + 1.869*10^21*t)

u P1/q5 =5.907*10^-21*(-2.083*10^19 + 1.413*10^15*MCasub5 + 1.714*10^14*MCcsub5 + 2.002*10^15*MCfsub5 - 2.822*10^15*MCgsub5 - 3.017*10^17*y)

v p2/q5 =3.544*10^-20*(3.22*10^18 - 8.01*10^13*MCasub5 - 1.27*10^14*MCcsub5 - 3.813*10^14*MCfsub5 + 4.701*10^14*MCgsub5 - 1.342*10^19*y)

w p3/q5 =7.089*10^-20*(-4.824*10^18 + 7.583*10^12*MCasub5 + 2.742*10^14*MCcsub5 + 6.137*10^13*MCfsub5 - 1.66*10^14*MCgsub5 + 6.329*10^18*y)

x p4/q5 =1.772*10^-20*(-7.185*10^18 - 9.211*10^12*MCasub5 + 4.577*10^13*MCcsub5 + 1.118*10^15*MCfsub5 - 8.908*10^14*MCgsub5 + 2.427*10^19*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)
ww =IF(w>=0,-0.00000001,w)
xx =IF(x>=0,-0.00000001,x)

yy =IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1 13519.4
P2 19635.95
P3 22021.65
P4 17309.3
P5 27224

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1 271,005
Csub1 70,794
Fsub1 145,143
Gsub1 183,024
Asub2 453,447
Csub2 221,174
Fsub2 428,571
Gsub2 544,633
Asub3 85,478
Csub3 95,302
Fsub3 81,709
Gsub3 106,577
asub4 128,757
Csub4 87,674
fsub4 238,199
gsub4 238,826
asub5 122,458
Csub5 24,872
fsub5 65,024
gsub5 108,874

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**

tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551

MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2

XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 24. 4th Quarter, 1994.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =6.68*10^-30*(-3.894*10^28 + 1.1*10^29*e + 9.799*10^23*MCasub1 + 3.203*10^24*MCcsub1 + 2.296*10^24*MCfsub1 - 3.85*10^24*MCgsub1)

b p2/q1 =9.352*10^-29*(2.281*10^27 - 1.194*10^28*e - 7.075*10^20*MCasub1 - 2.398*10^23*MCcsub1 - 1.544*10^23*MCfsub1 + 2.409*10^23*MCgsub1)

c p3/q1 =6.68*10^-30*(-2.864*10^28 + 9.993*10^28*e - 1.826*10^23*MCasub1 + 3.208*10^24*MCcsub1 + 3.162*10^23*MCfsub1 - 1.408*10^24*MCgsub1)

d p4/q1 =2.672*10^-29*(-1.037*10^28 + 4.661*10^28*e - 9.418*10^22*MCasub1 + 9.439*10^23*MCcsub1 + 8.588*10^23*MCfsub1 - 1.009*10^24*MCgsub1)

f P1/q2 =5.119*10^-29*(-6.496*10^27 + 1.435*10^28*j + 1.279*10^23*MCasub2 + 4.18*10^23*MCcsub2 + 2.996*10^23*MCfsub2 - 5.024*10^23*MCgsub2)

g p2/q2 =7.167*10^-28*(3.805*10^26 - 1.557*10^27*j - 9.233*10^19*MCasub2 - 3.129*10^22*MCcsub2 - 2.015*10^22*MCfsub2 + 3.144*10^22*MCgsub2)

h p3/q2 =5.119*10^-29*(-4.778*10^27 + 1.304*10^28*j - 2.383*10^22*MCasub2 + 4.186*10^23*MCcsub2 + 4.126*10^22*MCfsub2 - 1.837*10^23*MCgsub2)
i p4/q2 =2.048*10^-28*(-1.73*10^27 + 6.083*10^27*j - 1.229*10^22*MCasub2 + 1.232*10^23*MCcsub2 + 1.121*10^23*MCfsub2 - 1.316*10^23*MCgsub2)
k P1/q3 =3.969*10^-28*(-1.09*10^27 + 1.649*10^22*MCasub3 + 5.391*10^22*MCcsub3 + 3.864*10^22*MCfsub3 - 6.48*10^22*MCgsub3 + 1.851*10^27*o)
l p2/q3 =1.502*10^-28*(2.362*10^27 - 4.406*10^20*MCasub3 - 1.493*10^23*MCcsub3 - 9.614*10^22*MCfsub3 + 1.5*10^23*MCgsub3 - 7.433*10^27*o)
m p3/q3 =1.073*10^-29*(-2.966*10^28 - 1.137*10^23*MCasub3 + 1.998*10^24*MCcsub3 + 1.969*10^23*MCfsub3 - 8.768*10^23*MCgsub3 + 6.223*10^28*o)
n p4/q3 =2.145*10^-28*(-2.147*10^27 - 1.173*10^22*MCasub3 + 1.176*10^23*MCcsub3 + 1.07*10^23*MCfsub3 - 1.256*10^23*MCgsub3 + 5.806*10^27*o)
p P1/q4 =1.044*10^-29*(-3.147*10^28 + 6.271*10^23*MCasub4 + 2.05*10^24*MCcsub4 + 1.469*10^24*MCfsub4 - 2.464*10^24*MCgsub4 + 7.037*10^28*t)
q p2/q4 =1.462*10^-28*(1.843*10^27 - 4.527*10^20*MCasub4 - 1.534*10^23*MCcsub4 - 9.879*10^22*MCfsub4 + 1.542*10^23*MCgsub4 - 7.637*10^27*t)
r p3/q4 =1.044*10^-29*(-2.315*10^28 - 1.168*10^23*MCasub4 + 2.053*10^24*MCcsub4 + 2.023*10^23*MCfsub4 - 9.01*10^23*MCgsub4 + 6.395*10^28*t)
s p4/q4 =4.176*10^-29*(-8.38*10^27 - 6.027*10^22*MCasub4 + 6.04*10^23*MCcsub4 + 5.495*10^23*MCfsub4 - 6.454*10^23*MCgsub4 + 2.983*10^28*t)
u P1/q5 =9.17*10^-30*(-5.272*10^28 + 7.139*10^23*MCasub5 + 2.333*10^24*MCcsub5 + 1.672*10^24*MCfsub5 - 2.805*10^24*MCgsub5 + 8.01*10^28*y)
v p2/q5 =1.284*10^-28*(3.088*10^27 - 5.154*10^20*MCasub5 - 1.747*10^23*MCcsub5 - 1.125*10^23*MCfsub5 + 1.755*10^23*MCgsub5 - 8.694*10^27*y)
w p3/q5 =9.17*10^-30*(-3.878*10^28 - 1.33*10^23*MCasub5 + 2.337*10^24*MCcsub5 + 2.303*10^23*MCfsub5 - 1.026*10^24*MCgsub5 + 7.28*10^28*y)
x p4/q5 =7.336*10^-29*(-7.02*10^27 - 3.43*10^22*MCasub5 + 3.438*10^23*MCcsub5 + 3.128*10^23*MCfsub5 - 3.673*10^23*MCgsub5 + 1.698*10^28*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa	=IF(a>=0,-0.00000001,a)
bb	=IF(b>=0,-0.00000001,b)
cc	=IF(c_>=0,-0.00000001,c_)
dd	=IF(d>=0,-0.00000001,d)
ee	=IF(e>=0,-0.00000001,e)
ff	=IF(f>=0,-0.00000001,f)
gg	=IF(g>=0,-0.00000001,g)
hh	=IF(h>=0,-0.00000001,h)
ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	14814.3
P2	18936.67
P3	24631.48
P4	18710.41
P5	27535.16

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	213,076
Csub1	59,035
Fsub1	114,072
Gsub1	132,486
Asub2	403,923
Csub2	225,226
Fsub2	458,872
Gsub2	563,804
Asub3	87,998
Csub3	115,603
Fsub3	72,852
Gsub3	162,010
asub4	103,631
Csub4	91,611
fsub4	249,346
gsub4	251,275
asub5	106,519
Csub5	16,752
fsub5	69,190
gsub5	110,868

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1	**=+Gsub1+Fsub1+Csub1+Asub1**
tseg2	**=+Gsub2+Fsub2+Csub2+Asub2**
tseg3	**=+Gsub3+Fsub3+Csub3+Asub3**
tseg4	**=+gsub4+fsub4+Csub4+asub4**
tseg5	**=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------

Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)

Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447

MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4

XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 25. 1st Quarter, 1995.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =2.529*10^-29*(-3.342*10^28 + 3.475*10^28*e + 9.984*10^23*MCasub1 + 2.897*10^24*MCcsub1 + 3.408*10^24*MCfsub1 - 5.018*10^24*MCgsub1)

b p2/q1 =5.059*10^-29*(1.706*10^28 - 3.053*10^28*e - 3.915*10^23*MCasub1 - 1.595*10^24*MCcsub1 - 1.82*10^24*MCfsub1 + 2.641*10^24*MCgsub1)

c p3/q1 =2.529*10^-29*(-3.634*10^28 + 6.937*10^28*e + 6.059*10^23*MCasub1 + 3.608*10^24*MCcsub1 + 3.028*10^24*MCfsub1 - 4.757*10^24*MCgsub1)

d p4/q1 =2.529*10^-29*(-3.884*10^28 + 6.464*10^28*e + 8.129*10^23*MCasub1 + 3.428*10^24*MCcsub1 + 4.458*10^24*MCfsub1 - 6.044*10^24*MCgsub1)

f P1/q2 =8.774*10^-28*(-1.317*10^27 + 1.002*10^27*j + 2.878*10^22*MCasub2 + 8.35*10^22*MCcsub2 + 9.826*10^22*MCfsub2 - 1.447*10^23*MCgsub2)

g p2/q2 =1.755*10^-27*(6.72*10^26 - 8.8*10^26*j - 1.129*10^22*MCasub2 - 4.599*10^22*MCcsub2 - 5.247*10^22*MCfsub2 + 7.613*10^22*MCgsub2)

h p3/q2 =8.774*10^-28*(-1.432*10^27 + 2*10^27*j + 1.747*10^22*MCasub2 + 1.04*10^23*MCcsub2 + 8.729*10^22*MCfsub2 - 1.371*10^23*MCgsub2)

i p4/q2 =8.774*10^-28*(-1.53*10^27 + 1.864*10^27*j + 2.344*10^22*MCasub2 + 9.882*10^22*MCcsub2 + 1.285*10^23*MCfsub2 - 1.742*10^23*MCgsub2)

k P1/q3 =9.747*10^-29*(-1.654*10^28 + 2.591*10^23*MCasub3 + 7.517*10^23*MCcsub3 + 8.845*10^23*MCfsub3 - 1.302*10^24*MCgsub3 + 9.019*10^27*o)

l p2/q3 =1.949*10^-28*(8.441*10^27 - 1.016*10^23*MCasub3 - 4.14*10^23*MCcsub3 - 4.723*10^23*MCfsub3 + 6.853*10^23*MCgsub3 - 7.922*10^27*o)

m p3/q3 =9.747*10^-29*(-1.798*10^28 + 1.572*10^23*MCasub3 + 9.363*10^23*MCcsub3 + 7.858*10^23*MCfsub3 - 1.235*10^24*MCgsub3 + 1.8*10^28*o)

n p4/q3 =9.747*10^-29*(-1.922*10^28 + 2.11*10^23*MCasub3 + 8.896*10^23*MCcsub3 + 1.157*10^24*MCfsub3 - 1.569*10^24*MCgsub3 + 1.678*10^28*o)
p P1/q4 =3.388*10^-29*(-3.036*10^28 + 7.454*10^23*MCasub4 + 2.162*10^24*MCcsub4 + 2.545*10^24*MCfsub4 - 3.747*10^24*MCgsub4 + 2.594*10^28*t)
q p2/q4 =6.776*10^-29*(1.549*10^28 - 2.923*10^23*MCasub4 - 1.191*10^24*MCcsub4 - 1.359*10^24*MCfsub4 + 1.971*10^24*MCgsub4 - 2.279*10^28*t)
r p3/q4 =3.388*10^-29*(-3.301*10^28 + 4.524*10^23*MCasub4 + 2.694*10^24*MCcsub4 + 2.26*10^24*MCfsub4 - 3.552*10^24*MCgsub4 + 5.179*10^28*t)
s p4/q4 =3.388*10^-29*(-3.528*10^28 + 6.069*10^23*MCasub4 + 2.559*10^24*MCcsub4 + 3.328*10^24*MCfsub4 - 4.512*10^24*MCgsub4 + 4.826*10^28*t)
u P1/q5 =6.379*10^-20*(-3.013*10^19 + 3.959*10^14*MCasub5 + 1.149*10^15*MCcsub5 + 1.352*10^15*MCfsub5 - 1.99*10^15*MCgsub5 + 1.378*10^19*y)
v p2/q5 =1.276*10^-19*(1.537*10^19 - 1.552*10^14*MCasub5 - 6.326*10^14*MCcsub5 - 7.217*10^14*MCfsub5 + 1.047*10^15*MCgsub5 - 1.21*10^19*y)
w p3/q5 =6.379*10^-20*(-3.275*10^19 + 2.403*10^14*MCasub5 + 1.431*10^15*MCcsub5 + 1.201*10^15*MCfsub5 - 1.886*10^15*MCgsub5 + 2.751*10^19*y)
x p4/q5 =6.379*10^-20*(-3.501*10^19 + 3.224*10^14*MCasub5 + 1.359*10^15*MCcsub5 + 1.768*10^15*MCfsub5 - 2.397*10^15*MCgsub5 + 2.563*10^19*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)

ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	14628.02
P2	19990.01
P3	27894.02
P4	17798.69
P5	33250

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	212,911
Csub1	66,888
Fsub1	111,361
Gsub1	148,720
Asub2	372,149
Csub2	253,975
Fsub2	453,633
Gsub2	528,724

Asub3 68,074
Csub3 94,252
Fsub3 91,162
Gsub3 129,859
asub4 94,837
Csub4 92,210
fsub4 232,187
gsub4 229,785
asub5 113,036
Csub5 17,255
fsub5 63,041
gsub5 82,188

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)

Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 26. 2nd Quarter, 1995.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =2.524*10^-28*(1.693*10^27 + 8.99*10^27*e - 1.575*10^23*MCasub1 - 9.554*10^21*MCcsub1 - 4.001*10^23*MCfsub1 + 4.574*10^23*MCgsub1)

b p2/q1 =3.408*10^-27*(-1.304*10^26 - 7.99*10^26*e + 1.271*10^22*MCasub1 + 1.613*10^20*MCcsub1 + 2.855*10^22*MCfsub1 - 3.298*10^22*MCgsub1)

c p3/q1 =2.524*10^-28*(8.539*10^26 + 9.732*10^27*e - 1.35*10^23*MCasub1 + 5.31*10^22*MCcsub1 - 2.975*10^23*MCfsub1 + 3.241*10^23*MCgsub1)

d p4/q1 =3.787*10^-28*(1.471*10^27 + 8.12*10^27*e - 1.441*10^23*MCasub1 - 1.768*10^22*MCcsub1 - 3.025*10^23*MCfsub1 + 3.689*10^23*MCgsub1)

f P1/q2 =4.428*10^-28*(1.245*10^27 + 5.126*10^27*j - 8.98*10^22*MCasub2 - 5.447*10^21*MCcsub2 - 2.281*10^23*MCfsub2 + 2.608*10^23*MCgsub2)

g p2/q2 =5.977*10^-27*(-9.586*10^25 - 4.556*10^26*j + 7.248*10^21*MCasub2 + 9.198*10^19*MCcsub2 + 1.628*10^22*MCfsub2 - 1.88*10^22*MCgsub2)

h p3/q2 =8.412*10^-27*(3.305*10^25 + 2.921*10^26*j - 4.051*10^21*MCasub2 + 1.593*10^21*MCcsub2 - 8.929*10^21*MCfsub2 + 9.726*10^21*MCgsub2)

i p4/q2 =6.641*10^-28*(1.081*10^27 + 4.63*10^27*j - 8.215*10^22*MCasub2 - 1.008*10^22*MCcsub2 - 1.725*10^23*MCfsub2 + 2.104*10^23*MCgsub2)

k P1/q3 =6.68*10^-29*(1.151*10^28 - 5.952*10^23*MCasub3 - 3.611*10^22*MCcsub3 - 1.512*10^24*MCfsub3 + 1.729*10^24*MCgsub3 + 3.397*10^28*o)

l p2/q3 =4.239*10^-26*(-1.886*10^25 + 1.022*10^21*MCasub3 + 1.297*10^19*MCcsub3 + 2.296*10^21*MCfsub3 - 2.652*10^21*MCgsub3 - 6.424*10^25*o)

m p3/q3 =1.269*10^-27*(3.056*10^26 - 2.685*10^22*MCasub3 + 1.056*10^22*MCcsub3 - 5.918*10^22*MCfsub3 + 6.446*10^22*MCgsub3 + 1.936*10^27*o)

n p4/q3 =1.002*10^-28*(9.998*10^27 - 5.445*10^23*MCasub3 - 6.682*10^22*MCcsub3 - 1.143*10^24*MCfsub3 + 1.394*10^24*MCgsub3 + 3.068*10^28*o)

p P1/q4 =4.466*10^-29*(1.136*10^28 - 8.902*10^23*MCasub4 - 5.4*10^22*MCcsub4 - 2.262*10^24*MCfsub4 + 2.586*10^24*MCgsub4 + 5.081*10^28*t)

q p2/q4 =2.01*10^-28*(-2.623*10^27 + 2.155*10^23*MCasub4 + 2.735*10^21*MCcsub4 + 4.842*10^23*MCfsub4 - 5.592*10^23*MCgsub4 - 1.355*10^28*t)

r p3/q4 =1.385*10^-27*(1.848*10^26 - 2.461*10^22*MCasub4 + 9.681*10^21*MCcsub4 - 5.425*10^22*MCfsub4 + 5.909*10^22*MCgsub4 + 1.774*10^27*t)

s p4/q4 =6.7*10^-29*(9.865*10^27 - 8.144*10^23*MCasub4 - 9.993*10^22*MCcsub4 - 1.71*10^24*MCfsub4 + 2.085*10^24*MCgsub4 + 4.589*10^28*t)

u P1/q5 =1.185*10^-29*(7.644*10^28 - 3.356*10^24*MCasub5 - 2.036*10^23*MCcsub5 - 8.527*10^24*MCfsub5 + 9.749*10^24*MCgsub5 + 1.916*10^29*y)
v p2/q5 =5.331*10^-29*(-1.765*10^28 + 8.127*10^23*MCasub5 + 1.031*10^22*MCcsub5 + 1.826*10^24*MCfsub5 - 2.109*10^24*MCgsub5 - 5.108*10^28*y)
w p3/q5 =1.185*10^-29*(3.855*10^28 - 2.877*10^24*MCasub5 + 1.132*10^24*MCcsub5 - 6.341*10^24*MCfsub5 + 6.907*10^24*MCgsub5 + 2.074*10^29*y)
x p4/q5 =8.884*10^-29*(1.328*10^28 - 6.141*10^23*MCasub5 - 7.536*10^22*MCcsub5 - 1.289*10^24*MCfsub5 + 1.572*10^24*MCgsub5 + 3.461*10^28*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)

ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)
ww =IF(w>=0,-0.00000001,w)
xx =IF(x>=0,-0.00000001,x)
yy =IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1 15430.95
P2 19902.1
P3 27761.61
P4 18315.31
P5 32687.34

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1 265,131
Csub1 81,642
Fsub1 105,976
Gsub1 194,344
Asub2 443,230
Csub2 295,194
Fsub2 519,200
Gsub2 612,909
Asub3 75,960
Csub3 125,421
Fsub3 125,855
Gsub3 138,857
asub4 92,958
Csub4 96,564
fsub4 256,424
gsub4 258,315
asub5 132,737
Csub5 13,466

fsub5 75,610
gsub5 92,465

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)

Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1=+P1_-MCasub1

XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 27. 3rd Quarter, 1995.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =-0.675893-0.82993* e+0.0000885629*MCasub1+0.0000108097*MCcsub1+0.000108747*MCfsub1-0.000164701*MCgsub1

b p2/q1 =0.599066+0.247579*e-0.0000743063*MCasub1-0.000013552*MCcsub1-0.0000973218*MCfsub1+0.000146697*MCgsub1

c p3/q1 =-0.651597+0.288643*e+0.0000568952*MCasub1+0.0000307201*MCcsub1+0.0000718541*MCfsub1-0.000117612*MCgsub1

d p4/q1 =((-0.613829792700946) - 0.506278472594939* e + 0.0000769787284408508* MCasub1+ 7.09538562792401*10^-6* MCcsub1 + 0.00010899542025719 8*MCfsub1- 0.00015363807450847 5*MCgsub1)

f P1/q2 =-0.833126-0.82993*j+0.0000885629*MCasub2+0.0000108097*MCcsub2+0.000108747*MCfsub2-0.000164701*MCgsub2

g p2/q2= 0.738427+0.247579*j-0.0000743063*MCasub2-0.000013552*MCcsub2-0.0000973218*MCfsub2+0.000146697*MCgsub2

h p3/q2 =-0.803178+0.288643*j+0.0000568952*MCasub2+0.0000307201*MCcsub2+0.0000718541*MCfsub2-0.000117612*MCgsub2

I p4/q2 =((-0.756625493279187) - 0.506278472594939* j + 0.0000769787284408508*MCasub2+ 7.09538562792401*10^-6* MCcsub2 + 0.00010899542025719 8*MCfsub2 - 0.00015363807450847 5*MCgsub2)

k P1/q3 =-1.17303+0.0000885629*MCasub3+0.0000108097*MCcsub3+0.000108747*MCfsub3-0.000164701*MCgsub3-0.82993*o

l p2/q3 =1.0397-0.0000743063*MCasub3-0.000013552*MCcsub3-0.0000973218*MCfsub3+0.000146697*MCgsub3+0.247579* o

m p3/q3 =-1.13087+0.0000568952*MCasub3+0.0000307201*MCcsub3+0.0000718541*MCfsub3-0.000117612*MCgsub3+0.288643*o

n p4/q3 =((-1.06531974988933) + 0.0000769787284408508*MCasub3+7.09538562792401*10^-6*MCcsub3+0.00010899542025719 8*MCfsub3 -0.00015363807450847 5*MCgsub3-0.506278472594939* o)

p P1/q4 =-0.802483+0.0000885629*MCasub4+0.0000108097*MCcsub4+0.000108747*MCfsub4-0.000164701*MCgsub4-0.82993*t

q p2/q4 =0.711267-0.0000743063*MCasub4-0.000013552*MCcsub4-0.0000973218*MCfsub4+0.000146697*MCgsub4+0.247579*t

r p3/q4 =-0.773637+0.0000568952*MCasub4+0.0000307201*MCcsub4+0.0000718541*MCfsub4-0.000117612*MCgsub4+0.288643*t

s p4/q4 =((-0.728796121371952) + 0.0000769787284408508*MCasub4+7.09538562792401*10^-6*MCcsub4+0.00010899542025719 8*MCfsub4-0.00015363807450847 5*MCgsub4 -0.506278472594939*t)

u P1/q5 =-1.53511+0.0000885629*MCasub5+0.0000108097*MCcsub5+0.000108747*MCfsub5-0.000164701*MCgsub5-0.82993*y

v p2/q5 =1.36062-0.0000743063* MCasub5-0.000013552*MCcsub5-0.0000973218*MCfsub5+0.000146697*MCgsub5+0.247579*y

w p3/q5 =-1.47993+0.0000568952*MCasub5+0.0000307201*MCcsub5+0.0000718541*MCfsub5-0.000117612*MCgsub5+0.288643*y

x p4/q5 =(-1.3941485511724) + 0.0000769787284408508*MCasub5+7.09538562792401*10^-6*MCcsub5 + 0.00010899542025719 8*MCfsub5 -0.00015363807450847 5*MCgsub5-0.506278472594939*y

y p5/q5 =+y

e p5/q1 =+e

j p5/q2 =+jj

o p5/q3 =+o

t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)
ww =IF(w>=0,-0.00000001,w)
xx =IF(x>=0,-0.00000001,x)
yy =IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------
P1 15567.01
P2 19188.37
P3 27017

P4 18482.61
P5 35356.25

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------
Asub1 260,198
Csub1 65,061
Fsub1 96,373
Gsub1 201,744
Asub2 473,236
Csub2 243,985
Fsub2 449,608
Gsub2 567,343
Asub3 93,865
Csub3 96,689
Fsub3 108,285
Gsub3 128,316
asub4 101,068
Csub4 89,200
fsub4 243,090
gsub4 220,705
asub5 122,858
Csub5 10,842
fsub5 60,485
gsub5 101,672

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)

Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237

MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4

XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 28. 4th Quarter, 1995.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =2.401*10^-28*(8.874*10^26 + 2.451*10^26*e - 6.538*10^22*MCasub1 - 3.633*10^22*MCcsub1 - 9.874*10^22*MCfsub1 + 1.43*10^23*MCgsub1)

b p2/q1 =1.2*10^-28*(-1.482*10^27 - 5.097*10^27*e + 1.411*10^23*MCasub1 + 2.172*10^22*MCcsub1 + 1.517*10^23*MCfsub1 - 2.187*10^23*MCgsub1)

c p3/q1 =1.56*10^-27*(-5.779*10^24 + 6.327*10^26*e - 9.813*10^21*MCasub1 + 1.134*10^22*MCcsub1 - 1.452*10^22*MCfsub1 + 1.337*10^22*MCgsub1)

d p4/q1 =1.5*10^-27*(1.088*10^26 + 1.645*10^26*e - 9.944*10^21*MCasub1 - 7.053*10^21*MCcsub1 - 4.048*10^21*MCfsub1 + 1.401*10^22*MCgsub1)

f P1/q2 =4.049*10^-29*(6.692*10^27 + 1.453*10^27*j - 3.877*10^23*MCasub2 - 2.154*10^23*MCcsub2 - 5.854*10^23*MCfsub2 + 8.481*10^23*MCgsub2)

g p2/q2 =1.012*10^-29*(-2.235*10^28 - 6.044*10^28*j + 1.673*10^24*MCasub2 + 2.576*10^23*MCcsub2 + 1.799*10^24*MCfsub2 - 2.593*10^24*MCgsub2)

h p3/q2 =3.948*10^-28*(-2.905*10^25 + 2.501*10^27*j - 3.879*10^22*MCasub2 + 4.482*10^22*MCcsub2 - 5.74*10^22*MCfsub2 + 5.285*10^22*MCgsub2)

i p4/q2 =3.796*10^-28*(5.467*10^26 + 6.501*10^26*j - 3.931*10^22*MCasub2 - 2.788*10^22*MCcsub2 - 1.6*10^22*MCfsub2 + 5.537*10^22*MCgsub2)

k P1/q3 =2.693*10^-29*(1.362*10^28 - 5.829*10^23*MCasub3 - 3.239*10^23*MCcsub3 - 8.802*10^23*MCfsub3 + 1.275*10^24*MCgsub3 + 2.185*10^27*o)

l p2/q3 =2.693*10^-29*(-1.137*10^28 + 6.289*10^23*MCasub3 + 9.681*10^22*MCcsub3 + 6.764*10^23*MCfsub3 - 9.747*10^23*MCgsub3 - 2.272*10^28*o)

m p3/q3 =1.05*10^-27*(-1.478*10^25 - 1.458*10^22*MCasub3 + 1.685*10^22*MCcsub3 - 2.158*10^22*MCfsub3 + 1.987*10^22*MCgsub3 + 9.401*10^26*o)
n p4/q3 =4.039*10^-29*(6.955*10^27 - 3.694*10^23*MCasub3 - 2.62*10^23*MCcsub3 - 1.504*10^23*MCfsub3 + 5.203*10^23*MCgsub3 + 6.109*10^27*o)
p P1/q4 =5.061*10^-30*(5.646*10^28 - 3.101*10^24*MCasub4 - 1.723*10^24*MCcsub4 - 4.683*10^24*MCfsub4 + 6.785*10^24*MCgsub4 + 1.163*10^28*t)
q p2/q4 =5.061*10^-30*(-4.714*10^28 + 3.346*10^24*MCasub4 + 5.151*10^23*MCcsub4 + 3.599*10^24*MCfsub4 - 5.186*10^24*MCgsub4 - 1.209*10^29*t)
r p3/q4 =1.974*10^-28*(-6.129*10^25 - 7.758*10^22*MCasub4 + 8.963*10^22*MCcsub4 - 1.148*10^23*MCfsub4 + 1.057*10^23*MCgsub4 + 5.002*10^27*t)
s p4/q4 =7.592*10^-30*(2.883*10^28 - 1.965*10^24*MCasub4 - 1.394*10^24*MCcsub4 - 8.001*10^23*MCfsub4 + 2.769*10^24*MCgsub4 + 3.25*10^28*t)
u P1/q5 =9.55*10^-30*(5.456*10^28 - 1.644*10^24*MCasub5 - 9.134*10^23*MCcsub5 - 2.482*10^24*MCfsub5 + 3.596*10^24*MCgsub5 + 6.163*10^27*y)
v p2/q5 =9.55*10^-30*(-4.555*10^28 + 1.773*10^24*MCasub5 + 2.73*10^23*MCcsub5 + 1.907*10^24*MCfsub5 - 2.749*10^24*MCgsub5 - 6.407*10^28*y)
w p3/q5 =3.724*10^-28*(-5.923*10^25 - 4.112*10^22*MCasub5 + 4.75*10^22*MCcsub5 - 6.085*10^22*MCfsub5 + 5.603*10^22*MCgsub5 + 2.651*10^27*y)
x p4/q5 =1.432*10^-29*(2.786*10^28 - 1.042*10^24*MCasub5 - 7.388*10^23*MCcsub5 - 4.24*10^23*MCfsub5 + 1.467*10^24*MCgsub5 + 1.723*10^28*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)

gg	=IF(g>=0,-0.00000001,g)
hh	=IF(h>=0,-0.00000001,h)
ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	15455.3
P2	19655.56
P3	26608.96
P4	20731.22
P5	37800.32

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	197,449
Csub1	53,775
Fsub1	85,218
Gsub1	191,863
Asub2	394,156
Csub2	242,241

Fsub2 398,823
Gsub2 517,012
Asub3 88,309
Csub3 110,266
Fsub3 124,161
Gsub3 154,084
asub4 81,992
Csub4 105,204
fsub4 235,586
gsub4 226,826
asub5 122,106
Csub5 10,213
fsub5 58,268
gsub5 96,919

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)

Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525

MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 29. 1st Quarter, 1996.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =2.408*10^-29*(5.581*10^27 - 1.949*10^28*e - 1.273*10^23*MCasub1 - 6.915*10^23*MCcsub1 - 2.574*10^23*MCfsub1 + 7.323*10^23*MCgsub1)

b p2/q1 =1.204*10^-29*(-8.572*10^27 - 1.249*10^28*e + 5.308*10^23*MCasub1 + 5.937*10^23*MCcsub1 + 3.332*10^23*MCfsub1 - 9.294*10^23*MCgsub1)

c p3/q1 =2.408*10^-29*(-3.857*10^27 + 3.258*10^28*e - 3.278*10^23*MCasub1 + 8.037*10^23*MCcsub1 - 5.803*10^23*MCfsub1 + 3.421*10^23*MCgsub1)

d p4/q1 =1.204*10^-29*(8.662*10^27 - 1.553*10^28*e - 4.849*10^23*MCasub1 - 1.252*10^24*MCcsub1 + 5.147*10^23*MCfsub1 + 6.884*10^23*MCgsub1)

f P1/q2 =2.674*10^-29*(6.766*10^27 - 1.755*10^28*j - 1.147*10^23*MCasub2 - 6.228*10^23*MCcsub2 - 2.318*10^23*MCfsub2 + 6.595*10^23*MCgsub2)

g p2/q2 =2.674*10^-29*(-5.196*10^27 - 5.624*10^27*j + 2.39*10^23*MCasub2 + 2.673*10^23*MCcsub2 + 1.5*10^23*MCfsub2 - 4.185*10^23*MCgsub2)

h p3/q2 =2.674*10^-29*(-4.677*10^27 + 2.934*10^28*j - 2.952*10^23*MCasub2 + 7.238*10^23*MCcsub2 - 5.226*10^23*MCfsub2 + 3.081*10^23*MCgsub2)

i p4/q2 =2.674*10^-29*(5.251*10^27 - 6.992*10^27*j - 2.183*10^23*MCasub2 - 5.638*10^23*MCcsub2 + 2.318*10^23*MCfsub2 + 3.1*10^23*MCgsub2)

k P1/q3 =1.113*10^-29*(2.137*10^28 - 2.754*10^23*MCasub3 - 1.496*10^24*MCcsub3 - 5.568*10^23*MCfsub3 + 1.584*10^24*MCgsub3 - 4.215*10^28*o)

l p2/q3 =1.113*10^-29*(-1.641*10^28 + 5.741*10^23*MCasub3 + 6.421*10^23*MCcsub3 + 3.604*10^23*MCfsub3 - 1.005*10^24*MCgsub3 - 1.351*10^28*o)

m p3/q3 =4.772*10^-30*(-3.446*10^28 - 1.654*10^24*MCasub3 + 4.056*10^24*MCcsub3 - 2.929*10^24*MCfsub3 + 1.727*10^24*MCgsub3 + 1.644*10^29*o)

n p4/q3 =3.34*10^-29*(5.528*10^27 - 1.748*10^23*MCasub3 - 4.514*10^23*MCcsub3 + 1.855*10^23*MCfsub3 + 2.482*10^23*MCgsub3 - 5.598*10^27*o)

p P1/q4 =6.832*10^-22*(2.343*10^20 - 4.488*10^15*MCasub4 - 2.438*10^16*MCcsub4 - 9.075*10^15*MCfsub4 + 2.582*10^16*MCgsub4 - 6.87*10^20*t)

q p2/q4 =8.539*10^-23*(-1.44*10^21 + 7.485*10^16*MCasub4 + 8.372*10^16*MCcsub4 + 4.699*10^16*MCfsub4 - 1.311*10^17*MCgsub4 - 1.761*10^21*t)

r p3/q4 =3.416*10^-22*(-3.239*10^20 - 2.311*10^16*MCasub4 + 5.666*10^16*MCcsub4 - 4.091*10^16*MCfsub4 + 2.412*10^16*MCgsub4 + 2.297*10^21*t)

s p4/q4 =8.539*10^-23*(1.455*10^21 - 6.837*10^16*MCasub4 - 1.766*10^17*MCcsub4 + 7.258*10^16*MCfsub4 + 9.708*10^16*MCgsub4 - 2.19*10^21*t)
u P1/q5 =1.392*10^-30*(2.114*10^29 - 2.203*10^24*MCasub5 - 1.197*10^25*MCcsub5 - 4.455*10^24*MCfsub5 + 1.267*10^25*MCgsub5 - 3.372*10^29*y)
v p2/q5 =1.392*10^-30*(-1.624*10^29 + 4.593*10^24*MCasub5 + 5.137*10^24*MCcsub5 + 2.883*10^24*MCfsub5 - 8.041*10^24*MCgsub5 - 1.081*10^29*y)
w p3/q5 =1.392*10^-30*(-1.461*10^29 - 5.672*10^24*MCasub5 + 1.391*10^25*MCcsub5 - 1.004*10^25*MCfsub5 + 5.92*10^24*MCgsub5 + 5.637*10^29*y)
x p4/q5 =1.392*10^-30*(1.641*10^29 - 4.195*10^24*MCasub5 - 1.083*10^25*MCcsub5 + 4.453*10^24*MCfsub5 + 5.956*10^24*MCgsub5 - 1.343*10^29*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)

qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)
ww =IF(w>=0,-0.00000001,w)
xx =IF(x>=0,-0.00000001,x)
yy =IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	16224.07
P2	21841.99
P3	28721.97
P4	19324.16
P5	35523.17

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	193,201
Csub1	67,824
Fsub1	95,616
Gsub1	187,950
Asub2	430,983
Csub2	277,760
Fsub2	428,984
Gsub2	488,027
Asub3	78,976
Csub3	105,478
Fsub3	122,033
Gsub3	156,235
asub4	92,328
Csub4	125,861
fsub4	254,441
gsub4	224,352

asub5 110,789
Csub5 14,383
fsub5 61,222
gsub5 80,976

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)

Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 29. 1st Quarter, 1996.

----------COEFFICIENTS OF DEMAND----------
a P1/q1 =2.408*10^-29*(5.581*10^27 - 1.949*10^28*e - 1.273*10^23*MCasub1 - 6.915*10^23*MCcsub1 - 2.574*10^23*MCfsub1 + 7.323*10^23*MCgsub1)
b p2/q1 =1.204*10^-29*(-8.572*10^27 - 1.249*10^28*e + 5.308*10^23*MCasub1 + 5.937*10^23*MCcsub1 + 3.332*10^23*MCfsub1 - 9.294*10^23*MCgsub1)
c p3/q1 =2.408*10^-29*(-3.857*10^27 + 3.258*10^28*e - 3.278*10^23*MCasub1 + 8.037*10^23*MCcsub1 - 5.803*10^23*MCfsub1 + 3.421*10^23*MCgsub1)

d p4/q1 =1.204*10^-29*(8.662*10^27 - 1.553*10^28*e - 4.849*10^23*MCasub1 - 1.252*10^24*MCcsub1 + 5.147*10^23*MCfsub1 + 6.884*10^23*MCgsub1)

f P1/q2 =2.674*10^-29*(6.766*10^27 - 1.755*10^28*j - 1.147*10^23*MCasub2 - 6.228*10^23*MCcsub2 - 2.318*10^23*MCfsub2 + 6.595*10^23*MCgsub2)

g p2/q2 =2.674*10^-29*(-5.196*10^27 - 5.624*10^27*j + 2.39*10^23*MCasub2 + 2.673*10^23*MCcsub2 + 1.5*10^23*MCfsub2 - 4.185*10^23*MCgsub2)

h p3/q2 =2.674*10^-29*(-4.677*10^27 + 2.934*10^28*j - 2.952*10^23*MCasub2 + 7.238*10^23*MCcsub2 - 5.226*10^23*MCfsub2 + 3.081*10^23*MCgsub2)

i p4/q2 =2.674*10^-29*(5.251*10^27 - 6.992*10^27*j - 2.183*10^23*MCasub2 - 5.638*10^23*MCcsub2 + 2.318*10^23*MCfsub2 + 3.1*10^23*MCgsub2)

k P1/q3 =1.113*10^-29*(2.137*10^28 - 2.754*10^23*MCasub3 - 1.496*10^24*MCcsub3 - 5.568*10^23*MCfsub3 + 1.584*10^24*MCgsub3 - 4.215*10^28*o)

l p2/q3 =1.113*10^-29*(-1.641*10^28 + 5.741*10^23*MCasub3 + 6.421*10^23*MCcsub3 + 3.604*10^23*MCfsub3 - 1.005*10^24*MCgsub3 - 1.351*10^28*o)

m p3/q3 =4.772*10^-30*(-3.446*10^28 - 1.654*10^24*MCasub3 + 4.056*10^24*MCcsub3 - 2.929*10^24*MCfsub3 + 1.727*10^24*MCgsub3 + 1.644*10^29*o)

n p4/q3 =3.34*10^-29*(5.528*10^27 - 1.748*10^23*MCasub3 - 4.514*10^23*MCcsub3 + 1.855*10^23*MCfsub3 + 2.482*10^23*MCgsub3 - 5.598*10^27*o)

p P1/q4 =6.832*10^-22*(2.343*10^20 - 4.488*10^15*MCasub4 - 2.438*10^16*MCcsub4 - 9.075*10^15*MCfsub4 + 2.582*10^16*MCgsub4 - 6.87*10^20*t)

q p2/q4 =8.539*10^-23*(-1.44*10^21 + 7.485*10^16*MCasub4 + 8.372*10^16*MCcsub4 + 4.699*10^16*MCfsub4 - 1.311*10^17*MCgsub4 - 1.761*10^21*t)

r p3/q4 =3.416*10^-22*(-3.239*10^20 - 2.311*10^16*MCasub4 + 5.666*10^16*MCcsub4 - 4.091*10^16*MCfsub4 + 2.412*10^16*MCgsub4 + 2.297*10^21*t)

s p4/q4 =8.539*10^-23*(1.455*10^21 - 6.837*10^16*MCasub4 - 1.766*10^17*MCcsub4 + 7.258*10^16*MCfsub4 + 9.708*10^16*MCgsub4 - 2.19*10^21*t)

u P1/q5 =1.392*10^-30*(2.114*10^29 - 2.203*10^24*MCasub5 - 1.197*10^25*MCcsub5 - 4.455*10^24*MCfsub5 + 1.267*10^25*MCgsub5 - 3.372*10^29*y)

v p2/q5 =1.392*10^-30*(-1.624*10^29 + 4.593*10^24*MCasub5 + 5.137*10^24*MCcsub5 + 2.883*10^24*MCfsub5 - 8.041*10^24*MCgsub5 - 1.081*10^29*y)

w p3/q5 =1.392*10^-30*(-1.461*10^29 - 5.672*10^24*MCasub5 + 1.391*10^25*MCcsub5 - 1.004*10^25*MCfsub5 + 5.92*10^24*MCgsub5 + 5.637*10^29*y)

x p4/q5 =1.392*10^-30*(1.641*10^29 - 4.195*10^24*MCasub5 - 1.083*10^25*MCcsub5 + 4.453*10^24*MCfsub5 + 5.956*10^24*MCgsub5 - 1.343*10^29*y)

y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)
ww =IF(w>=0,-0.00000001,w)
xx =IF(x>=0,-0.00000001,x)
yy =IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	16224.07
P2	21841.99
P3	28721.97
P4	19324.16
P5	35523.17

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	193,201
Csub1	67,824
Fsub1	95,616
Gsub1	187,950
Asub2	430,983
Csub2	277,760
Fsub2	428,984
Gsub2	488,027
Asub3	78,976
Csub3	105,478
Fsub3	122,033
Gsub3	156,235
asub4	92,328
Csub4	125,861
fsub4	254,441
gsub4	224,352
asub5	110,789
Csub5	14,383
fsub5	61,222
gsub5	80,976

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1	**=+Gsub1+Fsub1+Csub1+Asub1**
tseg2	**=+Gsub2+Fsub2+Csub2+Asub2**
tseg3	**=+Gsub3+Fsub3+Csub3+Asub3**
tseg4	**=+gsub4+fsub4+Csub4+asub4**

tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351

MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3

XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 30. 2nd Quarter, 1996.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =4.532*10^-30*(3.66*10^28 - 1.811*10^28*e - 2.202*10^24*MCasub1 - 2.978*10^24*MCcsub1 - 2.207*10^24*MCfsub1 + 5.167*10^24*MCgsub1)

b p2/q1 =4.532*10^-30*(-3.589*10^28 - 1.088*10^29*e + 2.833*10^24*MCasub1 + 1.918*10^24*MCcsub1 + 1.745*10^24*MCfsub1 - 4.32*10^24*MCgsub1)

c p3/q1 =4.532*10^-30*(1.705*10^28 + 2.39*10^29*e - 3.667*10^24*MCasub1 + 1.041*10^24*MCcsub1 - 3.25*10^24*MCfsub1 + 4.842*10^24*MCgsub1)

d p4/q1 =7.479*10^-29*(1.681*10^27 + 2.631*10^27*e - 1.488*10^23*MCasub1 - 1.579*10^23*MCcsub1 - 1.507*10^21*MCfsub1 + 2.063*10^23*MCgsub1)

f P1/q2 =6.519*10^-23*(3.269*10^21 - 1.259*10^21*j - 1.531*10^17*MCasub2 - 2.07*10^17*MCcsub2 - 1.534*10^17*MCfsub2 + 3.592*10^17*MCgsub2)

g p2/q2 =6.519*10^-23*(-3.206*10^21 - 7.564*10^21*j + 1.97*10^17*MCasub2 + 1.333*10^17*MCcsub2 + 1.213*10^17*MCfsub2 - 3.004*10^17*MCgsub2)

h p3/q2 =6.519*10^-23*(1.523*10^21 + 1.661*10^22*j - 2.549*10^17*MCasub2 + 7.237*10^16*MCcsub2 - 2.259*10^17*MCfsub2 + 3.366*10^17*MCgsub2)

i p4/q2 =6.454*10^-21*(2.503*10^19 + 3.049*10^19*j - 1.724*10^15*MCasub2 - 1.829*10^15*MCcsub2 - 1.746*10^13*MCfsub2 + 2.39*10^15*MCgsub2)

k P1/q3 =3.833*10^-22*(6.956*10^20 - 2.603*10^16*MCasub3 - 3.521*10^16*MCcsub3 - 2.609*10^16*MCfsub3 + 6.109*10^16*MCgsub3 - 2.141*10^20*o)
l p2/q3 =1.917*10^-21*(-1.364*10^20 + 6.7*10^15*MCasub3 + 4.535*10^15*MCcsub3 + 4.127*10^15*MCfsub3 - 1.022*10^16*MCgsub3 - 2.573*10^20*o)
m p3/q3 =3.833*10^-22*(3.241*10^20 - 4.335*10^16*MCasub3 + 1.231*10^16*MCcsub3 - 3.842*10^16*MCfsub3 + 5.725*10^16*MCgsub3 + 2.825*10^21*o)
n p4/q3 =1.265*10^-20*(1.598*10^19 - 8.797*10^14*MCasub3 - 9.334*10^14*MCcsub3 - 8.907*10^12*MCfsub3 + 1.219*10^15*MCgsub3 + 1.555*10^19*o)
p P1/q4 =2.231*10^-29*(9.248*10^27 - 4.472*10^23*MCasub4 - 6.048*10^23*MCcsub4 - 4.482*10^23*MCfsub4 + 1.05*10^24*MCgsub4 - 3.679*10^27*t)
q p2/q4 =2.231*10^-29*(-9.068*10^27 + 5.755*10^23*MCasub4 + 3.895*10^23*MCcsub4 + 3.545*10^23*MCfsub4 - 8.776*10^23*MCgsub4 - 2.21*10^28*t)
r p3/q4 =2.231*10^-29*(4.309*10^27 - 7.448*10^23*MCasub4 + 2.114*10^23*MCcsub4 - 6.601*10^23*MCfsub4 + 9.835*10^23*MCgsub4 + 4.854*10^28*t)
s p4/q4 =2.209*10^-27*(7.08*10^25 - 5.038*10^21*MCasub4 - 5.345*10^21*MCcsub4 - 5.101*10^19*MCfsub4 + 6.983*10^21*MCgsub4 + 8.907*10^25*t)
u P1/q5 =1.478*10^-29*(2.125*10^28 - 6.751*10^23*MCasub5 - 9.129*10^23*MCcsub5 - 6.766*10^23*MCfsub5 + 1.584*10^24*MCgsub5 - 5.553*10^27*y)
v p2/q5 =7.391*10^-29*(-4.168*10^27 + 1.737*10^23*MCasub5 + 1.176*10^23*MCcsub5 + 1.07*10^23*MCfsub5 - 2.649*10^23*MCgsub5 - 6.671*10^27*y)
w p3/q5 =7.391*10^-30*(1.98*10^28 - 2.249*10^24*MCasub5 + 6.383*10^23*MCcsub5 - 1.993*10^24*MCfsub5 + 2.969*10^24*MCgsub5 + 1.465*10^29*y)
x p4/q5 =1.22*10^-28*(1.952*10^27 - 9.125*10^22*MCasub5 - 9.682*10^22*MCcsub5 - 9.239*10^20*MCfsub5 + 1.265*10^23*MCgsub5 + 1.613*10^27*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)

cc	=IF(c_>=0,-0.00000001,c_)
dd	=IF(d>=0,-0.00000001,d)
ee	=IF(e>=0,-0.00000001,e)
ff	=IF(f>=0,-0.00000001,f)
gg	=IF(g>=0,-0.00000001,g)
hh	=IF(h>=0,-0.00000001,h)
ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	16494.48
P2	21191.82
P3	26510.16
P4	20516.77
P5	31235.44

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	242,655
Csub1	80,007

Fsub1 105,026
Gsub1 237,065
Asub2 473,116
Csub2 349,278
Fsub2 490,221
Gsub2 612,257
Asub3 88,507
Csub3 132,231
Fsub3 121,855
Gsub3 165,960
asub4 106,288
Csub4 133,808
fsub4 289,504
gsub4 246,046
asub5 136,449
Csub5 9,262
fsub5 61,419
gsub5 93,219

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)

Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478

MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5

XMCgsub5 =+P5_-MCgsub5

Quarter 31. 3rd Quarter, 1996.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =1.809*10^-29*(2.463*10^27 - 1.864*10^28*e + 1.601*10^22*MCasub1 - 3.494*10^23*MCcsub1 - 2.835*10^23*MCfsub1 + 4.574*10^23*MCgsub1)

b p2/q1 =3.619*10^-29*(-1.723*10^27 - 6.683*10^27*e + 1.271*10^23*MCasub1 + 1.156*10^23*MCcsub1 + 7.648*10^22*MCfsub1 - 2.077*10^23*MCgsub1)

c p3/q1 =9.046*10^-29*(-5.776*10^26 + 5.825*10^27*e - 4.648*10^22*MCasub1 + 9.918*10^22*MCcsub1 - 6.745*10^22*MCfsub1 + 5.212*10^22*MCgsub1)

d p4/q1 =5.609*10^-28*(1.012*10^26 + 9.303*10^25*e - 1.141*10^22*MCasub1 - 1.688*10^22*MCcsub1 + 7.55*10^21*MCfsub1 + 1.419*10^22*MCgsub1)

f P1/q2 =2.435*10^-30*(2.412*10^28 - 1.385*10^29*j + 1.189*10^23*MCasub2 - 2.596*10^24*MCcsub2 - 2.106*10^24*MCfsub2 + 3.399*10^24*MCgsub2)

g p2/q2 =4.87*10^-30*(-1.687*10^28 - 4.966*10^28*j + 9.446*10^23*MCasub2 + 8.588*10^23*MCcsub2 + 5.682*10^23*MCfsub2 - 1.543*10^24*MCgsub2)

h p3/q2 =2.435*10^-30*(-2.828*10^28 + 2.164*10^29*j - 1.727*10^24*MCasub2 + 3.685*10^24*MCcsub2 - 2.506*10^24*MCfsub2 + 1.936*10^24*MCgsub2)

i p4/q2 =2.435*10^-30*(3.072*10^28 + 2.143*10^28*j - 2.628*10^24*MCasub2 - 3.888*10^24*MCcsub2 + 1.739*10^24*MCfsub2 + 3.268*10^24*MCgsub2)

k P1/q3 =1.782*10^-30*(4.652*10^28 + 1.625*10^23*MCasub3 - 3.547*10^24*MCcsub3 - 2.878*10^24*MCfsub3 + 4.644*10^24*MCgsub3 - 1.893*10^29*o)

l p2/q3 =3.564*10^-30*(-3.254*10^28 + 1.291*10^24*MCasub3 + 1.173*10^24*MCcsub3 + 7.764*10^23*MCfsub3 - 2.109*10^24*MCgsub3 - 6.786*10^28*o)

m p3/q3 =1.782*10^-30*(-5.455*10^28 - 2.359*10^24*MCasub3 + 5.035*10^24*MCcsub3 - 3.424*10^24*MCfsub3 + 2.646*10^24*MCgsub3 + 2.957*10^29*o)

n p4/q3 =1.782*10^-30*(5.926*10^28 - 3.591*10^24*MCasub3 - 5.312*10^24*MCcsub3 + 2.376*10^24*MCfsub3 + 4.466*10^24*MCgsub3 + 2.928*10^28*o)

p P1/q4 =8.706*10^-31*(7.685*10^28 + 3.327*10^23*MCasub4 - 7.26*10^24*MCcsub4 - 5.89*10^24*MCfsub4 + 9.506*10^24*MCgsub4 - 3.874*10^29*t)

q p2/q4 =1.741*10^-30*(-5.375*10^28 + 2.642*10^24*MCasub4 + 2.402*10^24*MCcsub4 + 1.589*10^24*MCfsub4 - 4.317*10^24*MCgsub4 - 1.389*10^29*t)
r p3/q4 =2.612*10^-30*(-3.004*10^28 - 1.61*10^24*MCasub4 + 3.435*10^24*MCcsub4 - 2.336*10^24*MCfsub4 + 1.805*10^24*MCgsub4 + 2.018*10^29*t)
s p4/q4 =8.706*10^-31*(9.789*10^28 - 7.351*10^24*MCasub4 - 1.087*10^25*MCcsub4 + 4.864*10^24*MCfsub4 + 9.141*10^24*MCgsub4 + 5.993*10^28*t)
u P1/q5 =7.618*10^-31*(1.233*10^29 + 3.802*10^23*MCasub5 - 8.298*10^24*MCcsub5 - 6.732*10^24*MCfsub5 + 1.086*10^25*MCgsub5 - 4.427*10^29*y)
v p2/q5 =1.524*10^-30*(-8.621*10^28 + 3.019*10^24*MCasub5 + 2.745*10^24*MCcsub5 + 1.816*10^24*MCfsub5 - 4.933*10^24*MCgsub5 - 1.587*10^29*y)
w p3/q5 =7.618*10^-31*(-1.445*10^29 - 5.519*10^24*MCasub5 + 1.178*10^25*MCcsub5 - 8.01*10^24*MCfsub5 + 6.189*10^24*MCgsub5 + 6.918*10^29*y)
x p4/q5 =7.618*10^-31*(1.57*10^29 - 8.401*10^24*MCasub5 - 1.243*10^25*MCcsub5 + 5.559*10^24*MCfsub5 + 1.045*10^25*MCgsub5 + 6.849*10^28*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)

mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)
qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	15453.83
P2	20369.25
P3	28753.81
P4	23205.03
P5	32566.83

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	245,592
Csub1	64,828
Fsub1	97,984
Gsub1	222,454
Asub2	462,501
Csub2	271,333
Fsub2	437,254
Gsub2	461,979
Asub3	91,579
Csub3	141,461
Fsub3	119,011
Gsub3	178,577

asub4 127,139
Csub4 105,029
fsub4 240,545
gsub4 224,815
asub5 139,791
Csub5 7,458
fsub5 63,528
gsub5 80,918

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------
tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)

Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------
MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08

o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Quarter 32. 4th Quarter, 1996.

----------COEFFICIENTS OF DEMAND----------
a P1/q1 =4.511*10^-30*(7.386*10^27 - 8.175*10^28*e - 9.398*10^22*MCasub1 - 1.321*10^24*MCcsub1 - 1.478*10^24*MCfsub1 + 2.37*10^24*MCgsub1)

b p2/q1 =2.932*10^-29*(-1.364*10^27 - 1.069*10^28*e + 1.624*10^23*MCasub1 + 3.5*10^22*MCcsub1 + 1.358*10^23*MCfsub1 - 2.366*10^23*MCgsub1)

c p3/q1 =9.023*10^-30*(-1.327*10^28 + 1.12*10^29*e - 6.628*10^23*MCasub1 + 2.58*10^24*MCcsub1 - 1.612*10^24*MCfsub1 + 6.355*10^23*MCgsub1)

d p4/q1 =2.256*10^-30*(3.562*10^28 - 1.541*10^29*e - 1.458*10^24*MCasub1 - 7.138*10^24*MCcsub1 + 4.311*10^24*MCfsub1 + 1.762*10^24*MCgsub1)

f P1/q2 =8.862*10^-30*(6.423*10^27 - 4.162*10^28*j - 4.784*10^22*MCasub2 - 6.723*10^23*MCcsub2 - 7.525*10^23*MCfsub2 + 1.206*10^24*MCgsub2)

g p2/q2 =4.431*10^-30*(-1.542*10^28 - 7.072*10^28*j + 1.075*10^24*MCasub2 + 2.316*10^23*MCcsub2 + 8.99*10^23*MCfsub2 - 1.566*10^24*MCgsub2)

h p3/q2 =8.862*10^-30*(-2.308*10^28 + 1.14*10^29*j - 6.748*10^23*MCasub2 + 2.626*10^24*MCcsub2 - 1.641*10^24*MCfsub2 + 6.47*10^23*MCgsub2)

i p4/q2 =4.431*10^-30*(3.097*10^28 - 7.846*10^28*j - 7.424*10^23*MCasub2 - 3.633*10^24*MCcsub2 + 2.195*10^24*MCfsub2 + 8.968*10^23*MCgsub2)

k P1/q3 =8.99*10^-31*(7.526*10^28 - 4.716*10^23*MCasub3 - 6.627*10^24*MCcsub3 - 7.418*10^24*MCfsub3 + 1.189*10^25*MCgsub3 - 4.102*10^29*o)

l p2/q3 =4.495*10^-31*(-1.807*10^29 + 1.059*10^25*MCasub3 + 2.283*10^24*MCcsub3 + 8.861*10^24*MCfsub3 - 1.543*10^25*MCgsub3 - 6.971*10^29*o)

m p3/q3 =1.798*10^-30*(-1.352*10^29 - 3.326*10^24*MCasub3 + 1.294*10^25*MCcsub3 - 8.09*10^24*MCfsub3 + 3.189*10^24*MCgsub3 + 5.621*10^29*o)

n p4/q3 =4.495*10^-31*(3.629*10^29 - 7.317*10^24*MCasub3 - 3.582*10^25*MCcsub3 + 2.163*10^25*MCfsub3 + 8.84*10^24*MCgsub3 - 7.734*10^29*o)

p P1/q4 =9.504*10^-30*(5.463*10^27 - 4.461*10^22*MCasub4 - 6.268*10^23*MCcsub4 - 7.017*10^23*MCfsub4 + 1.125*10^24*MCgsub4 - 3.88*10^28*t)

q p2/q4 =4.752*10^-30*(-1.312*10^28 + 1.002*10^24*MCasub4 + 2.159*10^23*MCcsub4 + 8.382*10^23*MCfsub4 - 1.46*10^24*MCgsub4 - 6.594*10^28*t)

r p3/q4 =9.504*10^-30*(-1.963*10^28 - 6.293*10^23*MCasub4 + 2.449*10^24*MCcsub4 - 1.53*10^24*MCfsub4 + 6.033*10^23*MCgsub4 + 1.063*10^29*t)

s p4/q4 =4.752*10^-30*(2.634*10^28 - 6.922*10^23*MCasub4 - 3.388*10^24*MCcsub4 + 2.046*10^24*MCfsub4 + 8.362*10^23*MCgsub4 - 7.316*10^28*t)

u P1/q5 =1.103*10^-21*(7.379*10^19 - 3.843*10^14*MCasub5 - 5.4*10^15*MCcsub5 - 6.045*10^15*MCfsub5 + 9.689*10^15*MCgsub5 - 3.343*10^20*y)

v p2/q5 =5.516*10^-22*(-1.772*10^20 + 8.632*10^15*MCasub5 + 1.86*10^15*MCcsub5 + 7.221*10^15*MCfsub5 - 1.258*10^16*MCgsub5 - 5.68*10^20*y)

w p3/q5 =2.206*10^-21*(-1.326*10^20 - 2.71*10^15*MCasub5 + 1.055*10^16*MCcsub5 - 6.592*10^15*MCfsub5 + 2.599*10^15*MCgsub5 + 4.58*10^20*y)
x p4/q5 =5.516*10^-22*(3.558*10^20 - 5.963*10^15*MCasub5 - 2.919*10^16*MCcsub5 + 1.763*10^16*MCfsub5 + 7.204*10^15*MCgsub5 - 6.303*10^20*y)
y p5/q5 =+y
e p5/q1 =+e
j p5/q2 =+jj
o p5/q3 =+o
t p5/q4 =+t

----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------

aa =IF(a>=0,-0.00000001,a)
bb =IF(b>=0,-0.00000001,b)
cc =IF(c_>=0,-0.00000001,c_)
dd =IF(d>=0,-0.00000001,d)
ee =IF(e>=0,-0.00000001,e)
ff =IF(f>=0,-0.00000001,f)
gg =IF(g>=0,-0.00000001,g)
hh =IF(h>=0,-0.00000001,h)
ii =IF(I>=0,-0.00000001,I)
jj =IF(j>=0,-0.00000001,j)
kk =IF(k>=0,-0.00000001,k)
ll =IF(l>=0,-0.00000001,l)
mm =IF(m>=0,-0.00000001,m)
nn =IF(n>=0,-0.00000001,n)
oo =IF(o>=0,-0.00000001,o)
pp =IF(p>=0,-0.00000001,p)
qq =IF(q>=0,-0.00000001,q)
rr =IF(r_>=0,-0.00000001,r_)
ss =IF(s>=0,-0.00000001,s)
tt =IF(t>=0,-0.00000001,t)
uu =IF(u>=0,-0.00000001,u)
vv =IF(v>=0,-0.00000001,v)

ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	14116.4736842105
P2	24112.9714285714
P3	28666.6666666667
P4	21997.2592592593
P5	34490.625

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	180842
Csub1	48537
Fsub1	71174
Gsub1	172171
Asub2	413497
Csub2	253276
Fsub2	394302
Gsub2	403534
Asub3	95547
Csub3	130013
Fsub3	172453
Gsub3	183830
asub4	97559
Csub4	124016
fsub4	248092
gsub4	227754
asub5	133615
Csub5	8983
fsub5	61766
gsub5	83338

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1 **=+Gsub1+Fsub1+Csub1+Asub1**
tseg2 **=+Gsub2+Fsub2+Csub2+Asub2**
tseg3 **=+Gsub3+Fsub3+Csub3+Asub3**
tseg4 **=+gsub4+fsub4+Csub4+asub4**
tseg5 **=+gsub5+fsub5+Csub5+asub5**

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------
Elasticity11=(1/tseg1)/(aa/P1_)
Elasticity21=+((-ff/aa)/tseg1)/(gg/P2_)
Elasticity31=+((-kk/aa)/tseg1)/(mm/P3_)
Elasticity41=+((-pp/aa)/tseg1)/(ss/P4_)
Elasticity51=+((-uu/aa)/tseg1)/(yy/P5_)
Elasticity12=+((-bb/gg)/tseg2)/(aa/P1_)
Elasticity22=(1/tseg2)/(gg/P2_)
Elasticity32=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasticity42=+((-qq/gg)/tseg2)/(ss/P4_)
Elasticity52=+((-vv/gg)/tseg2)/(yy/P5_)
Elasticity13=+((-cc/mm)/tseg3)/(aa/P1_)
Elasticity23=+((-hh/mm)/tseg3)/(gg/P2_)
Elasticity33=(1/tseg3)/(mm/P3_)
Elasticity43=+((-rr/mm)/tseg3)/(ss/P4_)
Elasticity53=+((-ww/mm)/tseg3)/(yy/P5_)
Elasticity14=+((-dd/ss)/tseg4)/(aa/P1_)
Elasticity24=+((-ii/ss)/tseg4)/(gg/P2_)
Elasticity34=+((-nn/ss)/tseg4)/(mm/P3_)
Elasticity44=(1/tseg4)/(ss/P4_)
Elasticity54=+((-xx/ss)/tseg4)/(yy/P5_)
Elasticity15=+((-ee/yy)/tseg5)/(aa/P1_)
Elasticity25=+((-jj/yy)/tseg5)/(gg/P2_)
Elasticity35=+((-oo/yy)/tseg5)/(mm/P3_)
Elasticity45=+((-tt/yy)/tseg5)/(ss/P4_)
Elasticity55=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------

MCasub1 9116.47368479351
MCcsub1 12598.9637668551
MCfsub1 11778.1920278281
MCgsub1 9116.47368479351
MCasub2 9116.47354991237
MCcsub2 14694.318327471
MCfsub2 9438.33036146479
MCgsub2 9116.47354991237
MCasub3 18631.8726978068
MCcsub3 15705.9141884447
MCfsub3 10819.8202871299
MCgsub3 9913.47742250574
MCasub4 19255.139200834
MCcsub4 19116.4218467478
MCfsub4 16994.688362832
MCgsub4 16997.2592592593
MCasub5 8000.00001167589
MCcsub5 32712.7137896525
MCfsub5 22250.6635206755
MCgsub5 17970.1913726469

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------
e -1.90507726554869E-08
j -9.69317285304045E-08
o -1.44373094757685E-07
t **-3.98188558696166E-08**
y -0.198400191880761

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------
XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2

XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

Appendix 6: Constraints and Values Set by Optimization

Quarter 1. 1st Quarter, 1989.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($B$424)

---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($B$554:$B$573,$B$292:$B$311,$B$423,$B$359,$B$118:$B$137,$B$140:$B$144,$B$476:$B$480)
=i=q
=MCasub2>=MCcsub2
=MCasub3>=MCfsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCgsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCasub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCcsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCfsub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=Allmc>=8000
=Allpartials<=0

=c_=k
=coefficients<=0
=coefficients>=-1
=d=p
=e=u
=f=b
=g<=i
=g<=f
=g<=h
=g<=j
=h=l
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=maxmc5<=p5_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
------The following statements are internal program settings--------
={100,100000,0.00000001,0.0001,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.00000001,TRUE,FALSE}
={FALSE,100000000000,100000000000,TRUE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,200
}

Quarter 2. 2nd Quarter, 1989.

----------The following command maximizes/minimizes any value of the user's choice-------
=MIN($D$90)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCfsub3

=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCgsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCasub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCcsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCfsub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_

=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 3. 3rd Quarter, 1989.

----------The following command maximizes/minimizes any value of the user's choice-------
=MIN($F$31)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCfsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCgsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCasub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCcsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCfsub1
=MCgsub2<=MCgsub3

=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 4. 4th Quarter, 1989.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCcsub3
=MCasub4>=MCgsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCgsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCasub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCasub3
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCfsub1
=MCgsub2<=MCgsub3
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b

=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 5. 1st Quarter, 1990.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCcsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCfsub5
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4

=MCcsub5<=p5_
=MCcsub5>=MCasub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCasub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n

=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 6. 2nd Quarter, 1990.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCcsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCgsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000

=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 7. 3rd Quarter, 1990.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)

---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCcsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub3>=MCgsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l

=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 8. 4th Quarter, 1990.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCfsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCasub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub3>=MCgsub3
=MCfsub4>=MCgsub4

=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u

=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 9. 1st Quarter, 1991.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCgsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCgsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCasub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCasub1
=MCfsub2>=MCasub2
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCfsub1
=MCgsub2<=MCgsub3
=MCgsub3>=MCfsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000

=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 10. 2nd Quarter, 1991.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2

=MCasub3>=MCcsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub3>=MCfsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o

=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 11. 3rd Quarter, 1991.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCfsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCasub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub3>=MCgsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1

=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}

={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 12. 4th Quarter, 1991.

----------The following command maximizes/minimizes any value of the user's choice-------
=MIN($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCgsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCasub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub3>=MCfsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k

=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 13. 1st Quarter, 1992.

----------The following command maximizes/minimizes any value of the user's choice-------
=MIN($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCcsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCfsub1

=MCcsub2>=MCfsub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub3>=MCfsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w

=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 14. 2nd Quarter, 1992.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCcsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub3>=MCgsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4

=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 15. 3rd Quarter, 1992.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCcsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub3>=MCgsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b

=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 16. 4th Quarter, 1992.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCcsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_

=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCgsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n

=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 17. 1st Quarter, 1993.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCfsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCcsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000

=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 18. 2nd Quarter, 1993.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)

---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCfsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCcsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l

=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 19. 3rd Quarter, 1993.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCfsub3
=MCasub4>=MCgsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub3>=MCgsub3
=MCfsub5<=p5_
=MCfsub5>=MCgsub5

=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub3>=MCcsub3
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t

=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 20. 4th Quarter, 1993.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCfsub3
=MCasub4>=MCgsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub3>=MCcsub3
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000

=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 21. 1st Quarter, 1994.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0

=MCasub2>=MCfsub2
=MCasub3>=MCfsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCgsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub3>=MCcsub3
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n

=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 22. 2nd Quarter, 1994.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCfsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCgsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3

=MCgsub3>=MCcsub3
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}

={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 23. 3rd Quarter, 1994.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCcsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub3>=MCasub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e

=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 24. 4th Quarter, 1994.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCcsub3
=MCasub4>=MCfsub4
=MCasub5<=p5_
=MCasub5>=MCgsub5

=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCasub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCasub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_

=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 25. 1st Quarter, 1995.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCfsub3
=MCasub4>=MCgsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCcsub3
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2

=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 26. 2nd Quarter, 1995.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCcsub3
=MCasub4>=MCcsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCfsub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCgsub3
=MCfsub4>=MCgsub4
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b

=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 27. 3rd Quarter, 1995.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCcsub3
=MCasub4>=MCgsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_

=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub3>=MCgsub3
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n

=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 28. 4th Quarter, 1995.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCcsub3
=MCasub4>=MCcsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCgsub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCgsub3
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000

=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 29. 1st Quarter, 1996.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)

---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCgsub2
=MCasub3>=MCcsub3
=MCasub4>=MCcsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCgsub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCasub2
=MCfsub3>=MCgsub3
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l

=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 30. 2nd Quarter, 1996.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub2>=MCfsub2
=MCasub3>=MCfsub3
=MCasub4>=MCcsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCasub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCgsub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCcsub3
=MCfsub5<=p5_

=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t

=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.00000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 31. 3rd Quarter, 1996.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0
=MCasub3>=MCfsub3
=MCasub4>=MCgsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCgsub3
=MCcsub4>=MCasub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCcsub3
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub2>=MCasub2
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000

=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Quarter 32. 4th Quarter, 1996.

----------The following command maximizes/minimizes any value of the user's choice-------
=MAX($F$62)
---------The following command changes the marginal cost variables for each firm and the exogenous coefficients----------
=COUNT($D$31:$D$50,$D$51:$D$55)
=Allmc>=8000
=Allpartials<=0

=MCasub3>=MCcsub3
=MCasub4>=MCcsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCgsub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCgsub3
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub2>=MCasub2
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=c_=k
=d=p
=e=u
=f=b
=g<=f
=g<=h
=g<=i
=g<=j
=h=l
=i=q
=j=v
=m<=k
=m<=l
=m<=n

=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=o=w
=partials5<=0
=partials5>=-1
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}
={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Appendix 7: Max/min Elasticity In Each Quarter For Each Vehicle Segment

Quarter	1	2	3	4	5	6	7	8
Max seg 1	-3.61993		-1.96169	-2.90133	-3.44356	-4.03307	-4.707	-6.24929
Min seg 1	-1.42354		-1.44184	-1.82661	-1.62198	-1.42735	-1.34956	-1.35999
Max seg 2	-2.35926		-3.25817	-1.50712	-3.38765	-3.37523	-3.598	-3.54325
Min seg 2	-0.92146		-0.95874	-0.80963	-0.83318	-0.86291	-0.824	-0.77258
Max seg 3	-2.64644		-2.65421	-1.93334	-1.73927	-2.12402	-1.91151	-15.2663
Min seg 3	-0.66667		-0.7566	-0.76016	-0.64826	-0.64121	-0.61997	-0.51585
Max seg 4	-3.9422		-5.98679	-1.31582	-5.62382	-5.9245	-5.67802	-5.60506
Min seg 4	-0.94705		-1.14036	-1.05842	-1.2156	-0.9142	-0.84216	-0.82412
Max seg 5	-14.0319		-20.7843	-3.25848	-21.3185	-22.8053	-20.9787	-15.9189
Min seg 5	-0.55546		-0.62092	-0.47021	-0.52897	-0.49208	-0.53352	-0.53785

Quarter	9	10	11	12	13	14	15	16
Max seg 1	-1.75355	-3.25376	-7.99998	-2.96641	-8.91798	-2.01602	-4.94252	-10.1719
Min seg 1	-1.4354	-1.83627	-1.3957	-1.17987	-1.24332	-1.25421	-1.23196	-1.01365
Max seg 2	-1.29878	-1.44226	-4.10329	-1.64684	-1.11192	-4.00784	-3.94843	-1.67986
Min seg 2	-0.84171	-0.84821	-0.79089	-0.7574	-0.71467	-0.73646	-0.65427	-0.58133
Max seg 3	-2.18765	-1.12356	-14.6341	-7.53748	-2.42744	-3.44706	-1.92772	-3.21616
Min seg 3	-1.05562	-0.5502	-0.49103	-0.51092	-0.54638	-0.51507	-0.53867	-0.47033
Max seg 4	-5.38827	-4.47801	-4.68615	-4.8899	-6.2297	-6.91932	-4.89153	-6.38267
Min seg 4	-1.06901	-0.95061	-0.78688	-0.83447	-0.74186	-0.71661	-0.8573	-0.72926
Max seg 5	-17.6515	-21.2831	-10.9859	-18.8033	-23.4897	-22.1243	-14.5472	-12.7955
Min seg 5	-0.59363	-0.52977	-0.61541	-0.65486	-0.49179	-0.50837	-0.56445	-0.48579

Quarter	17	18	19	20	21	22	23	24
Max seg 1	-1.81203	-4.1033	-4.62621	-8.12777	-1.90213	-7.3658	-3.03514	-13.9916
Min seg 1	-0.96194	-0.93294	-0.95101	-0.80465	-0.82191	-2.17394	-0.98928	-0.89056
Max seg 2	-3.82815	-1.52661	-2.93448	-2.94298	-3.52283	-3.94282	-1.00207	-4.06527
Min seg 2	-0.63689	-0.64269	-0.6057	-0.60028	-0.59155	-0.5617	-0.55677	-0.59303
Max seg 3	-2.32101	-3.22224	-1.39447	-1.74109	-1.34523	-1.53099	-1.62429	-2.92796
Min seg 3	-0.44451	-0.4765	-0.65754	-0.47115	-0.47098	-0.47231	-0.45255	-0.55068
Max seg 4	-6.01327	-6.82472	-1.38106	-1.61469	-6.61523	-6.74963	-5.14133	-6.65726
Min seg 4	-0.68795	-0.77696	-0.79538	-0.72065	-0.6966	-0.68684	-0.63965	-0.63397
Max seg 5	-8.65999	-8.09391	-20.5891	-8.23349	-7.05958	-11.4354	-14.9415	-20.0139
Min seg 5	-0.54683	-0.5306	-0.55442	-0.47848	-0.59397	-0.49857	-0.53889	-0.51236

Quarter	25	26	27	28	29	30	31	32
Max seg 1	-8.64109	-4.4466	-9.39891	-11.3955	-8.9047	-13.2874	-23.1358	-23.9267
Min seg 1	-0.9021	-0.82733	-0.97238	-5.7609	-0.70028	-0.70733	-0.80613	-0.88366
Max seg 2	-1.4827	-2.16699	-2.66923	-1.48018	-4.03524	-4.0846	-3.41975	-1.09991
Min seg 2	-0.56372	-1.03629	-0.75309	-0.56019	-0.8383	-0.50962	-0.46654	-0.4225
Max seg 3	-2.0981	-6.84542	-2.2666	-5.98868	-7.11047	-2.55354	-2.85634	-5.40315
Min seg 3	-0.47537	-0.69658	-0.61089	-0.46253	-0.46823	-0.46721	-0.46625	-0.43763
Max seg 4	-1.35254	-1.4207	-2.03607	-1.72665	-2.34596	-2.35835	-3.475	-3.56834
Min seg 4	-0.62741	-0.64621	-0.75847	-0.5913	-0.62121	-0.61179	-0.52657	-0.55871
Max seg 5	-14.9177	-15.101	-18.7499	-11.3382	-14.1388	-11.3441	-21.2209	-19.1067
Min seg 5	-0.53905	-0.56188	-0.53675	-0.53746	-0.5345	-0.60935	-0.63488	-0.60425

Appendix 8: Max/min Elasticity Overall For Each Vehicle Segment

Overall	Average	Median	Max	Min
Max seg 1	-7.00125	-4.707	-1.75355	-23.9267
Min seg 1	-1.3267	-1.17987	-0.70028	-5.7609
Max seg 2	-2.72489	-2.94298	-1.00207	-4.10329
Min seg 2	-0.70472	-0.71467	-0.4225	-1.03629
Max seg 3	-3.74213	-2.42744	-1.12356	-15.2663
Min seg 3	-0.56025	-0.51507	-0.43763	-1.05562
Max seg 4	-4.42653	-4.89153	-1.31582	-6.91932
Min seg 4	-0.78089	-0.74186	-0.52657	-1.2156
Max seg 5	-15.6684	-15.101	-3.25848	-23.4897
Min seg 5	-0.54824	-0.53785	-0.47021	-0.65486

Appendix 9: SAS Results

The SAS System 19:52 Monday, October 15, 2001 1

Model: MODEL1
NOTE: No intercept in model. R-square is redefined.
Dependent Variable: SEG1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	8579420.0112	1715884.0022	3.505	0.0161
Error	24	11750878.35	489619.93126		
U Total	29	20330298.362			

Root MSE	699.72847	R-square	0.4220
Dep Mean	29.57020	Adj R-sq	0.3016
C.V.	2366.33010		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INDEX	1	3.877441	13.89381573	0.279	0.7826
DGAS	1	-0.637954	1.37941869	-0.462	0.6479
REALFED	1	14.494462	74.88707928	0.194	0.8482
Q1	1	1201.827918	322.06402064	3.732	0.0010
Q2	1	-202.219768	329.54396799	-0.614	0.5452

Model: MODEL2
NOTE: No intercept in model. R-square is redefined.
Dependent Variable: SEG2

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	30114318.347	6022863.6693	7.364	0.0003
Error	24	19629357.476	817889.89484		
U Total	29	49743675.823			

Root MSE	904.37265	R-square	0.6054
Dep Mean	222.57689	Adj R-sq	0.5232
C.V.	406.31920		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INDEX	1	11.978006	17.95723275	0.667	0.5111
DGAS	1	-0.898730	1.78284663	-0.504	0.6188
REALFED	1	-64.952041	96.78872516	-0.671	0.5086
Q1	1	1542.616258	416.25559813	3.706	0.0011
Q2	1	-1336.423647	425.92314792	-3.138	0.0045

Model: MODEL3
NOTE: No intercept in model. R-square is redefined.
Dependent Variable: SEG3

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	27825055.129	5565011.0258	1.988	0.1169
Error	24	67179122.297	2799130.0957		

```
  U Total         29 95004177.426

     Root MSE    1673.06010     R-square       0.2929
     Dep Mean     672.90733     Adj R-sq       0.1456
     C.V.         248.63157

                        Parameter Estimates

                 Parameter      Standard    T for H0:
Variable  DF      Estimate         Error   Parameter=0    Prob > |T|

INDEX      1     26.092890   33.22029864         0.785        0.4399
DGAS       1     -1.993681    3.29820849        -0.604        0.5512
REALFED    1    -60.570765  179.05600489        -0.338        0.7381
Q1         1   1347.353290  770.05936688         1.750        0.0930
Q2         1   -597.318205  787.94402071        -0.758        0.4558
```

Model: MODEL4
NOTE: No intercept in model. R-square is redefined.
Dependent Variable: SEG4

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	40059207.832	8011841.5664	4.522	0.0048
Error	24	42520851.685	1771702.1536		
U Total	29	82580059.517			

Root MSE	1331.05302	R-square	0.4851
Dep Mean	232.80806	Adj R-sq	0.3778
C.V.	571.73837		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INDEX	1	19.533079	26.42940262	0.739	0.4670
DGAS	1	-1.902277	2.62398845	-0.725	0.4755
REALFED	1	-51.704450	142.45336252	-0.363	0.7198
Q1	1	2182.951248	612.64377153	3.563	0.0016
Q2	1	-1058.599892	626.87244303	-1.689	0.1042

Model: MODEL5
NOTE: No intercept in model. R-square is redefined.
Dependent Variable: SEG5

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	116896033.14	23379206.628	2.034	0.1098
Error	24	275857814.72	11494075.613		
U Total	29	392753847.86			

Root MSE	3390.29138	R-square	0.2976
Dep Mean	-131.04605	Adj R-sq	0.1513
C.V.	-2587.09923		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INDEX	1	-33.603611	67.31766063	-0.499	0.6222
DGAS	1	2.618076	6.68349439	0.392	0.6987
REALFED	1	-130.772734	362.83934418	-0.360	0.7217
Q1	1	4243.178328	1560.4494014	2.719	0.0120
Q2	1	-723.786928	1596.6908895	-0.453	0.6544

Model: MODEL1
NOTE: No intercept in model. R-square is redefined.
Dependent Variable: P1

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	883017.73065	176603.54613	0.296	0.9108
Error	25	14939460.982	597578.43929		
U Total	30	15822478.713			

Root MSE	773.03198	R-square	0.0558
Dep Mean	89.12581	Adj R-sq	-0.1330
C.V.	867.34917		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INDEX	1	12.330321	15.34831006	0.803	0.4293
DGAS	1	-1.114950	1.52359434	-0.732	0.4711
REALFED	1	12.702937	79.57906331	0.160	0.8745
Q1	1	61.129932	355.64207424	0.172	0.8649
Q2	1	-268.266279	346.61823051	-0.774	0.4462

Model: MODEL2
NOTE: No intercept in model. R-square is redefined.
Dependent Variable: P2

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	7663550.9168	1532710.1834	1.756	0.1587
Error	25	21818649.557	872745.98226		
U Total	30	29482200.473			

Root MSE	934.20875	R-square	0.2599
Dep Mean	294.34119	Adj R-sq	0.1119
C.V.	317.38974		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INDEX	1	11.845348	18.54842478	0.639	0.5289
DGAS	1	-0.555503	1.84126297	-0.302	0.7654
REALFED	1	42.114546	96.17125693	0.438	0.6652
Q1	1	-723.543565	429.79326315	-1.683	0.1047
Q2	1	-858.474793	418.88795266	-2.049	0.0511

Model: MODEL3
NOTE: No intercept in model. R-square is redefined.
Dependent Variable: P3

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	21232256.075	4246451.215	1.972	0.1179
Error	25	53832668.548	2153306.7419		
U Total	30	75064924.622			

Root MSE	1467.41499	R-square	0.2829
Dep Mean	343.13862	Adj R-sq	0.1394
C.V.	427.64496		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INDEX	1	29.432385	29.13506922	1.010	0.3221
DGAS	1	-1.994902	2.89217681	-0.690	0.4967
REALFED	1	52.060367	151.06168100	0.345	0.7333
Q1	1	-1783.398424	675.10080336	-2.642	0.0140
Q2	1	-1017.420122	657.97120989	-1.546	0.1346

Model: MODEL4
NOTE: No intercept in model. R-square is redefined.
Dependent Variable: P4

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	4483737.8039	896747.56077	0.388	0.8526
Error	25	57842607.771	2313704.3108		
U Total	30	62326345.574			

Root MSE	1521.08656	R-square	0.0719
Dep Mean	279.29832	Adj R-sq	-0.1137
C.V.	544.61000		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INDEX	1	24.429476	30.20070159	0.809	0.4262
DGAS	1	-1.860793	2.99795989	-0.621	0.5404
REALFED	1	-49.302996	156.58685119	-0.315	0.7555
Q1	1	-302.352717	699.79301393	-0.432	0.6694
Q2	1	-484.930593	682.03689547	-0.711	0.4837

Model: MODEL5
NOTE: No intercept in model. R-square is redefined.
Dependent Variable: P5

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	5	28572943.819	5714588.7637	0.258	0.9317
Error	25	553853328.08	22154133.123		
U Total	30	582426271.9			

Root MSE	4706.81773	R-square	0.0491
Dep Mean	364.50952	Adj R-sq	-0.1411
C.V.	1291.27428		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INDEX	1	-51.204189	93.45240549	-0.548	0.5886
DGAS	1	6.239369	9.27682301	0.673	0.5074
REALFED	1	-284.803611	484.53900551	-0.588	0.5620
Q1	1	320.966341	2165.4245452	0.148	0.8834
Q2	1	-751.458816	2110.4803918	-0.356	0.7248

Appendix 10: SAS Regression Program

```
data robert;
Proc reg data=robert.shift;
model seg1=index dgas realfed q1 q2 /noint;
model seg2=index dgas realfed q1 q2 /noint;
model seg3=index dgas realfed q1 q2 /noint;
model seg4=index dgas realfed q1 q2 /noint;
model seg5=index dgas realfed q1 q2 /noint;

Proc reg data=robert.shift ;
model p1=index dgas realfed q1 q2 /noint;
model p2=index dgas realfed q1 q2 /noint;
model p3=index dgas realfed q1 q2 /noint;
model p4=index dgas realfed q1 q2 /noint;
model p5=index dgas realfed q1 q2 /noint;


run;
```

Appendix 11: Data set used for SAS regressions

Seg1	Seg2	Seg3	Seg4	Seg5	Fedfund	index	Dgas	realfed	q1	q2	q3	q4	p1	p2	p3	p4	p5
1226.727	**2172.999**	**841.6576**	**2077.792**	**3502.607**					1	0	0	0	-403.951	-133.66	-714.185	-1115.24	-2963.89
					9.431538	96.3	928	4.376972	0	1	0	0	91.10141	486.2551	-514.239	685.5274	-971.743
-1934.89	**-1287.18**	**-2677.01**	**-2133.74**	**689.3946**	9.730769	95.6	1085.615	4.398948	0	0	1	0	-370.396	473.8917	-1008.12	-129.564	7601.191
1059.53	**1102.081**	**2.27E-05**	**1543.736**	**0.000207**	9.092308	95.6	1032.353	4.95013	0	0	0	1	323.4294	-497.195	1076.957	-130.63	-2143.55
1158.131	**1258.426**	**1981.943**	**1368.46**	**172.1731**	8.646154	95.8	966.472	4.214021	1	0	0	0	644.3895	377.7933	476.7039	558.8767	-596.587
-843.331	**-739.301**	**-0.17289**	**-707.292**	**-2982.5**	8.249231	96.3	986.4077	1.673888	0	1	0	0	-384.359	-58.1593	-275.709	143.5889	-2128.17
-466.789	**-1386.67**	**0.000671**	**-935.977**	**1.35E-05**	8.238462	96.1	998.9242	5.00396	0	0	1	0	-92.0098	-341.89	1023.032	305.257	-1393.42
-247.321	**-0.00349**	**-55.0615**	**-1791.88**	**-3.5E-05**	8.170769	95.3	1107.288	4.320502	0	0	0	1	83.53162	848.606	1052.968	-842.77	2264.908
1200.8	**859.9487**	**1249.38**	**1798.985**	**4651.463**	7.778462	93.6	1263.024	0.892868	1	0	0	0	-441.831	-811.799	-1850.64	-649.44	2238.495
77.64255	**-5E-06**	**2513.684**	**834.224**	**-4110.44**	6.515385	93.9	1049.163	2.453942	0	1	0	0	428.3441	870.5982	2267.226	1824.676	-5064.68
-0.00099	**-371.505**	**-1.1E-06**	**-2004.44**	**-1.9E-05**	5.826154	95.2	1023.062	-1.08106	0	0	1	0	1823.409	94.55213	1491.734	-989.443	4162.69
-1115.52	**1162.828**	**0.000356**	**872.4767**	**-5E-05**	5.701538	96.0	1002.755	-0.7844	0	0	0	1	-1720.61	1073.586	-1650.02	1755.831	3479.913
488.9521	**1645.883**	**3691.027**	**3082.23**	**1029.45**	4.887692	95.6	977.7843	1.596742	1	0	0	0	-72.94	-224.965	-189.352	481.372	-677.539
-0.00021	**-644.808**	**-755.403**	**-1827.96**	**-3171.06**	4.041538	96.2	914.1255	1.667651	0	1	0	0	256.7509	124.2781	-970.069	-1996.99	-2356.11
-5.3E-07	**-0.00769**	**3416.659**	**-0.00037**	**1521.161**	3.779231	96.6	968.3635	0.632721	0	0	1	0	1151.672	200.8653	2991.62	2155.057	3157.908
-0.00091	**-36.8221**	**-0.00064**	**-5.8E-05**	**-5447.48**	3.295714	96.4	988.2652	0.271324	0	0	0	1	-392.38	6.32273	2606.611	1195.23	-5890.56
1209.071	**3432.743**	**1565.106**	**1229.652**	**3386.189**	3.038462	97.4	969.0485	0.230425	1	0	0	0	496.5924	493.5845	-2392.35	-1704.62	-12.3333
-242.482	**-1740.87**	**-1236.64**	**-2119.83**	**2200.506**	3.038462	97.4	927.1383	-0.23077	0	1	0	0	132.9121	-682.264	-869.894	-1335.65	7329.181
1.34E-05	**9.65E-07**	**841.4234**	**3477.181**	**0.000478**	2.997692	97.1	932.9059	-0.14966	0	0	1	0	308.5913	1204.259	363.4457	3770.397	-387.352
613.2444	**1168.621**	**0.000132**	**6.87E-07**	**-10134.5**	3.047692	97.1	903.656	0.208799	0	0	0	1	499.5808	532.7595	-222.154	-470.402	-11280.7
0.000395	**2075.542**	**1234.48**	**2675.067**	**12591.93**	3.002308	97.9	902.4681	-0.38036	1	0	0	0	-412.385	547.6683	690.2171	711.9782	10913.15
-484.154	**-1382.54**	**-896.43**	**-2389.2**	**-4253.44**	3.19	98.6	848.6682	0.115227	0	1	0	0	-276.697	-365.53	-448.831	-1647.29	-4576
-0.3109	**-421.67**	**5065.719**	**-7.8E-05**	**3.96E-05**	3.917692	98.9	871.9757	2.345801	0	0	1	0	1294.897	-699.281	2609.828	1401.112	311.1622
-0.0001	**-0.00539**	**-1.2E-06**	**-1250.04**	**413.1**	4.489231	98.8	934.0387	1.726164	0	0	0	1	-186.273	1053.336	3262.54	-911.722	5714.838
1537.065	**1551.315**	**3018.472**	**1868.842**	**1527.474**	5.169231	99.2	917.8105	2.60806	1	0	0	0	802.9225	-87.9114	-132.414	516.6259	-562.655
-164.693	**-1375.81**	**-1865.47**	**-824.225**	**-0.00121**	5.771538	98.5	887.1808	3.226662	0	1	0	0	136.0602	-713.725	-744.606	167.2908	2668.905
-163.253	**-123.566**	**4.28E-09**	**1608.613**	**-0.0004**	6.024615	97.6	934.5083	2.502376	0	0	1	0	-111.703	467.1842	-408.038	2248.617	2444.068

Seg1	Seg2	Seg3	Seg4	Seg5	Fedfund	index	Dgas	realfed	q1	q2	q3	q4	p1	p2	p3	p4	p5
623.4313	**2394.133**	**174.1576**	**-6.8E-06**	**-1883.76**	5.790769	98.2	911.0246	3.910733	0	0	0	1	768.7644	2186.438	2113.009	-1407.06	-2277.15
1240.708	**1174.289**	**0.000748**	**2850.269**	**5.37E-05**	5.767692	98.3	860.7394	2.470744	1	0	0	0	270.4084	-650.171	-2211.81	1192.605	-4287.72
-1107.51	**-1860.33**	**2204.529**	**3.46E-08**	**-0.00016**	5.356154	98.7	875.7571	1.821023	0	1	0	0	-1040.65	-822.57	2243.65	2688.262	1331.389
-1580.78	**-5.8E-05**	**43.92231**	**-473.703**	**4.29E-06**	5.252308	100.0	984.5077	3.500227	0	0	1	0	-1337.36	3743.718	-87.1429	-1207.77	1923.792

Appendix 12: Change in Vehicle Price Caused by Change in Operating Costs

Quarter	1	2	3	4	5	6	7	8
Dp_Dgas min Seg 1	9104.416		18761.24	10138.32	9369.061	8557.784	6977.287	4784.868
Dp_Dgas max Seg 1	23151.7		25525.6	16103.41	19891.12	24180.62	24335.41	21986.91
Dp_Dgas min Seg 2	18178.74		14847.5	24388.19	12488.13	14068.16	11974.43	10285.64
Dp_Dgas max Seg 2	46544		50457.53	45398.6	50775.63	55027.14	52286.22	47172.8
Dp_Dgas min Seg 3	20064.35		23864.47	28325.77	29794.28	27249.23	30655.12	3552.334
Dp_Dgas max Seg 3	79648.57		83718.04	72042.05	79937.69	90263.61	94517.14	105129.1
Dp_Dgas min Seg 4	10397.42		7566.109	27686.62	7201.543	7255.728	7013.498	5899.85
Dp_Dgas max Seg 4	43280.35		39721.43	34419.66	33317.06	47021.21	47286.47	40126.51
Dp_Dgas min Seg 5	5257.774		3983.047	23117.53	3986.666	3943.988	3951.263	5443.13
Dp_Dgas max Seg 5	132821.5		133326	160201.2	160669	182783.3	155368.1	161101.8
tseg1	787,698	878,886	879,627	703,024	771,100	824,905	784,943	714,674
tseg2	1,582,702	1,944,178	1,785,199	1,356,399	1,561,188	1,752,266	1,589,918	1,344,908
tseg3	221,693	229,454	264,455	228,641	216,353	241,645	244,649	226,419
tseg4	601,006	669,454	664,173	534,171	593,843	630,300	583,910	484,881
tseg5	271,638	301,568	304,806	277,351	312,924	331,164	305,202	319,033
Slope min Seg 1	-0.00415		-0.00767	-0.00518	-0.00437	-0.00373	-0.0032	-0.00241
Slope Max Seg 1	-0.01056		-0.01043	-0.00823	-0.00927	-0.01054	-0.01114	-0.01106
Slope min Seg 2	-0.00413		-0.00299	-0.00646	-0.00288	-0.00289	-0.00271	-0.00275
Slope Max Seg 2	-0.01057		-0.01016	-0.01203	-0.01169	-0.01129	-0.01182	-0.01261
Slope min Seg 3	-0.03253		-0.03244	-0.04453	-0.0495	-0.04053	-0.04504	-0.00564
Slope Max Seg 3	-0.12914		-0.11379	-0.11326	-0.13281	-0.13427	-0.13887	-0.1669
Slope min Seg 4	-0.00622		-0.00409	-0.01863	-0.00436	-0.00414	-0.00432	-0.00437
Slope Max Seg 4	-0.02589		-0.0215	-0.02316	-0.02017	-0.02682	-0.02911	-0.02975
Slope min Seg 5	-0.00696		-0.0047	-0.02996	-0.00458	-0.00428	-0.00465	-0.00613
Slope Max Seg 5	-0.17576		-0.15723	-0.20762	-0.18456	-0.1984	-0.18299	-0.18151

Quarter	9	10	11	12	13	14	15	16
Dp_Dgas min Seg 1	15836.94	9975.877	4294.641	9227.457	3124.369	16343.49	5919.934	2384.559
Dp_Dgas max Seg 1	19347.14	17676.63	24616.44	23199.45	22410.29	26270.52	23750.36	23928.98
Dp_Dgas min Seg 2	26293.39	28047.91	8612.941	20320.58	31479.44	10686.38	9682.696	22826.46
Dp_Dgas max Seg 2	40571.09	47691.48	44685.64	44183.62	48977.34	58155.83	58433.53	65961.53
Dp_Dgas min Seg 3	22168.14	51256.84	4009.417	7043.892	22790.3	20226.46	36241.08	23785.99
Dp_Dgas max Seg 3	45941.03	104670.7	119493	103917.4	101251.2	135363.4	129696	162649.1
Dp_Dgas min Seg 4	5540.216	8022.648	8282.601	6794.345	5122.577	5684.841	8127.505	5532.588
Dp_Dgas max Seg 4	27924.98	37792.05	49325.68	39814	43016.47	54890.4	46373.22	48422.67
Dp_Dgas min Seg 5	3958.15	3939.893	7597.102	4195.493	3116.14	3721.241	4918.705	6102.632
Dp_Dgas max Seg 5	117695.6	158281.6	135618.9	120467.3	148837.2	161947.5	126766.6	160742
tseg1	663,736	775,790	821,151	654,215	665,941	787,492	699,314	579,721
tseg2	1,260,202	1,492,805	1,304,197	1,234,942	1,291,695	1,580,521	1,410,847	1,415,049
tseg3	202,475	240,442	244,970	221,668	230,974	291,094	291,682	319,391
tseg4	437,714	526,765	569,111	487,149	467,918	576,761	582,930	517,780
tseg5	257,244	308,739	307,296	290,462	269,505	303,131	263,453	287,506
Slope min Seg 1	-0.00858	-0.00462	-0.00188	-0.00507	-0.00169	-0.00746	-0.00304	-0.00148
Slope Max Seg 1	-0.01048	-0.00819	-0.01078	-0.01275	-0.0121	-0.01199	-0.01221	-0.01484
Slope min Seg 2	-0.0075	-0.00675	-0.00237	-0.00591	-0.00876	-0.00243	-0.00247	-0.0058
Slope Max Seg 2	-0.01157	-0.01148	-0.01232	-0.01286	-0.01363	-0.01323	-0.01489	-0.01676
Slope min Seg 3	-0.03936	-0.07663	-0.00588	-0.01142	-0.03547	-0.02498	-0.04466	-0.02677
Slope Max Seg 3	-0.08156	-0.15648	-0.17534	-0.16851	-0.15757	-0.16715	-0.15983	-0.18305
Slope min Seg 4	-0.00455	-0.00547	-0.00523	-0.00501	-0.00394	-0.00354	-0.00501	-0.00384
Slope Max Seg 4	-0.02293	-0.02579	-0.03115	-0.02938	-0.03305	-0.03421	-0.0286	-0.03362
Slope min Seg 5	-0.00553	-0.00459	-0.00889	-0.00519	-0.00416	-0.00441	-0.00671	-0.00763
Slope Max Seg 5	-0.16446	-0.18428	-0.15864	-0.14908	-0.19851	-0.19204	-0.17296	-0.20097

Quarter	17	18	19	20	21	22	23	24
Dp_Dgas min Seg 1	14767.3	7936.88	6537.373	3252.931	15113.22	4246.188	9235.633	1551.011
Dp_Dgas max Seg 1	27817.48	34908.33	31801.21	32857.65	34976.16	14387.08	28335.24	24368.07
Dp_Dgas min Seg 2	9484.183	32193.91	14309.53	13603.32	12544.67	13028.36	44560.88	11010.71
Dp_Dgas max Seg 2	57006.83	76471.21	69326.71	66693.1	74706.58	91451.81	80200.75	75479.32
Dp_Dgas min Seg 3	30044.13	26983.49	60954.12	50978.55	65610.18	59457.21	54422.36	35867.76
Dp_Dgas max Seg 3	156874	182469	129268.3	188386.3	187396.4	192730.2	195332.7	190707.2
Dp_Dgas min Seg 4	6057.985	6531.037	29917.71	26343.63	6662.902	7643.497	9198.763	7128.764
Dp_Dgas max Seg 4	52951.94	57367.64	51947.18	59025.73	63273.7	75112.73	73937.56	74858.07
Dp_Dgas min Seg 5	7706.789	10072.14	3594.855	9482.066	10459.1	7587.421	5839.115	4116.325
Dp_Dgas max Seg 5	122051.2	153642.2	133499.4	163163.9	124310.2	174027.9	161898.8	160793.3
tseg1	639,547	778,378	722,829	631,907	687,075	747,526	669,966	518,669
tseg2	1,339,824	1,813,678	1,549,586	1,477,375	1,630,833	1,895,640	1,647,825	1,651,825
tseg3	291,139	363,011	354,877	370,573	368,495	380,051	369,066	438,463
tseg4	534,138	653,554	605,834	623,704	646,283	756,461	693,456	695,863
tseg5	245,733	300,160	272,516	287,448	271,860	319,460	321,228	303,329
Slope min Seg 1	-0.0083	-0.00367	-0.00325	-0.00185	-0.00791	-0.00204	-0.00496	-0.00107
Slope Max Seg 1	-0.01563	-0.01612	-0.01581	-0.01869	-0.0183	-0.00692	-0.0152	-0.01689
Slope min Seg 2	-0.00254	-0.00638	-0.00332	-0.00331	-0.00276	-0.00247	-0.00972	-0.0024
Slope Max Seg 2	-0.01529	-0.01516	-0.01608	-0.01623	-0.01647	-0.01734	-0.01749	-0.01643
Slope min Seg 3	-0.03709	-0.02672	-0.06174	-0.04945	-0.064	-0.05623	-0.053	-0.0294
Slope Max Seg 3	-0.19368	-0.18068	-0.13094	-0.18273	-0.1828	-0.18228	-0.19025	-0.15634
Slope min Seg 4	-0.00408	-0.00359	-0.01775	-0.01518	-0.00371	-0.00363	-0.00477	-0.00368
Slope Max Seg 4	-0.03563	-0.03155	-0.03082	-0.03402	-0.03519	-0.03569	-0.03833	-0.03867
Slope min Seg 5	-0.01127	-0.01206	-0.00474	-0.01186	-0.01383	-0.00854	-0.00653	-0.00488
Slope Max Seg 5	-0.17853	-0.18399	-0.17609	-0.20404	-0.16436	-0.19581	-0.18116	-0.19054

Quarter	25	26	27	28	29	30	31	32
Dp_Dgas min Seg 1	2614.097	6088.804	2775.015	1939.749	2558.847	2093.213	1140.879	826.6428
Dp_Dgas max Seg 1	25040.1	32725.09	26823.04	3836.962	32538.08	39321.37	32743.23	22382.89
Dp_Dgas min Seg 2	29396.96	23391.06	17605.43	28417.26	10917.57	12770.07	12940.48	36083.37
Dp_Dgas max Seg 2	77320.45	48913.21	62399.84	75086.63	52552.65	102352.7	94854.33	93935.91
Dp_Dgas min Seg 3	43762.43	16308.27	45138.35	19070.36	15586.83	47701.19	44495.58	25792.56
Dp_Dgas max Seg 3	193148.9	160264.8	167478.4	246915.3	236697.9	260713.1	272590.6	318446.3
Dp_Dgas min Seg 4	32726.08	33807.84	21908.51	25658.57	20262.22	22430.65	13689.67	13329.52
Dp_Dgas max Seg 4	70548.8	74326.4	58812.28	74925.49	76518.96	86466.45	90342.78	85131.59
Dp_Dgas min Seg 5	5016.243	5652.433	4285.598	6886.975	5136.028	7190.912	3733.292	4089.628
Dp_Dgas max Seg 5	138820.1	151914.5	149705.3	145288.1	135861	133870.3	124785.2	129316.6
tseg1	539,880	647,093	623,376	528,305	544,591	664,753	630,858	472,724
tseg2	1,608,481	1,870,533	1,734,172	1,552,232	1,625,754	1,924,872	1,633,067	1,464,609
tseg3	383,347	466,093	427,155	476,820	462,722	508,553	530,628	581,843
tseg4	649,019	704,261	654,063	649,608	696,982	775,646	697,528	697,421
tseg5	275,520	314,278	295,857	287,506	267,370	300,349	291,695	287,702
Slope min Seg 1	-0.00174	-0.00338	-0.0016	-0.00132	-0.00169	-0.00113	-0.00065	-0.00063
Slope Max Seg 1	-0.01667	-0.01818	-0.01547	-0.00261	-0.02148	-0.02126	-0.01866	-0.01702
Slope min Seg 2	-0.00657	-0.00449	-0.00365	-0.00658	-0.00241	-0.00238	-0.00285	-0.00886
Slope Max Seg 2	-0.01728	-0.0094	-0.01293	-0.01739	-0.01162	-0.01911	-0.02088	-0.02305
Slope min Seg 3	-0.04103	-0.01258	-0.03798	-0.01438	-0.01211	-0.03372	-0.03014	-0.01593
Slope Max Seg 3	-0.18111	-0.1236	-0.14093	-0.18614	-0.18387	-0.18428	-0.18466	-0.19673
Slope min Seg 4	-0.01813	-0.01726	-0.01204	-0.0142	-0.01045	-0.01039	-0.00705	-0.00687
Slope Max Seg 4	-0.03907	-0.03794	-0.03232	-0.04146	-0.03946	-0.04007	-0.04656	-0.04388
Slope min Seg 5	-0.00654	-0.00646	-0.00521	-0.00861	-0.0069	-0.00861	-0.0046	-0.00511
Slope Max Seg 5	-0.18111	-0.17375	-0.18189	-0.18165	-0.18265	-0.16021	-0.15377	-0.16157

Appendix 13: Optimization Program for Social Welfare

Note: Coefficients of demand, known prices, and known sales vary from quarter to quarter.

----------COEFFICIENTS OF DEMAND----------

a P1/q1 =4.511*10^-30*(7.386*10^27 - 8.175*10^28*e - 9.398*10^22*MCasub1 - 1.321*10^24*MCcsub1 - 1.478*10^24*MCfsub1 + 2.37*10^24*MCgsub1)

b p2/q1 =2.932*10^-29*(-1.364*10^27 - 1.069*10^28*e + 1.624*10^23*MCasub1 + 3.5*10^22*MCcsub1 + 1.358*10^23*MCfsub1 - 2.366*10^23*MCgsub1)

c p3/q1 =9.023*10^-30*(-1.327*10^28 + 1.12*10^29*e - 6.628*10^23*MCasub1 + 2.58*10^24*MCcsub1 - 1.612*10^24*MCfsub1 + 6.355*10^23*MCgsub1)

d p4/q1 =2.256*10^-30*(3.562*10^28 - 1.541*10^29*e - 1.458*10^24*MCasub1 - 7.138*10^24*MCcsub1 + 4.311*10^24*MCfsub1 + 1.762*10^24*MCgsub1)

f P1/q2 =8.862*10^-30*(6.423*10^27 - 4.162*10^28*j - 4.784*10^22*MCasub2 - 6.723*10^23*MCcsub2 - 7.525*10^23*MCfsub2 + 1.206*10^24*MCgsub2)

g p2/q2 =4.431*10^-30*(-1.542*10^28 - 7.072*10^28*j + 1.075*10^24*MCasub2 + 2.316*10^23*MCcsub2 + 8.99*10^23*MCfsub2 - 1.566*10^24*MCgsub2)

h p3/q2 =8.862*10^-30*(-2.308*10^28 + 1.14*10^29*j - 6.748*10^23*MCasub2 + 2.626*10^24*MCcsub2 - 1.641*10^24*MCfsub2 + 6.47*10^23*MCgsub2)

i p4/q2 =4.431*10^-30*(3.097*10^28 - 7.846*10^28*j - 7.424*10^23*MCasub2 - 3.633*10^24*MCcsub2 + 2.195*10^24*MCfsub2 + 8.968*10^23*MCgsub2)

k P1/q3 =8.99*10^-31*(7.526*10^28 - 4.716*10^23*MCasub3 - 6.627*10^24*MCcsub3 - 7.418*10^24*MCfsub3 + 1.189*10^25*MCgsub3 - 4.102*10^29*o)

l p2/q3 =4.495*10^-31*(-1.807*10^29 + 1.059*10^25*MCasub3 + 2.283*10^24*MCcsub3 + 8.861*10^24*MCfsub3 - 1.543*10^25*MCgsub3 - 6.971*10^29*o)

m p3/q3 =1.798*10^-30*(-1.352*10^29 - 3.326*10^24*MCasub3 + 1.294*10^25*MCcsub3 - 8.09*10^24*MCfsub3 + 3.189*10^24*MCgsub3 + 5.621*10^29*o)

n p4/q3 =4.495*10^-31*(3.629*10^29 - 7.317*10^24*MCasub3 - 3.582*10^25*MCcsub3 + 2.163*10^25*MCfsub3 + 8.84*10^24*MCgsub3 - 7.734*10^29*o)

p P1/q4 =9.504*10^-30*(5.463*10^27 - 4.461*10^22*MCasub4 - 6.268*10^23*MCcsub4 - 7.017*10^23*MCfsub4 + 1.125*10^24*MCgsub4 - 3.88*10^28*t)

q p2/q4 =4.752*10^-30*(-1.312*10^28 + 1.002*10^24*MCasub4 + 2.159*10^23*MCcsub4 + 8.382*10^23*MCfsub4 - 1.46*10^24*MCgsub4 - 6.594*10^28*t)

r p3/q4	=9.504*10^-30*(-1.963*10^28 - 6.293*10^23*MCasub4 + 2.449*10^24*MCcsub4 - 1.53*10^24*MCfsub4 + 6.033*10^23*MCgsub4 + 1.063*10^29*t)
s p4/q4	=4.752*10^-30*(2.634*10^28 - 6.922*10^23*MCasub4 - 3.388*10^24*MCcsub4 + 2.046*10^24*MCfsub4 + 8.362*10^23*MCgsub4 - 7.316*10^28*t)
u P1/q5	=1.103*10^-21*(7.379*10^19 - 3.843*10^14*MCasub5 - 5.4*10^15*MCcsub5 - 6.045*10^15*MCfsub5 + 9.689*10^15*MCgsub5 - 3.343*10^20*y)
v p2/q5	=5.516*10^-22*(-1.772*10^20 + 8.632*10^15*MCasub5 + 1.86*10^15*MCcsub5 + 7.221*10^15*MCfsub5 - 1.258*10^16*MCgsub5 - 5.68*10^20*y)
w p3/q5	=2.206*10^-21*(-1.326*10^20 - 2.71*10^15*MCasub5 + 1.055*10^16*MCcsub5 - 6.592*10^15*MCfsub5 + 2.599*10^15*MCgsub5 + 4.58*10^20*y)
x p4/q5	=5.516*10^-22*(3.558*10^20 - 5.963*10^15*MCasub5 - 2.919*10^16*MCcsub5 + 1.763*10^16*MCfsub5 + 7.204*10^15*MCgsub5 - 6.303*10^20*y)
y p5/q5	=+y
e p5/q1	=+e
j p5/q2	=+jj
o p5/q3	=+o
t p5/q4	=+t
----------IF THEN STATEMENTS TO AVOID VALUE OF 0 AND INVALID OPERATION ERROR----------	
aa	=IF(a>=0,-0.00000001,a)
bb	=IF(b>=0,-0.00000001,b)
cc	=IF(c_>=0,-0.00000001,c_)
dd	=IF(d>=0,-0.00000001,d)
ee	=IF(e>=0,-0.00000001,e)
ff	=IF(f>=0,-0.00000001,f)
gg	=IF(g>=0,-0.00000001,g)
hh	=IF(h>=0,-0.00000001,h)
ii	=IF(I>=0,-0.00000001,I)
jj	=IF(j>=0,-0.00000001,j)
kk	=IF(k>=0,-0.00000001,k)
ll	=IF(l>=0,-0.00000001,l)
mm	=IF(m>=0,-0.00000001,m)
nn	=IF(n>=0,-0.00000001,n)
oo	=IF(o>=0,-0.00000001,o)
pp	=IF(p>=0,-0.00000001,p)

qq	=IF(q>=0,-0.00000001,q)
rr	=IF(r_>=0,-0.00000001,r_)
ss	=IF(s>=0,-0.00000001,s)
tt	=IF(t>=0,-0.00000001,t)
uu	=IF(u>=0,-0.00000001,u)
vv	=IF(v>=0,-0.00000001,v)
ww	=IF(w>=0,-0.00000001,w)
xx	=IF(x>=0,-0.00000001,x)
yy	=IF(y>=0,-0.00000001,y)

----------KNOWN PRICES IN EACH SEGMENT----------

P1	14116.4736842105
P2	24112.9714285714
P3	28666.6666666667
P4	21997.2592592593
P5	34490.625

----------KNOWN SALES FOR EACH FIRM WITHIN SEGMENT 1----------

Asub1	180842
Csub1	48537
Fsub1	71174
Gsub1	172171
Asub2	413497
Csub2	253276
Fsub2	394302
Gsub2	403534
Asub3	95547
Csub3	130013
Fsub3	172453
Gsub3	183830
asub4	97559
Csub4	124016
fsub4	248092
gsub4	227754

asub5	133615
Csub5	8983
fsub5	61766
gsub5	83338

----------TOTAL SALES FOR EACH SEGMENT BEFORE TAXES----------

tseg1	**=+Gsub1+Fsub1+Csub1+Asub1**
tseg2	**=+Gsub2+Fsub2+Csub2+Asub2**
tseg3	**=+Gsub3+Fsub3+Csub3+Asub3**
tseg4	**=+gsub4+fsub4+Csub4+asub4**
tseg5	**=+gsub5+fsub5+Csub5+asub5**
tsum	=+tseg5+tseg4+tseg3+tseg2+tseg1

----------Elasticity: %CHANGE IN PRICE IN SEGMENT|%CHANGE IN QUANTITY IN SEGMENT----------

Elasiticity11	=(1/tseg1)/(aa/P1_)
Elasiticity21	=+((-ff/aa)/tseg1)/(gg/P2_)
Elasiticity31	=+((-kk/aa)/tseg1)/(mm/P3_)
Elasiticity41	=+((-pp/aa)/tseg1)/(ss/P4_)
Elasiticity51	=+((-uu/aa)/tseg1)/(yy/P5_)
Elasiticity12	=+((-bb/gg)/tseg2)/(aa/P1_)
Elasiticity22	=(1/tseg2)/(gg/P2_)
Elasiticity32	=+((-ll/gg)/TSseg2)/(mm/P3_)
Elasiticity42	=+((-qq/gg)/tseg2)/(ss/P4_)
Elasiticity52	=+((-vv/gg)/tseg2)/(yy/P5_)
Elasiticity13	=+((-cc/mm)/tseg3)/(aa/P1_)
Elasiticity23	=+((-hh/mm)/tseg3)/(gg/P2_)
Elasiticity33	=(1/tseg3)/(mm/P3_)
Elasiticity43	=+((-rr/mm)/tseg3)/(ss/P4_)
Elasiticity53	=+((-ww/mm)/tseg3)/(yy/P5_)
Elasiticity14	=+((-dd/ss)/tseg4)/(aa/P1_)
Elasiticity24	=+((-ii/ss)/tseg4)/(gg/P2_)
Elasiticity34	=+((-nn/ss)/tseg4)/(mm/P3_)
Elasiticity44	=(1/tseg4)/(ss/P4_)
Elasiticity54	=+((-xx/ss)/tseg4)/(yy/P5_)

Elasiticity15	=+((-ee/yy)/tseg5)/(aa/P1_)
Elasiticity25	=+((-jj/yy)/tseg5)/(gg/P2_)
Elasiticity35	=+((-oo/yy)/tseg5)/(mm/P3_)
Elasiticity45	=+((-tt/yy)/tseg5)/(ss/P4_)
Elasiticity55	=(1/tseg5)/(yy/P5_)

----------MARGINAL COST FOR EACH FIRM IN SEGMENT 1. VALUES SET WITHIN CONSTRAINTS BY PROGRAM----------

MCasub1	13091.368535568
MCcsub1	13591.4688720526
MCfsub1	13307.1772548583
MCgsub1	13116.4736842105
MCasub2	20213.2350814711
MCcsub2	22300.3643157862
MCfsub2	20980.9629001944
MCgsub2	20612.9714285714
MCasub3	24669.2756777729
MCcsub3	23360.9648267047
MCfsub3	20762.7440685427
MCgsub3	20612.9714285714
MCasub4	19161.427682443
MCcsub4	19161.427682443
MCfsub4	16997.2592592593
MCgsub4	16997.2592592593
MCasub5	29490.625
MCcsub5	32016.9938735556
MCfsub5	29732.6448398538
MCgsub5	29490.625

----------EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM----------

e	-0.0000301810670623743
j	-0.00655876476980566
o	-0.000285094789239224
t	**-0.00534108171948723**
y	-0.0131822429808332

----------MARKUP FOR EACH FIRM WITHIN SEGMENT 1----------

XMCasub1 =+P1_-MCasub1
XMCcsub1 =+P1_-MCcsub1
XMCfsub1 =+P1_-MCfsub1
XMCgsub1 =+P1_-MCgsub1
XMCasub2 =+P2_-MCasub2
XMCcsub2 =+P2_-MCcsub2
XMCfsub2 =+P2_-MCfsub2
XMCgsub2 =+P2_-MCgsub2
XMCasub3 =+P3_-MCasub3
XMCcsub3 =+P3_-MCcsub3
XMCfsub3 =+P3_-MCfsub3
XMCgsub3 =+P3_-MCgsub3
XMCasub4 =+P4_-MCasub4
XMCcsub4 =+P4_-MCcsub4
XMCfsub4 =+P4_-MCfsub4
XMCgsub4 =+P4_-MCgsub4
XMCasub5 =+P5_-MCasub5
XMCcsub5 =+P5_-MCcsub5
XMCfsub5 =+P5_-MCfsub5
XMCgsub5 =+P5_-MCgsub5

----------LINEARIZED DEMAND INTERCEPT FOR EACH SEGMENT----------

constant1 =P1_-(a*tseg1+f*tseg2+k*tseg3+p*tseg4+u*tseg5)
constant2 =P2_-(+b*tseg1+g*tseg2+l*tseg3+q*tseg4+v*tseg5)
constant3 =P3_-(+c_*tseg1+h*tseg2+m*tseg3+r_*tseg4+w*tseg5)
constant4 =P4_-(+d*tseg1+I*tseg2+n*tseg3+s*tseg4+x*tseg5)
constant5 =P5_-(+e*tseg1+j*tseg2+o*tseg3+t*tseg4+y*tseg5)

----------TOTAL SURPLUS BEFORE TAXES----------

TSseg1 =+CSseg1+PSseg1

```
TSseg2                  =+CSseg2+PSseg2
TSseg3                  =+CSseg3+PSseg3
TSseg4                  =+CSseg4+PSseg4
TSseg5                  =+CSseg5+PSseg5
Tssum                   =+TSseg5+TSseg4+TSseg3+TSseg2+TSseg1


----------CONSUMER SURPLUS BEFORE TAXES----------
                        CS
CSseg1                  =0.5*(constant1-P1_)*tseg1
CSseg2                  =0.5*(constant2-P2_)*tseg2
CSseg3                  =0.5*(constant3-P3_)*tseg3
CSseg4                  =0.5*(constant4-P4_)*tseg4
CSseg5                  =0.5*(constant5-P5_)*tseg5
Cssum                   =+CSseg5+CSseg4+CSseg3+CSseg2+CSseg1


----------PRODUCER SURPLUS BEFORE TAXES----------
                        PS
PSseg1                  =+(P1_-MCasub1)*Asub1+(P1_-MCcsub1)*Csub1+(P1_-MCfsub1)*Fsub1+(P1_-MCgsub1)*Gsub1
PSseg2                  =+(P2_-MCasub2)*Asub2+(P2_-MCcsub2)*Csub2+(P2_-MCfsub2)*Fsub2+(P2_-MCgsub2)*Gsub2
PSseg3                  =+(P3_-MCasub3)*Asub3+(P3_-MCcsub3)*Csub3+(P3_-MCfsub3)*Fsub3+(P3_-MCgsub3)*Gsub3
PSseg4                  =+(P4_-MCasub4)*asub4+(P4_-MCcsub4)*Csub4+(P4_-MCfsub4)*fsub4+(P4_-MCgsub4)*gsub4
PSseg5                  =+(P5_-MCasub5)*asub5+(P5_-MCcsub5)*Csub5+(P5_-MCfsub5)*fsub5+(P5_-MCgsub5)*gsub5
Pssum                   =+PSseg5+PSseg4+PSseg3+PSseg2+PSseg1

----------CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES----------
CStravseg1              =0.5*(14304/9216-0.25)*12000*tseg1
CStravseg2              =0.5*(14304/9216-0.25)*12000*tseg2
CStravseg3              =0.5*(14304/9216-0.25)*12000*tseg3
CStravseg4              =0.5*(14304/9216-0.25)*12000*tseg4
CStravseg5              =0.5*(14304/9216-0.25)*12000*tseg5
Cstravsum               =+CStravseg5+CStravseg4+CStravseg3+CStravseg2+CStravseg1
```

----------FOC-LSET----------

foc1l =+p1a1l+a*Asub1nl+b*Asub2nl+c_*Asub3nl+d*asub4nl-MCasub1-2*taxa1+e*asub5nl
foc2l =+p2a2l+f*Asub1nl+g*Asub2nl+h*Asub3nl+I*asub4nl-MCasub2-2*taxa2+j*asub5nl
foc3l =+p3a3l+k*Asub1nl+l*Asub2nl+m*Asub3nl+n*asub4nl-MCasub3-2*taxa3+o*asub5nl
foc4l =+p4a4l+p*Asub1nl+q*Asub2nl+r_*Asub3nl+s*asub4nl-MCasub4-2*taxa4+t*asub5nl
foc5l =+p1c1l+a*Csub1nl+b*Csub2nl+c_*Csub3nl+d*Csub4nl-MCcsub1-2*taxc1+e*Csub5nl
foc6l =+p2c2l+f*Csub1nl+g*Csub2nl+h*Csub3nl+I*Csub4nl-MCcsub2-2*taxc2+j*Csub5nl
foc7l =+p3c3l+k*Csub1nl+l*Csub2nl+m*Csub3nl+n*Csub4nl-MCcsub3-2*taxc3+o*Csub5nl
foc8l =+p4c4l+p*Csub1nl+q*Csub2nl+r_*Csub3nl+s*Csub4nl-MCcsub4-2*taxc4+t*Csub5nl
foc9l =+p1f1l+a*Fsub1nl+b*Fsub2nl+c_*Fsub3nl+d*fsub4nl-MCfsub1-2*taxf1+e*fsub5nl
foc10l =+p2f2l+f*Fsub1nl+g*Fsub2nl+h*Fsub3nl+I*fsub4nl-MCfsub2-2*taxf2+j*fsub5nl
foc11l =+p3f3l+k*Fsub1nl+l*Fsub2nl+m*Fsub3nl+n*fsub4nl-MCfsub3-2*taxf3+o*fsub5nl
foc12l =+p4f4l+p*Fsub1nl+q*Fsub2nl+r_*Fsub3nl+s*fsub4nl-MCfsub4-2*taxf4+t*fsub5nl
foc13l =+p1g1l+a*Gsub1nl+b*Gsub2nl+c_*Gsub3nl+d*gsub4nl-MCgsub1-2*taxg1+e*gsub5nl
foc14l =+p2g2l+f*Gsub1nl+g*Gsub2nl+h*Gsub3nl+I*gsub4nl-MCgsub2-2*taxg2+j*gsub5nl
foc15l =+p3g3l+k*Gsub1nl+l*Gsub2nl+m*Gsub3nl+n*gsub4nl-MCgsub3-2*taxg3+o*gsub5nl
foc16l =+p4g4l+p*Gsub1nl+q*Gsub2nl+r_*Gsub3nl+s*gsub4nl-MCgsub4-2*taxg4+t*gsub5nl
foc17l =+p5a5l+u*Asub1nl+v*Asub2nl+w*Asub3nl+x*asub4nl-MCasub5-2*taxa5+y*asub5nl
foc18l =+p5c5l+u*Csub1nl+v*Csub2nl+w*Csub3nl+x*Csub4nl-MCcsub5-2*taxc5+y*Csub5nl
foc19l =+p5f5l+u*Fsub1nl+v*Fsub2nl+w*Fsub3nl+x*fsub4nl-MCfsub5-2*taxf5+y*fsub5nl
foc20l =+p5g5l+u*Gsub1nl+v*Gsub2nl+w*Gsub3nl+x*gsub4nl-MCgsub5-2*taxg5+y*gsub5nl

----------PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER LSET----------

p1a1l =+constant1+a*tseg1nl+b*tseg2nl+c_*tseg3nl+d*tseg4nl+e*tseg5nl
p1c1l =+constant1+a*tseg1nl+b*tseg2nl+c_*tseg3nl+d*tseg4nl+e*tseg5nl
p1f1l =+constant1+a*tseg1nl+b*tseg2nl+c_*tseg3nl+d*tseg4nl+e*tseg5nl
p1g1l =+constant1+a*tseg1nl+b*tseg2nl+c_*tseg3nl+d*tseg4nl+e*tseg5nl
p2a2l =+constant2+f*tseg1nl+g*tseg2nl+h*tseg3nl+I*tseg4nl+j*tseg5nl
p2c2l =+constant2+f*tseg1nl+g*tseg2nl+h*tseg3nl+I*tseg4nl+j*tseg5nl
p2f2l =+constant2+f*tseg1nl+g*tseg2nl+h*tseg3nl+I*tseg4nl+j*tseg5nl
p2g2l =+constant2+f*tseg1nl+g*tseg2nl+h*tseg3nl+I*tseg4nl+j*tseg5nl
p3a3l =+constant3+k*tseg1nl+l*tseg2nl+m*tseg3nl+n*tseg4nl+o*tseg5nl
p3c3l =+constant3+k*tseg1nl+l*tseg2nl+m*tseg3nl+n*tseg4nl+o*tseg5nl

p3f3l =+constant3+k*tseg1nl+l*tseg2nl+m*tseg3nl+n*tseg4nl+o*tseg5nl
p3g3l =+constant3+k*tseg1nl+l*tseg2nl+m*tseg3nl+n*tseg4nl+o*tseg5nl
p4a4l =+constant4+p*tseg1nl+q*tseg2nl+r_*tseg3nl+s*tseg4nl+t*tseg5nl
p4c4l =+constant4+p*tseg1nl+q*tseg2nl+r_*tseg3nl+s*tseg4nl+t*tseg5nl
p4f4l =+constant4+p*tseg1nl+q*tseg2nl+r_*tseg3nl+s*tseg4nl+t*tseg5nl
p4g4l =+constant4+p*tseg1nl+q*tseg2nl+r_*tseg3nl+s*tseg4nl+t*tseg5nl
p5a5l =+constant5+u*tseg1nl+v*tseg2nl+w*tseg3nl+x*tseg4nl+y*tseg5nl
p5c5l =+constant5+u*tseg1nl+v*tseg2nl+w*tseg3nl+x*tseg4nl+y*tseg5nl
p5f5l =+constant5+u*tseg1nl+v*tseg2nl+w*tseg3nl+x*tseg4nl+y*tseg5nl
p5g5l =+constant5+u*tseg1nl+v*tseg2nl+w*tseg3nl+x*tseg4nl+y*tseg5nl

----------OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER LSET----------
lemp_a1 =+(Abate1/ABS(LSET))^0.5
lemp_c1 =+(Abate1/ABS(LSET))^0.5
lemp_f1 =+(Abate1/ABS(LSET))^0.5
lemp_g1 =+(Abate1/ABS(LSET))^0.5
----------OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET----------
lemp_a2 =+(Abate2/ABS(LSET))^0.5
lemp_c2 =+(Abate2/ABS(LSET))^0.5
lemp_f2 =+(Abate2/ABS(LSET))^0.5
lemp_g2 =+(Abate2/ABS(LSET))^0.5
----------OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET
lemp_a3 =+(Abate3/ABS(LSET))^0.5
lemp_c3 =+(Abate3/ABS(LSET))^0.5
lemp_f3 =+(Abate3/ABS(LSET))^0.5
lemp_g3 =+(Abate3/ABS(LSET))^0.5
----------OPTIMAL EMISSIONSFOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET----------
lemp_a4 =+(Abate4/ABS(LSET))^0.5
lemp_c4 =+(Abate4/ABS(LSET))^0.5
lemp_f4 =+(Abate4/ABS(LSET))^0.5
lemp_g4 =+(Abate4/ABS(LSET))^0.5
----------OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET----------
lemp_a5 =+(Abate4/ABS(LSET))^0.5

lemp_c5	=+(Abate4/ABS(LSET))^0.5
lemp_f5	=+(Abate4/ABS(LSET))^0.5
lemp_g5	=+(Abate4/ABS(LSET))^0.5

----SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC----------

Asub1nl	211349.192393486
Csub1nl	95227.3394304897
Fsub1nl	94754.2528053335
Gsub1nl	206549.918837436
Asub2nl	316077.177702211
Csub2nl	141034.708586437
Fsub2nl	307642.672126328
Gsub2nl	307153.465577837
Asub3nl	108778.441852681
Csub3nl	145323.072400668
Fsub3nl	183667.57248143
Gsub3nl	195884.354438843
asub4nl	41174.808339425
Csub4nl	60655.9799609679
fsub4nl	196118.467648515
gsub4nl	172828.297081955
asub5nl	203420.612576887
Csub5nl	90445.072697469
fsub5nl	125126.032094552
gsub5nl	152645.330847838

----------TOTAL SALES FOR EACH SEGMENT AFTER LSET----------

tseg1nl	**=+Gsub1nl+Fsub1nl+Csub1nl+Asub1nl**
tseg2nl	**=+Gsub2nl+Fsub2nl+Csub2nl+Asub2nl**
tseg3nl	**=+Gsub3nl+Fsub3nl+Csub3nl+Asub3nl**
tseg4nl	**=+gsub4nl+fsub4nl+Csub4nl+asub4nl**
tseg5nl	**=+gsub5nl+fsub5nl+Csub5nl+asub5nl**
tsumnl	=tseg5nl+tseg4nl+tseg3nl+tseg2nl+tseg1nl

----------SALES LOST AS RESULT OF LSET----------

lostsales1l =((Asub1-Asub1nl)+(Csub1-Csub1nl)+(Fsub1-Fsub1nl)+(Gsub1-Gsub1nl))
lostsales2l =((Asub2-Asub2nl)+(Csub2-Csub2nl)+(Fsub2-Fsub2nl)+(Gsub2-Gsub2nl))
lostsales3l =((Asub3-Asub3nl)+(Csub3-Csub3nl)+(Fsub3-Fsub3nl)+(Gsub3-Gsub3nl))
lostsales4l =((asub4-asub4nl)+(Csub4-Csub4nl)+(fsub4-fsub4nl)+(gsub4-gsub4nl))
lostsales5l =((asub5-asub5nl)+(Csub5-Csub5nl)+(fsub5-fsub5nl)+(gsub5-gsub5nl))
lostsuml =+lostsales5l+lostsales4l+lostsales3l+lostsales2l+lostsales1l

----------CONSUMER SURPLUS UNDER LSET----------

CSlsetseg1 =0.5*(constant1-p1a1l)*tseg1nl
CSlsetseg2 =0.5*(constant2-p2a2l)*tseg2nl
CSlsetseg3 =0.5*(constant3-p3a3l)*tseg3nl
CSlsetseg4 =0.5*(constant4-p4a4l)*tseg4nl
CSlsetseg5 =0.5*(constant5-p5a5l)*tseg5nl
Cslsetsum =+CSlsetseg5+CSlsetseg4+CSlsetseg3+CSlsetseg2+CSlsetseg1

----------PRODUCER SURPLUS UNDER LSET----------

PSlsetseg1 =+(p1a1l-MCasub1-2*taxa1)*Asub1nl+(p1c1l-MCcsub1-2*taxc1)*Csub1nl+(p1f1l-MCfsub1-2*taxf1)*Fsub1nl+(p1g1l-MCgsub1-2*taxg1)*Gsub1nl
PSlsetseg2 =+(p2a2l-MCasub2-2*taxa2)*Asub2nl+(p2c2l-MCcsub2-2*taxc2)*Csub2nl+(p2f2l-MCfsub2-2*taxf2)*Fsub2nl+(p2g2l-MCgsub2-2*taxg2)*Gsub2nl
PSlsetseg3 =+(p3a3l-MCasub3-2*taxa3)*Asub3nl+(p3c3l-MCcsub3-2*taxc3)*Csub3nl+(p3f3l-MCfsub3-2*taxf3)*Fsub3nl+(p3g3l-MCgsub3-2*taxg3)*Gsub3nl
PSlsetseg4 =+(p4a4l-MCasub4-2*taxa4)*asub4nl+(p4c4l-MCcsub4-2*taxc4)*Csub4nl+(p4f4l-MCfsub4-2*taxf4)*fsub4nl+(p4g4l-MCgsub4-2*taxg4)*gsub4nl
PSlsetseg5 =+(p5a5l-MCasub5-2*taxa5)*asub5nl+(p5c5l-MCcsub5-2*taxc5)*Csub5nl+(p5f5l-MCfsub5-2*taxf5)*fsub5nl+(p5g5l-MCgsub5-2*taxg5)*gsub5nl
Pslsetsum =+PSlsetseg5+PSlsetseg4+PSlsetseg3+PSlsetseg2+PSlsetseg1

----------TOTAL SURPLUS UNDER LSET----------

TSlsetseg1 =+PSlsetseg1+CSlsetseg1
TSlsetseg2 =+PSlsetseg2+CSlsetseg2
TSlsetseg3 =+PSlsetseg3+CSlsetseg3
TSlsetseg4 =+PSlsetseg4+CSlsetseg4
TSlsetseg5 =+PSlsetseg5+CSlsetseg5
Tslsetsum =+TSlsetseg5+TSlsetseg4+TSlsetseg3+TSlsetseg2+TSlsetseg1
dwllset =+Tssum-Tslsetsum
surpluslset =+Tslsetsum+Cstravsum*10
----------LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM----------
---
LSET 94.480296107971

----------ABATEMENT CONSTANT FROM ABATEMENT EQUATION----------
Abate1 840
Abate2 1680
Abate3 2200
Abate4 2200
Abate5 1680

----------EMISSIONS OF OLDEST NON-GROSS POLLUTER----------
max emis1 7.5
max emis2 7.5
max emis3 7.5
max emis4 7.5
max emis5 7.5
----------EMISSIONS OF CURRENT NEW VEHICLES----------
cur_emis1 4.2
cur_emis2 4.2
cur_emis3 5.5
cur_emis4 5.5
cur_emis5 4.2

```
----------TOTAL TAX REVENUE UNDER LSET-------------------------------------------------------
taxrevlsetseg1          =+(taxa1)*Asub1nl+(taxc1)*Csub1nl+(taxf1)*Fsub1nl+(taxg1)*Gsub1nl
taxrevlsetseg2          =+(taxa2)*Asub2nl+(taxc2)*Csub2nl+(taxf2)*Fsub2nl+(taxg2)*Gsub2nl
taxrevlsetseg3          =+(taxa3)*Asub3nl+(taxc3)*Csub3nl+(taxf3)*Fsub3nl+(taxg3)*Gsub3nl
taxrevlsetseg4          =+(taxa4)*asub4nl+(taxc4)*Csub4nl+(taxf4)*fsub4nl+(taxg4)*gsub4nl
taxrevlsetseg5          =+(taxa5)*asub5nl+(taxc5)*Csub5nl+(taxf5)*fsub5nl+(taxg5)*gsub5nl
taxrevlsetsum           =+taxrevlsetseg5+taxrevlsetseg4+taxrevlsetseg3+taxrevlsetseg2+taxrevlsetseg1


----------TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS----------------------------
taxa1                   =+LSET*lemp_a1
taxc1                   =+LSET*lemp_c1
taxf1                   =+LSET*lemp_f1
taxg1                   =+LSET*lemp_g1
----------TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS----------------------------
taxa2                   =+LSET*lemp_a2
taxc2                   =+LSET*lemp_c2
taxf2                   =+LSET*lemp_f2
taxg2                   =+LSET*lemp_g2
----------TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS----------------------------
taxa3                   =+LSET*lemp_a3
taxc3                   =+LSET*lemp_c3
taxf3                   =+LSET*lemp_f3
taxg3                   =+LSET*lemp_g3
----------TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS----------------------------
taxa4                   =+LSET*lemp_a4
taxc4                   =+LSET*lemp_c4
taxf4                   =+LSET*lemp_f4
taxg4                   =+LSET*lemp_g4
----------TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS----------------------------
taxa5                   =+LSET*lemp_a4
taxc5                   =+LSET*lemp_c4
taxf5                   =+LSET*lemp_f4
```

```
taxg5                       =+LSET*lemp_g4


------------POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET-------------------------------------------------------------
pollution reduction 1l      =+(12000*(cur_emis1))*(Asub1+Csub1+Fsub1+Gsub1)-
                            (12000*(lemp_a1))*(Asub1nl+Csub1nl+Fsub1nl+Gsub1nl)-(12000*max_emis1)*lostsales1l
pollution reduction 2l      =+(12000*(cur_emis2))*(Asub2+Csub2+Fsub2+Gsub2)-
                            (12000*(lemp_a2))*(Asub2nl+Csub2nl+Fsub2nl+Gsub2nl)-(12000*max_emis2)*lostsales2l
pollution reduction 3l      =+(12000*(cur_emis3))*(Asub3+Csub3+Fsub3+Gsub3)-
                            (12000*(lemp_a3))*(Asub3nl+Csub3nl+Fsub3nl+Gsub3nl)-(12000*max_emis3)*lostsales3l
pollution reduction 4l      =+(12000*(cur_emis4))*(asub4+Csub4+fsub4+gsub4)-
                            (12000*(lemp_a4))*(asub4nl+Csub4nl+fsub4nl+gsub4nl)-(12000*max_emis4)*lostsales4l
pollution reduction 5l      =+(12000*(cur_emis5))*(asub5+Csub5+fsub5+gsub5)-
                            (12000*(lemp_a5))*(asub5nl+Csub5nl+fsub5nl+gsub5nl)-(12000*max_emis5)*lostsales5l
Total reductionl
                            =+(pollution_reduction_5l+pollution_reduction_4l+pollution_reduction_3l+pollution_reduction_2l+pollution_r
                            eduction_1l)/1000000000

----------------------PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-----------------------------------------------------------
PMET                        0.00410953689894777
                            =+PMET*12000
---------------------------------FOC-PMET-------------------------------------------------------
foc1p                       =+p1a1+a*Asub1n+b*Asub2n+c_*Asub3n+d*asub4n-MCasub1-taxa1p+e*asub5n
foc2p                       =+p2a2+f*Asub1n+g*Asub2n+h*Asub3n+I*asub4n-MCasub2-taxa2p+j*asub5n
foc3p                       =+p3a3+k*Asub1n+l*Asub2n+m*Asub3n+n*asub4n-MCasub3-taxa3p+o*asub5n
foc4p                       =+p4a4+p*Asub1n+q*Asub2n+r_*Asub3n+s*asub4n-MCasub4-taxa4p+t*asub5n
foc5p                       =+p1c1+a*Csub1n+b*Csub2n+c_*Csub3n+d*Csub4n-MCcsub1-taxc1p+e*Csub5n
foc6p                       =+p2c2+f*Csub1n+g*Csub2n+h*Csub3n+I*Csub4n-MCcsub2-taxc2p+j*Csub5n
foc7p                       =+p3c3+k*Csub1n+l*Csub2n+m*Csub3n+n*Csub4n-MCcsub3-taxc3p+o*Csub5n
foc8p                       =+p4c4+p*Csub1n+q*Csub2n+r_*Csub3n+s*Csub4n-MCcsub4-taxc4p+t*Csub5n
foc9p                       =+p1f1+a*Fsub1n+b*Fsub2n+c_*Fsub3n+d*fsub4n-MCfsub1-taxf1p+e*fsub5n
foc10p                      =+p2f2+f*Fsub1n+g*Fsub2n+h*Fsub3n+I*fsub4n-MCfsub2-taxf2p+j*fsub5n
foc11p                      =+p3f3+k*Fsub1n+l*Fsub2n+m*Fsub3n+n*fsub4n-MCfsub3-taxf3p+o*fsub5n
foc12p                      =+p4f4+p*Fsub1n+q*Fsub2n+r_*Fsub3n+s*fsub4n-MCfsub4-taxf4p+t*fsub5n
```

foc13p =+p1g1+a*Gsub1n+b*Gsub2n+c_*Gsub3n+d*gsub4n-MCgsub1-taxg1p+e*gsub5n
foc14p =+p2g2+f*Gsub1n+g*Gsub2n+h*Gsub3n+I*gsub4n-MCgsub2-taxg2p+j*gsub5n
foc15p =+p3g3+k*Gsub1n+l*Gsub2n+m*Gsub3n+n*gsub4n-MCgsub3-taxg3p+o*gsub5n
foc16p =+p4g4+p*Gsub1n+q*Gsub2n+r_*Gsub3n+s*gsub4n-MCgsub4-taxg4p+t*gsub5n
foc17p =+p5a5+u*Asub1n+v*Asub2n+w*Asub3n+x*asub4n-MCasub5-taxa5p+y*asub5n
foc18p =+p5c5+u*Csub1n+v*Csub2n+w*Csub3n+x*Csub4n-MCcsub5-taxc2p+y*Csub5n
foc19p =+p5f5+u*Fsub1n+v*Fsub2n+w*Fsub3n+x*fsub4n-MCfsub5-taxf5p+y*fsub5n
foc20p =+p5g5+u*Gsub1n+v*Gsub2n+w*Gsub3n+x*gsub4n-MCgsub5-taxg5p+y*gsub5n

----------PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET----------
p1a1 =+constant1+a*tseg1n+b*tseg2n+c_*tseg3n+d*tseg4n-dp_dgas1*PMET*epm_a1+e*tseg5n
p1c1 =+constant1+a*tseg1n+b*tseg2n+c_*tseg3n+d*tseg4n-dp_dgas1*PMET*epm_a1+e*tseg5n
p1f1 =+constant1+a*tseg1n+b*tseg2n+c_*tseg3n+d*tseg4n-dp_dgas1*PMET*epm_a1+e*tseg5n
p1g1 =+constant1+a*tseg1n+b*tseg2n+c_*tseg3n+d*tseg4n-dp_dgas1*PMET*epm_a1+e*tseg5n
----------PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET----------
p2a2 =+constant2+f*tseg1n+g*tseg2n+h*tseg3n+I*tseg4n-dp_dgas2*PMET*epm_a2+j*tseg5n
p2c2 =+constant2+f*tseg1n+g*tseg2n+h*tseg3n+I*tseg4n-dp_dgas2*PMET*epm_a2+j*tseg5n
p2f2 =+constant2+f*tseg1n+g*tseg2n+h*tseg3n+I*tseg4n-dp_dgas2*PMET*epm_a2+j*tseg5n
p2g2 =+constant2+f*tseg1n+g*tseg2n+h*tseg3n+I*tseg4n-dp_dgas2*PMET*epm_a2+j*tseg5n
----------PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET----------
p3a3 =+constant3+k*tseg1n+l*tseg2n+m*tseg3n+n*tseg4n-dp_dgas3*PMET*epm_a3+o*tseg5n
p3c3 =+constant3+k*tseg1n+l*tseg2n+m*tseg3n+n*tseg4n-dp_dgas3*PMET*epm_a3+o*tseg5n
p3f3 =+constant3+k*tseg1n+l*tseg2n+m*tseg3n+n*tseg4n-dp_dgas3*PMET*epm_a3+o*tseg5n
p3g3 =+constant3+k*tseg1n+l*tseg2n+m*tseg3n+n*tseg4n-dp_dgas3*PMET*epm_a3+o*tseg5n
----------PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET----------
p4a4 =+constant4+p*tseg1n+q*tseg2n+r_*tseg3n+s*tseg4n-dp_dgas4*PMET*epm_a4+t*tseg5n
p4c4 =+constant4+p*tseg1n+q*tseg2n+r_*tseg3n+s*tseg4n-dp_dgas4*PMET*epm_a4+t*tseg5n
p4f4 =+constant4+p*tseg1n+q*tseg2n+r_*tseg3n+s*tseg4n-dp_dgas4*PMET*epm_a4+t*tseg5n
p4g4 =+constant4+p*tseg1n+q*tseg2n+r_*tseg3n+s*tseg4n-dp_dgas4*PMET*epm_a4+t*tseg5n
----------PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET----------
p5a5 =+constant5+u*tseg1n+v*tseg2n+w*tseg3n+x*tseg4n-dp_dgas5*PMET*epm_a5+y*tseg5n
p5c5 =+constant5+u*tseg1n+v*tseg2n+w*tseg3n+x*tseg4n-dp_dgas5*PMET*epm_a5+y*tseg5n
p5f5 =+constant5+u*tseg1n+v*tseg2n+w*tseg3n+x*tseg4n-dp_dgas5*PMET*epm_a5+y*tseg5n

p5g5 =+constant5+u*tseg1n+v*tseg2n+w*tseg3n+x*tseg4n-dp_dgas5*PMET*epm_a5+y*tseg5n

----------CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST----------
dp/dgas1 14687.8151748685
dp/dgas2 40541.4485210189
dp/dgas3 31821.4898108971
dp/dgas4 14418.2846385137
dp/dgas5 2693

----------VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET----------
VMT1 =14304-9216*(0.25+tpma1)
VMT2 =14304-9216*(0.25+tpma2)
VMT3 =14304-9216*(0.25+tpma3)
VMT4 =14304-9216*(0.25+tpma4)
VMT5 =14304-9216*(0.25+tpma5)

----------TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1----------
tpma1 =+epm_a1*PMET
tpmc1 =+epm_c1*PMET
tpmf1 =+epm_f1*PMET
tpmg1 =+epm_g1*PMET
----------TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2----------
tpma2 =+epm_a2*PMET
tpmc2 =+epm_c2*PMET
tpmf2 =+epm_f2*PMET
tpmg2 =+epm_g2*PMET
----------TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3----------
tpma3 =+epm_a3*PMET
tpmc3 =+epm_c3*PMET
tpmf3 =+epm_f3*PMET
tpmg3 =+epm_g3*PMET

----------TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4----------
tpma4 =+epm_a4*PMET
tpmc4 =+epm_c4*PMET
tpmf4 =+epm_f4*PMET
tpmg4 =+epm_g4*PMET
----------TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5----------
tpma5 =+epm_a5*PMET
tpmc5 =+epm_c5*PMET
tpmf5 =+epm_f5*PMET
tpmg5 =+epm_g5*PMET

----------CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR----------
cstravelpmetseg1 =0.5*(14304/9216-0.25-tpma1)*VMT1*tseg1n+0.5*(14304/9216-0.25)*12000*lostsales1
cstravelpmetseg2 =0.5*(14304/9216-0.25-tpma2)*VMT2*tseg2n+0.5*(14304/9216-0.25)*12000*lostsales2
cstravelpmetseg3 =0.5*(14304/9216-0.25-tpma3)*VMT3*tseg3n+0.5*(14304/9216-0.25)*12000*lostsales3
cstravelpmetseg4 =0.5*(14304/9216-0.25-tpma4)*VMT4*tseg4n+0.5*(14304/9216-0.25)*12000*lostsales4
cstravelpmetseg5 =0.5*(14304/9216-0.25-tpma5)*VMT5*tseg5n+0.5*(14304/9216-0.25)*12000*lostsales5
cstravelpmetsum =+cstravelpmetseg5+cstravelpmetseg4+cstravelpmetseg3+cstravelpmetseg2+cstravelpmetseg1

----------OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET----------
epm_a1 **=(Abate1/(ABS(PMET*dp_dgas1)))^0.5**
epm_c1 **=(Abate1/(ABS(PMET*dp_dgas1)))^0.5**
epm_f1 **=(Abate1/(ABS(PMET*dp_dgas1)))^0.5**
epm_g1 **=(Abate1/(ABS(PMET*dp_dgas1)))^0.5**
----------OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET----------
epm_a2 **=(Abate2/(ABS(PMET*dp_dgas2)))^0.5**
epm_c2 **=(Abate2/(ABS(PMET*dp_dgas2)))^0.5**
epm_f2 **=(Abate2/(ABS(PMET*dp_dgas2)))^0.5**
epm_g2 **=(Abate2/(ABS(PMET*dp_dgas2)))^0.5**
----------OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET----------
epm_a3 **=(Abate3/(ABS(PMET*dp_dgas3)))^0.5**
epm_c3 **=(Abate3/(ABS(PMET*dp_dgas3)))^0.5**
epm_f3 **=(Abate3/(ABS(PMET*dp_dgas3)))^0.5**

epm_g3 **=(Abate3/(ABS(PMET*dp_dgas3)))^0.5**

----------OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET----------

epm_a4 **=(Abate4/(ABS(PMET*dp_dgas4)))^0.5**

epm_c4 **=(Abate4/(ABS(PMET*dp_dgas4)))^0.5**

epm_f4 **=(Abate4/(ABS(PMET*dp_dgas4)))^0.5**

epm_g4 **=(Abate4/(ABS(PMET*dp_dgas4)))^0.5**

----------OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET----------

epm_a5 **=(Abate4/(ABS(PMET*dp_dgas4)))^0.5**

epm_c5 **=(Abate4/(ABS(PMET*dp_dgas4)))^0.5**

epm_f5 **=(Abate4/(ABS(PMET*dp_dgas4)))^0.5**

epm_g5 **=(Abate4/(ABS(PMET*dp_dgas4)))^0.5**

----SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC----------

Asub1n 252367.568899113

Csub1n 1692.56425547713

Fsub1n 135306.462552826

Gsub1n 247172.306565318

Asub2n 287857.80036071

Csub2n 249158.164127542

Fsub2n 279780.498471881

Gsub2n 279237.517154543

Asub3n 108604.594614223

Csub3n 125023.250525469

Fsub3n 183446.867828235

Gsub3n 195670.703904558

asub4n 38799.8289747788

Csub4n 122217.874641066

fsub4n 193892.347168846

gsub4n 170579.766751726

asub5n 214824.201898977

Csub5n 501.469856238852

fsub5n 136293.662802129

gsub5n 163848.48371731

----------TOTAL SALES FOR EACH SEGMENT AFTER PMET----------

tseg1n	**=+Gsub1n+Fsub1n+Csub1n+Asub1n**
tseg2n	**=+Gsub2n+Fsub2n+Csub2n+Asub2n**
tseg3n	**=+Gsub3n+Fsub3n+Csub3n+Asub3n**
tseg4n	**=+gsub4n+fsub4n+Csub4n+asub4n**
tseg5n	**=+gsub5n+fsub5n+Csub5n+asub5n**
tsumn	=tseg5n+tseg4n+tseg3n+tseg2n+tseg1n

----------CONSUMER SURPLUS UNDER PMET----------

CSPMETseg1	=0.5*(constant1-dp_dgas1*PMET*epm_a1-p1a1)*tseg1n
CSPMETseg2	=0.5*(constant2-p2a2-dp_dgas2*PMET*epm_a2)*tseg2n
CSPMETseg3	=0.5*(constant3-p3a3-dp_dgas3*PMET*epm_a3)*tseg3n
CSPMETseg4	=0.5*(constant4-p4a4-dp_dgas4*PMET*epm_a4)*tseg4n
CSPMETseg5	=0.5*(constant5-p5a5-dp_dgas5*PMET*epm_a5)*tseg5n
CsPMETsum	=+CSPMETseg5+CSPMETseg4+CSPMETseg3+CSPMETseg2+CSPMETseg1

----------PRODUCER SURPLUS UNDER PMET----------

PSpmetseg1	=+(p1a1-MCasub1-taxa1p)*Asub1n+(p1c1-MCcsub1-taxa1p)*Csub1n+(p1f1-MCfsub1-taxa1p)*Fsub1n+(p1g1-MCgsub1-taxa1p)*Gsub1n
PSpmetseg2	=+(p2a2-MCasub2-taxa2p)*Asub2n+(p2c2-MCcsub2-taxa2p)*Csub2n+(p2f2-MCfsub2-taxa2p)*Fsub2n+(p2g2-MCgsub2-taxa2p)*Gsub2n
PSpmetseg3	=+(p3a3-MCasub3-taxa3p)*Asub3n+(p3c3-MCcsub3-taxa3p)*Csub3n+(p3f3-MCfsub3-taxa3p)*Fsub3n+(p3g3-MCgsub3-taxa3p)*Gsub3n
PSpmetseg4	=+(p4a4-MCasub4-taxa4p)*asub4n+(p4c4-MCcsub4-taxa4p)*Csub4n+(p4f4-MCfsub4-taxa4p)*fsub4n+(p4g4-MCgsub4-taxa4p)*gsub4n
PSpmetseg5	=+(p5a5-MCasub5-taxa5p)*asub5n+(p5c5-MCcsub5-taxa5p)*Csub5n+(p5f5-MCfsub5-taxa5p)*fsub5n+(p5g5-MCgsub5-taxa5p)*gsub5n
Pspmetsum	=+PSpmetseg5+PSpmetseg4+PSpmetseg3+PSpmetseg2+PSpmetseg1

----------TOTAL SURPLUS UNDER PMET----------

TSPMETseg1	=+PSpmetseg1+CSPMETseg1
TSPMETseg2	=+PSpmetseg2+CSPMETseg2
TSPMETseg3	=+PSpmetseg3+CSPMETseg3

```
TSPMETseg4                =+PSpmetseg4+CSPMETseg4
TSPMETseg5                =+PSpmetseg5+CSPMETseg5
TSPMETsum                 =+TSPMETseg5+TSPMETseg4+TSPMETseg3+TSPMETseg2+TSPMETseg1
dwlpmet                   =+Tssum+Cstravsum-TSPMETsum-taxrevpmetsum-cstravelpmetsum
pmetsurplus               =+TSPMETsum+taxrevpmetsum*10+cstravelpmetsum*10
pmetsurplus10             =+TSPMETsum+pmetrev10+cstravelpmetsum

------------TOTAL TAX REVENUE UNDER PMET-----------------------------------------------------
taxrevpmetseg1            =+(tpma1)*Asub1n*VMT1+(tpmc1)*Csub1n*VMT1+(tpmf1)*Fsub1n*VMT1+(tpmg1)*Gsub1n*VMT1
taxrevpmetseg2            =+(tpma2)*Asub2n*VMT2+(tpmc2)*Csub1n*VMT2+(tpmf2)*Fsub2n*VMT2+(tpmg2)*Gsub2n*VMT2
taxrevpmetseg3            =+(tpma3)*Asub3n*VMT3+(tpmc3)*Csub3n*VMT3+(tpmf3)*Fsub3n*VMT3+(tpmg3)*Gsub3n*VMT3
taxrevpmetseg4            =+(tpma4)*asub4n*VMT4+(tpmc4)*Csub4n*VMT4+(tpmf4)*fsub4n*VMT4+(tpmg4)*gsub4n*VMT4
taxrevpmetseg5            =+(tpma5)*asub5n*VMT5+(tpmc5)*Csub4n*VMT5+(tpmf5)*fsub5n*VMT5+(tpmg5)*gsub5n*VMT5
taxrevpmetsum             =+taxrevpmetseg5+taxrevpmetseg4+taxrevpmetseg3+taxrevpmetseg2+taxrevpmetseg1
pmetrev10                 =+taxrevpmetsum*10

----------------SALES LOST AS RESULT OF PMET-----------------------------------------------------
lostsales1                =((Asub1-Asub1n)+(Csub1-Csub1n)+(Fsub1-Fsub1n)+(Gsub1-Gsub1n))
lostsales2                =((Asub2-Asub2n)+(Csub2-Csub2n)+(Fsub2-Fsub2n)+(Gsub2-Gsub2n))
lostsales3                =((Asub3-Asub3n)+(Csub3-Csub3n)+(Fsub3-Fsub3n)+(Gsub3-Gsub3n))
lostsales4                =((asub4-asub4n)+(Csub4-Csub4n)+(fsub4-fsub4n)+(gsub4-gsub4n))
lostsales5                =((asub5-asub5n)+(Csub5-Csub5n)+(fsub5-fsub5n)+(gsub5-gsub5n))
lostsum                   =+lostsales5+lostsales4+lostsales3+lostsales2+lostsales1

--------------------------COSTOF ABATEMENT EQUIPMENT USED  IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-------------
taxa1p                    =+Abate1/epm_a1
taxc1p                    =+Abate1/epm_a1
taxf1p                    =+Abate1/epm_a1
taxg1p                    =+Abate1/epm_a1
--------------------------COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2----------------
taxa2p                    =+Abate2/epm_a2
taxc2p                    =+Abate2/epm_a2
taxf2p                    =+Abate2/epm_a2
taxg2p                    =+Abate2/epm_a2
```

```
----------COSTOF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3----------
-
taxa3p                  =+Abate3/epm_a3
taxc3p                  =+Abate3/epm_a3
taxf3p                  =+Abate3/epm_a3
taxg3p                  =+Abate3/epm_a3
----------COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4----------
taxa4p                  =+Abate4/epm_a4
taxc4p                  =+Abate4/epm_a4
taxf4p                  =+Abate4/epm_a4
taxg4p                  =+Abate4/epm_a4
----------COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5----------
taxa5p                  =+Abate4/epm_a4
taxc5p                  =+Abate4/epm_a4
taxf5p                  =+Abate4/epm_a4
taxg5p                  =+Abate4/epm_a4


----------POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET----------
pollution reduction 1p  =+cur_emis1*(Asub1+Csub1+Fsub1+Gsub1)*12000-
                        (VMT1*(epm_a1)*(Asub1n+Csub1n+Fsub1n+Gsub1n)+12000*max_emis1*lostsales1)
pollution reduction 2p  =+cur_emis2*(Asub2+Csub2+Fsub2+Gsub2)*12000-
                        (VMT2*(epm_a2)*(Asub2n+Csub2n+Fsub2n+Gsub2n)+12000*max_emis2*lostsales2)
pollution reduction 3p  =+cur_emis3*(Asub3+Csub3+Fsub3+Gsub3)*12000-
                        (VMT3*(epm_a3)*(Asub3n+Csub3n+Fsub3n+Gsub3n)+12000*max_emis3*lostsales3)
pollution reduction 4p  =+cur_emis4*(asub4+Csub4+fsub4+gsub4)*12000-
                        (VMT4*(epm_a4)*(asub4n+Csub4n+fsub4n+gsub4n)+12000*max_emis4*lostsales4)
pollution reduction 5p  =+cur_emis5*(asub5+Csub5+fsub5+gsub5)*12000-
                        (VMT5*(epm_a5)*(asub5n+Csub5n+fsub5n+gsub5n)+12000*max_emis5*lostsales5)
Total reductionp
                        =+(pollution_reduction_5p+pollution_reduction_4p+pollution_reduction_3p+pollution_reduction_2p+pollutio
                        n_reduction_1p)/1000000000
```

```
----------DIFFERENCE BETWEEN TOTAL SURPLUS UNDER LSET AND PMET'----------
Tsdiff                          =+(+surpluslset-pmetsurplus)/1000000
                                x
```

Appendix 14: Social Welfare Optimization Program Constraints

=MIN($B$678)
=COUNT($B$118:$B$137,$B$140:$B$144,$B$292:$B$311,$B$560:$B$579,$B$359,$B$429,$B$482:$B$486)
=i=q
=LSET<=1500
=LSET>=1
=MCasub3>=MCcsub3
=MCasub4>=MCcsub4
=MCasub5<=p5_
=MCcsub1>=MCfsub1
=MCcsub2>=MCfsub2
=MCcsub3>=MCfsub3
=MCcsub4>=MCgsub4
=MCcsub5<=p5_
=MCcsub5>=MCfsub5
=MCfsub1>=MCgsub1
=MCfsub2>=MCgsub2
=MCfsub3>=MCgsub3
=MCfsub5<=p5_
=MCfsub5>=MCgsub5
=MCgsub1<=MCgsub2
=MCgsub1<=MCgsub4
=MCgsub1>=MCasub1
=MCgsub2<=MCgsub3
=MCgsub2>=MCasub2
=MCgsub4>=MCfsub4
=MCgsub5<=p5_
=MCgsub5>=MCasub5
=MCgsub5>=MCgsub1
=MCgsub5>=MCgsub2
=MCgsub5>=MCgsub4
=PMET<=0.25
=PMET>=0.0000001
=Total_reductionl=40
=Total_reductionp=40
=XMCgsub1<=XMCgsub2
=XMCgsub1<=XMCgsub4
=XMCgsub1>=1000
=XMCgsub2<=XMCgsub3
=XMCgsub2>=3500
=XMCgsub3>=5000
=XMCgsub4<=XMCgsub5
=XMCgsub4>=5000
=XMCgsub5>=5000
=a<=b
=a<=c_
=a<=d
=a<=e
=Allmc>=8000

=Allpartials<=-0.00000001
=c_=k
=coefficients<=0
=coefficients>=-1
=d=p
=dp_dgas1<=22382.89
=dp_dgas1>=826.64
=dp_dgas2<=93935.91
=dp_dgas2>=36083.37
=dp_dgas3<=318446.3
=dp_dgas3>=25792.56
=dp_dgas4<=85131.59
=dp_dgas4>=13329.52
=dp_dgas5<=129316.6
=dp_dgas5>=4089.628
=e=u
=f=b
=foclset=0
=focpmet=0
=g<=i
=g<=f
=g<=h
=g<=j
=h=l
=j=v
=m<=k
=m<=l
=m<=n
=m<=o
=maxmc1<=P1_
=maxmc2<=P2_
=maxmc3<=P3_
=maxmc4<=P4_
=maxmc5<=p5_
=o=w
=partials5<=0
=partials5>=-1
=qlset<=1000000
=qlset>=0
=qpmet<=1000000
=qpmet>=0
=r_=n
=s<=p
=s<=q
=s<=r_
=s<=t
=x=t
=y<=u
=y<=v
=y<=w
=y<=x
={100,1000,0.000001,0.05,0,FALSE,TRUE,1,1,1}

={FALSE,FALSE,0.000001,TRUE,FALSE}
={FALSE,1000,1000,FALSE,FALSE,FALSE,FALSE,FALSE,TRUE,FALSE,0}

Appendix 15: Optimization Results Future Gains from Trade No Discounting

QUARTER	1	1	2	2	3	3
COEFFICIENTS OF DEMAND						
a P1/q1	-0.00702915	-0.006520906			-0.007108384	-0.008285507
b p2/q1	-1E-08	-6.75957E-05			-1E-08	-0.000193836
c p3/q1	-1E-08	-0.005196309			-1E-08	-1.76279E-17
d p4/q1	-0.00702915	-1E-08			-0.004048538	-0.003530722
f P1/q2	-1E-08	-6.75957E-05			-1E-08	-0.000193836
g p2/q2	-0.010048942	-0.004861936			-0.003434686	-0.006280546
h p3/q2	-1E-08	-0.002058816			-2.87814E-15	-0.002008154
i p4/q2	-0.000754488	-1E-08			-0.003434686	-0.004617846
k P1/q3	-1E-08	-0.005196309			-1E-08	8.90467E-18
l p2/q3	-1E-08	-0.002058816			5.03817E-16	-0.002008154
m p3/q3	-0.105171223	-0.061563013			-0.036767044	-0.043303358
n p4/q3	-1E-08	-1E-08			-0.000713612	-1E-08
p P1/q4	-0.00702915	-1E-08			-0.004048538	-0.003530722
q p2/q4	-0.000754488	-1E-08			-0.003434686	-0.004617846
r p3/q4	-1E-08	-9.95833E-09			-0.000713612	-1E-08
s p4/q4	-0.0160297	-0.019816928			-0.005825133	-0.004617846
u P1/q5	-0.00702915	-0.006520906			9.7479E-16	-1E-08
v p2/q5	-1E-08	-0.000596662			-1E-08	-0.005559525
w p3/q5	-0.018329715	-9.98933E-09			-0.009449012	-0.008123746
x p4/q5	-1E-08	-0.006719884			-0.001594647	-1.13553E-16
y p5/q5	-0.137610548	-0.113721023			-0.077695098	-0.075114438
e p5/q1	-0.00702915	-0.006520906			0	-0.00000001
j p5/q2	-0.00000001	-0.000596662			-9.99996E-09	-0.005559525
o p5/q3	-0.018329715	-0.00000001			-0.009449012	-0.008123746
t p5/q4	-0.00000001	-0.006719884			-0.001594647	0
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR						
aa	-0.00702915	-0.006520906			-0.007108384	-0.008285507
bb	-1E-08	-6.75957E-05			-1E-08	-0.000193836
cc	-1E-08	-0.005196309			-1E-08	-1.76279E-17
dd	-0.00702915	-1E-08			-0.004048538	-0.003530722
ee	-0.00702915	-0.006520906			-0.00000001	-0.00000001
ff	-1E-08	-6.75957E-05			-1E-08	-0.000193836
gg	-0.010048942	-0.004861936			-0.003434686	-0.006280546
hh	-1E-08	-0.002058816			-2.87814E-15	-0.002008154
ii	-0.000754488	-1E-08			-0.003434686	-0.004617846
jj	-0.00000001	-0.000596662			-9.99996E-09	-0.005559525
kk	-1E-08	-0.005196309			-1E-08	-0.00000001
ll	-1E-08	-0.002058816			-0.00000001	-0.002008154
mm	-0.105171223	-0.061563013			-0.036767044	-0.043303358
nn	-1E-08	-1E-08			-0.000713612	-1E-08
oo	-0.018329715	-0.00000001			-0.009449012	-0.008123746
pp	-0.00702915	-1E-08			-0.004048538	-0.003530722
qq	-0.000754488	-1E-08			-0.003434686	-0.004617846
rr	-1E-08	-9.95833E-09			-0.000713612	-1E-08
ss	-0.0160297	-0.019816928			-0.005825133	-0.004617846
tt	-0.00000001	-0.006719884			-0.001594647	-0.00000001
uu	-0.00702915	-0.006520906			-0.00000001	-1E-08
vv	-1E-08	-0.000596662			-1E-08	-0.005559525
ww	-0.018329715	-9.98933E-09			-0.009449012	-0.008123746
xx	-1E-08	-0.006719884			-0.001594647	-1.13553E-16
yy	-0.137610548	-0.113721023			-0.077695098	-0.075114438
KNOWN PRICE BEFORE TAXES						
P1	11,847	11,847			11,534	11,534
P2	15,416	15,416			15,769	15,769
P3	19,087	19,087			17,858	17,858
P4	14,734	14,734			14,304	14,304
P5	26,519	26,519			22,584	22,584

QUARTER	1	1	2	2	3	3
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM						
Asub1	341622	341622			359326	359326
Csub1	97391	97391			128651	128651
Fsub1	203833	203833			211244	211244
Gsub1	144852	144852			180406	180406
Asub2	262998	262998			365529	365529
Csub2	267224	267224			243589	243589
Fsub2	387792	387792			424418	424418
Gsub2	664688	664688			751663	751663
Asub3	37038	37038			44666	44666
Csub3	57610	57610			70706	70706
Fsub3	44652	44652			48051	48051
Gsub3	82393	82393			101032	101032
asub4	119719	119719			135222	135222
Csub4	61215	61215			52631	52631
fsub4	201750	201750			212169	212169
gsub4	218322	218322			264151	264151
asub5	84980	84980			101272	101272
Csub5	4458	4458			5577	5577
fsub5	78969	78969			82402	82402
gsub5	103231	103231			115555	115555
TOTAL SALES IN EACH SEGMENT BEFORE TAXES						
tseg1	787,698	787,698			879,627	879,627
tseg2	1,582,702	1,582,702			1,785,199	1,785,199
tseg3	221,693	221,693			264,455	264,455
tseg4	601,006	601,006			664,173	664,173
tseg5	271,638	271,638			304,806	304,806
tsum	3,464,737	3,464,737			3,898,260	3,898,260
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j						
Elasiticity11	2.14	2.31			1.84	1.58
Elasiticity21	0.00	0.04			0.00	0.07
Elasiticity31	0.00	0.31			0.00	0.00
Elasiticity41	1.17	0.00			1.59	1.50
Elasiticity51	0.24	0.30			0.00	0.00
Elasiticity12	0.00	0.02			0.00	0.02
Elasiticity22	0.97	2.00			2.57	1.41
Elasiticity32	0.00	0.00			0.00	0.00
Elasiticity42	0.04	0.00			1.38	1.28
Elasiticity52	0.00	0.02			0.00	0.15
Elasiticity13	0.00	0.69			0.00	0.00
Elasiticity23	0.00	0.48			0.00	0.44
Elasiticity33	0.82	1.40			1.84	1.56
Elasiticity43	0.00	0.00			0.18	0.00
Elasiticity53	0.15	0.00			0.28	0.21
Elasiticity14	1.23	0.00			1.70	1.60
Elasiticity24	0.12	0.00			4.08	3.78
Elasiticity34	0.00	0.00			0.09	0.00
Elasiticity44	1.53	1.24			3.70	4.66
Elasiticity54	0.00	0.13			0.12	0.00
Elasiticity15	0.32	0.38			0.00	0.00
Elasiticity25	0.00	0.06			0.00	0.61
Elasiticity35	0.09	0.00			0.19	0.15
Elasiticity45	0.00	0.16			0.17	0.00
Elasiticity55	0.71	0.86			0.95	0.99
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM						

QUARTER	1	1	2	2	3	3
MCasub1	8,000	8,848			8,423	8,000
MCcsub1	10,690	10,854			10,397	10,226
MCfsub1	8,430	9,734			9,161	8,940
MCgsub1	8,547	9,734			9,161	8,940
MCasub2	12,673	13,976			14,043	12,122
MCcsub2	12,673	13,976			14,742	13,790
MCfsub2	11,352	13,361			13,578	11,525
MCgsub2	8,547	11,916			12,269	8,940
MCasub3	13,635	14,492			15,161	14,366
MCcsub3	12,952	14,492			15,161	14,255
MCfsub3	12,952	14,492			15,161	14,255
MCgsub3	8,547	11,916			12,858	11,029
MCasub4	10,225	11,800			10,594	10,704
MCcsub4	12,883	13,508			12,562	12,463
MCfsub4	9,783	10,214			10,569	10,598
MCgsub4	9,734	9,734			9,161	8,940
MCasub5	11,723	13,643			14,097	12,599
MCcsub5	24,148	24,788			21,408	20,246
MCfsub5	13,367	14,586			15,417	13,669
MCgsub5	9,734	11,916			12,269	8,940
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM						
e	-0.00702915	-0.006520906			0	-0.00000001
j	-0.00000001	-0.000596662			-9.99996E-09	-0.0055595
o	-0.018329715	-0.00000001			-0.009449012	-0.008123746
t	-0.00000001	-0.006719884			-0.001594647	0
y	-0.137610548	-0.113721023			-0.077695098	-0.075114438
MARKUP FOR EACH FIRM BY SEGMENT						
XMCasub1	3846.65014	2998.804178			3110.340045	3533.800486
XMCcsub1	1156.811836	992.8099751			1136.326908	1307.449933
XMCfsub1	3416.258682	2113.10014			2373.220487	2593.903568
XMCgsub1	3299.503652	2113.10014			2373.220487	2593.903568
XMCasub2	2743.685203	1440.465453			1725.937358	3646.999414
XMCcsub2	2743.685203	1440.465453			1026.749461	1978.99914
XMCfsub2	4064.757672	2055.491058			2190.815807	4243.683609
XMCgsub2	6869.248782	3500			3500	6829.093517
XMCasub3	5452.102725	4594.380628			2696.781598	3492.597927
XMCcsub3	6134.318357	4594.380628			2696.919116	3603.310803
XMCfsub3	6134.318357	4594.380628			2696.919116	3603.310803
XMCgsub3	10539.54706	7170.29828			5000	6829.093517
XMCasub4	4508.562562	2933.10552			3709.52751	3599.352698
XMCcsub4	1850.6698	1225.815086			1742.094635	1840.767347
XMCfsub4	4950.406859	4519.392515			3735.119104	3706.094326
XMCgsub4	5000	5000			5143.256937	5363.940018
XMCasub5	14795.95547	12876.15022			8486.175557	9984.226789
XMCcsub5	2370.848259	1731.248829			1175.146561	2337.724632
XMCfsub5	13151.95941	11932.7475			7166.416368	8914.195003
XMCgsub5	16785.67642	14602.83115			10314.60593	13643.69945
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT						
constant1	23,517	20,013			20,475	21,513
constant2	31,774	23,783			24,182	32,444
constant3	47,381	40,086			30,936	35,371
constant4	31,098	28,469			28,540	28,720
constant5	73,500	67,530			49,824	57,552

QUARTER	1	1	2	2	3	3
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES						
TSseg1	7,197,586,716	5,074,442,722			6,125,957,775	6,842,882,797
TSseg2	20,541,826,746	10,508,312,250			11,950,919,136	23,633,705,520
TSseg3	4,834,007,171	3,558,524,141			2,675,073,148	3,589,564,992
TSseg4	7,661,114,151	6,557,141,520			7,472,110,702	7,574,340,954
TSseg5	10,420,199,504	9,121,718,495			6,799,841,087	8,664,612,453
Tssum	50,654,734,289	34,820,139,129			35,023,901,848	50,305,106,717
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES						
CSseg1	4,596,537,382	3,216,488,163			3,932,670,331	4,388,989,330
CSseg2	12,944,876,749	6,621,034,788			7,509,291,942	14,884,286,419
CSseg3	3,136,379,625	2,327,744,533			1,729,180,677	2,315,689,256
CSseg4	4,917,710,214	4,127,557,350			4,727,739,842	4,787,539,411
CSseg5	6,380,870,721	5,570,003,342			4,151,443,994	5,329,307,161
Cssum	31,976,374,691	21,862,828,177			22,050,326,786	31,705,811,577
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES						
PSseg1	2,601,049,334	1,857,954,559			2,193,287,443	2,453,893,467
PSseg2	7,596,949,997	3,887,277,462			4,441,627,195	8,749,419,101
PSseg3	1,697,627,546	1,230,779,608			945,892,470	1,273,875,736
PSseg4	2,743,403,937	2,429,584,170			2,744,370,860	2,786,801,544
PSseg5	4,039,328,783	3,551,715,152			2,648,397,093	3,335,305,292
Pssum	18,678,359,598	12,957,310,952			12,973,575,062	18,599,295,140
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES						
CStravseg1	6,153,890,625	6,153,890,625			6,872,085,938	6,872,085,938
CStravseg2	12,364,859,375	12,364,859,375			13,946,867,188	13,946,867,188
CStravseg3	1,731,976,563	1,731,976,563			2,066,054,688	2,066,054,688
CStravseg4	4,695,359,375	4,695,359,375			5,188,851,563	5,188,851,563
CStravseg5	2,122,171,875	2,122,171,875			2,381,296,875	2,381,296,875
Cstravsum	27,068,257,813	27,068,257,813			30,455,156,250	30,455,156,250
FIRST ORDER CONDITIONS UNDER LSET						
foc1l	-4.20297E-08	2.95426E-07			0.000280662	8.74635E-08
foc2l	-5.97954E-08	5.97537E-07			1.74628E-06	-8.9758E-07
foc3l	0.000338415	-2.89769E-06			-8.41788E-07	4.45934E-06
foc4l	-6.85118E-08	-2.13531E-07			0.000168296	1.2049E-08
foc5l	-4.21838E-08	2.95462E-07			0.000280437	9.0022E-08
foc6l	-5.97747E-08	5.9751E-07			1.74611E-06	-9.02727E-07
foc7l	0.000340755	-2.89748E-06			-7.19506E-07	4.48801E-06
foc8l	-6.80745E-08	-2.11441E-07			0.00016834	1.11831E-08
foc9l	-4.21064E-08	2.95495E-07			0.000278737	8.45276E-08
foc10l	-5.98019E-08	5.97483E-07			1.7466E-06	-8.93008E-07
foc11l	0.00034214	-2.89731E-06			-8.92941E-07	4.42947E-06
foc12l	-6.84182E-08	-2.12322E-07			0.000167024	1.29985E-08
foc13l	-4.2382E-08	2.95452E-07			0.000274115	7.20186E-08
foc14l	-5.97796E-08	5.97546E-07			1.74495E-06	-8.71552E-07
foc15l	0.000346696	-2.89765E-06			-1.01735E-06	4.30043E-06
foc16l	-6.81158E-08	-2.04124E-07			0.000164062	1.74623E-08
foc17l	1.45366E-06	-1.47151E-06			9.11714E-07	3.90441E-06
foc18l	1.86387E-06	-1.48056E-06			9.74193E-07	3.91141E-06
foc19l	2.10142E-06	-1.48008E-06			1.03836E-06	3.90427E-06
foc20l	2.89457E-06	-1.50903E-06			1.00081E-06	3.88599E-06

QUARTER	1	1	2	2	3	3
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET						
p1a1l	12428.59547	12421.89534			12102.19594	12134.7704
p1c1l	12428.59547	12421.89534			12102.19594	12134.7704
p1f1l	12428.59547	12421.89534			12102.19594	12134.7704
p1g1l	12428.59547	12421.89534			12102.19594	12134.7704
p2a2l	16240.39729	16230.40765			16581.23578	16628.27777
p2c2l	16240.39729	16230.40765			16581.23578	16628.27777
p2f2l	16240.39729	16230.40765			16581.23578	16628.27777
p2g2l	16240.39729	16230.40765			16581.23578	16628.27777
p3a3l	20051.05605	20043.40433			18792.11491	18843.90282
p3c3l	20051.05605	20043.40433			18792.11491	18843.90282
p3f3l	20051.05605	20043.40433			18792.11491	18843.90282
p3g3l	20051.05605	20043.40433			18792.11491	18843.90282
p4a4l	15702.06731	15692.4428			15221.63887	15273.82808
p4c4l	15702.06731	15692.4428			15221.63887	15273.82808
p4f4l	15702.06731	15692.4428			15221.63887	15273.82808
p4g4l	15702.06731	15692.4428			15221.63887	15273.82808
p5a5l	33195.55852	26973.31666			26761.32288	22203.01013
p5c5l	33195.55852	26973.31666			26761.32288	22203.01013
p5f5l	33195.55852	26973.31666			26761.32288	22203.01013
p5g5l	33195.55852	26973.31666			26761.32288	22203.01013
lemp_a1	2.27	2.30			2.32	2.20
lemp_c1	2.27	2.30			2.32	2.20
lemp_f1	2.27	2.30			2.32	2.20
lemp_g1	2.27	2.30			2.32	2.20
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET						
lemp_a2	3.21	3.25			3.28	3.11
lemp_c2	3.21	3.25			3.28	3.11
lemp_f2	3.21	3.25			3.28	3.11
lemp_g2	3.21	3.25			3.28	3.11
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-						
lemp_a3	3.68	3.72			3.76	3.56
lemp_c3	3.68	3.72			3.76	3.56
lemp_f3	3.68	3.72			3.76	3.56
lemp_g3	3.68	3.72			3.76	3.56
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET						
lemp_a4	3.68	3.72			3.76	3.56
lemp_c4	3.68	3.72			3.76	3.56
lemp_f4	3.68	3.72			3.76	3.56
lemp_g4	3.68	3.72			3.76	3.56
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET						
lemp_a5	3.68	3.72			3.76	3.56
lemp_c5	3.676396154	3.715210187			3.758648019	3.560183489
lemp_f5	3.676396154	3.715210187			3.758648019	3.560183489
lemp_g5	3.676396154	3.715210187			3.758648019	3.560183489

QUARTER	1	1	2	2	3	3
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM						
Asub1nl	245519.0908	324146.8125			327320.9492	232599.244
Csub1nl	3324.706387	80830.28863			138057.7425	0
Fsub1nl	108480.6219	187103.7395			155798.6442	86525.06391
Gsub1nl	53610.70958	130138.5971			74519.90902	63853.78665
Asub2nl	239836.8043	221117.7084			285867.8481	142917.1032
Csub2nl	244328.3028	225760.8444			237581.958	17791.99116
Fsub2nl	365162.2914	347137.2488			302129.9726	204514.0478
Gsub2nl	643189.2218	626246.6549			540588.0764	546424.9849
Asub3nl	26757.78878	36176.93872			27557.04051	50354.63462
Csub3nl	47301.79374	56559.14162			54789.90592	76606.5544
Fsub3nl	34281.30556	43529.83321			30329.72911	53649.35664
Gsub3nl	71951.44303	80845.92213			82158.96968	106289.5923
asub4nl	148069.4819	109303.4671			155280.0671	401104.6186
Csub4nl	88251.75411	50481.26671			0	323247.1344
fsub4nl	229827.1953	191367.4833			274366.6808	474308.3914
gsub4nl	243895.6596	207367.4873			417074.3794	508739.8485
asub5nl	131234.1718	80598.54872			141389.3774	95376.21437
Csub5nl	50577.18806	0			47165.47561	0
fsub5nl	125285.2233	74650.57563			121621.5969	76215.53043
gsub5nl	149476.1019	98986.40522			152909.0745	108180.2909
TOTAL SALES FOR EACH SEGMENT AFTER LSET						
tseg1nl	410,935	722,219			695,697	382,978
tseg2nl	1,492,517	1,420,262			1,366,168	911,648
tseg3nl	180,292	217,112			194,836	286,900
tseg4nl	710,044	558,520			846,721	1,707,400
tseg5nl	456,573	254,236			463,086	279,772
tsumnl	3,250,361	3,172,349			3,566,507	3,568,698
SALES LOST 'AS RESULT OF LSET-						
lostsales1l	376,763	65,479			183,930	496,649
lostsales2l	90,185	162,440			419,031	873,551
lostsales3l	41,401	4,581			69,619	(22,445)
lostsales4l	(109,038)	42,486			(182,548)	(1,043,227)
lostsales5l	(184,935)	17,402			(158,280)	25,034
lostsuml	214,376	292,388			331,753	329,562
-CONSUMER SURPLUS UNDER LSET-						
CSlsetseg1	2,278,402,293	2,741,386,193			2,912,634,603	1,795,829,465
CSlsetseg2	11,592,334,621	5,363,433,775			5,191,840,535	7,209,279,441
CSlsetseg3	2,463,734,207	2,175,786,352			1,182,990,315	2,370,839,924
CSlsetseg4	5,466,065,518	3,567,991,946			5,638,599,380	11,479,321,773
CSlsetseg5	9,200,935,100	5,155,438,511			5,339,881,716	4,944,845,567
Cslsetsum	31,001,471,738	19,004,036,777			20,265,946,550	27,800,116,169
-PRODUCER SURPLUS UNDER LSET						
PSlsetseg1	1,430,999,612	1,609,593,525			1,613,752,286	1,149,714,953
PSlsetseg2	6,899,792,482	3,235,347,462			3,003,406,335	4,954,696,988
PSlsetseg3	1,362,767,469	1,156,330,061			668,536,256	1,299,283,695
PSlsetseg4	3,026,013,821	2,158,275,632			3,531,850,383	6,071,422,943
PSlsetseg5	8,720,243,073	3,188,416,748			5,096,610,304	2,655,391,927
Pslsetsum	21,439,816,457	11,347,963,428			13,914,155,565	16,130,510,505

QUARTER	1	1	2	2	3	3
-TOTAL SURPLUS UNDER LSET-						
TSlsetseg1	3,709,401,90€	4,350,979,718			4,526,386,889	2,945,544,417
TSlsetseg2	18,492,127,103	8,598,781,237			8,195,246,870	12,163,976,429
TSlsetseg3	3,826,501,675	3,332,116,413			1,851,526,571	3,670,123,618
TSlsetseg4	8,492,079,339	5,726,267,578			9,170,449,763	17,550,744,716
TSlsetseg5	17,921,178,173	8,343,855,259			10,436,492,020	7,600,237,494
Tslsetsum	52,441,288,19€	30,352,000,204			34,180,102,114	43,930,626,674
dwllset	(1,786,553,907)	4,468,138,924			843,799,733	6,374,480,043
surpluslset	323,123,866,321	301,034,578,329			338,731,664,614	348,482,189,174
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-						
LSET	162.77	159.39			155.73	173.57
ABATEMENTCONSTANT FROM ABATEMENT EQUATION						
Abate1	840	840			840	840
Abate2	1680	1680			1680	1680
Abate3	2200	2200			2200	2200
Abate4	2200	2200			2200	2200
Abate5	1680	1680			1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-						
max emis1	7.5	7.5			7.5	7.5
max emis2	7.5	7.5			7.5	7.5
max emis3	7.5	7.5			7.5	7.5
max emis4	7.5	7.5			7.5	7.5
max emis5	7.5	7.5			7.5	7.5
cur_emis1	4.2	4.2			4.2	4.2
cur_emis2	4.2	4.2			4.2	4.2
cur_emis3	5.5	5.5			5.5	5.5
cur_emis4	5.5	5.5			5.5	5.5
cur_emis5	4.2	4.2			4.2	4.2
TOTAL TAX REVENUE UNDER LSET-						
taxrevlsetseg1	151,950,435	264,263,247			251,616,785	146,235,406
taxrevlsetseg2	780,481,933	734,938,840			698,776,653	492,289,807
taxrevlsetseg3	107,889,115	128,565,011			114,040,585	177,288,700
taxrevlsetseg4	424,898,987	330,733,199			495,600,139	1,055,080,446
taxrevlsetseg5	273,218,62€	150,548,189			271,051,758	172,883,920
taxrevlsetsum	1,738,439,09€	1,609,048,48€			1,831,085,920	2,043,778,280
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS						
taxa1	369.77	365.90			361.68	381.84
taxc1	369.77	365.90			361.68	381.84
taxf1	369.77	365.90			361.68	381.84
taxg1	369.77	365.90			361.68	381.84
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-						
taxa2	522.93	517.47			511.49	540.00
taxc2	522.93	517.47			511.49	540.00
taxf2	522.93	517.47			511.49	540.00

QUARTER	1	1	2	2	3	3
taxg2	522.93	517.47			511.49	540.00
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS						
taxa3	598.41	592.16			585.32	617.95
taxc3	598.41	592.16			585.32	617.95
taxf3	598.41	592.16			585.32	617.95
taxg3	598.41	592.16			585.32	617.95
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-						
taxa4	598.41	592.16			585.32	617.95
taxc4	598.41	592.16			585.32	617.95
taxf4	598.41	592.16			585.32	617.95
taxg4	598.41	592.16			585.32	617.95
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-						
taxa5	598.41	592.16			585.32	617.95
taxc5	598.4121155	592.1603057			585.3168451	617.9456781
taxf5	598.4121155	592.1603057			585.3168451	617.9456781
taxg5	598.4121155	592.1603057			585.3168451	617.9456781
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET						
pollution reduction 1	(5,410,925,598)	13,911,076,359			8,390,251,431	(10,475,310,306)
pollution reduction 2	14,112,004,312	9,816,599,711			(1,585,619,013)	(22,680,424,934)
pollution reduction 3	2,951,765,407	4,540,039,968			2,400,464,727	7,217,086,806
pollution reduction 4	18,154,983,798	10,942,412,251			22,074,429,211	64,781,960,208
pollution reduction 5	10,192,172,091	789,871,710			8,720,473,732	1,156,688,226
Total reduction	40.00000001	40			40.00000009	40
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM						
PMET	0.00724	0.00403			0.00955	0.00578
	86.85587463	48.40142412			114.5580004	69.34148051
FOC-PMET						
foc1p	-7.17421E-09	9.17826E-07			0.000618105	7.77574E-07
foc2p	-1.44193E-08	4.8941E-06			8.71402E-06	1.39424E-06
foc3p	0.000329285	-1.49084E-06			-3.07995E-06	1.52018E-05
foc4p	-1.74767E-07	1.45223E-06			0.000384366	2.07947E-06
foc5p	-7.16764E-09	9.17798E-07			0.000620346	8.19869E-07
foc6p	-1.44222E-08	4.89412E-06			8.714E-06	1.37799E-06
foc7p	0.000331655	-1.49047E-06			-2.81831E-06	1.5368E-05
foc8p	-1.74772E-07	1.26709E-06			0.000385971	2.06133E-06
foc9p	-7.1712E-09	9.17829E-07			0.000616182	7.74822E-07
foc10p	-1.44185E-08	4.89407E-06			8.71399E-06	1.39838E-06
foc11p	0.000333012	-1.49056E-06			-3.13156E-06	1.51729E-05
foc12p	-1.74765E-07	1.45349E-06			0.000383095	2.08042E-06
foc13p	-7.16E-09	9.1778E-07			0.000611559	7.62109E-07
foc14p	-1.44126E-08	4.89402E-06			8.71223E-06	1.42019E-06
foc15p	0.000337567	-1.49043E-06			-3.25558E-06	1.50427E-05
foc16p	-1.74757E-07	1.46162E-06			0.000380133	2.08476E-06
foc17p	5.79326E-05	-8.80338E-07			4.12123E-06	2.72693E-06
foc18p	5.83263E-05	9.72265E-07			2.03725E-06	2.19563E-06
foc19p	5.85801E-05	-8.88578E-07			4.24548E-06	2.72682E-06
foc20p	5.93744E-05	-9.17729E-07			4.2106E-06	2.70926E-06

QUARTER	1	1	2	2	3	3
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-						
p1a1	11,978.13	12,004.49			11,781.27	11,704.89
p1c1	11,978.13	12,004.49			11,781.27	11,704.89
p1f1	11,978.13	12,004.49			11,781.27	11,704.89
p1g1	11,978.13	12,004.49			11,781.27	11,704.89
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-						
p2a2	15,685.80	15,728.77			16,055.65	15,992.07
p2c2	15,685.80	15,728.77			16,055.65	15,992.07
p2f2	15,685.80	15,728.77			16,055.65	15,992.07
p2g2	15,685.80	15,728.77			16,055.65	15,992.07
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-						
p3a3	19,432.74	19,474.07			18,651.21	18,203.20
p3c3	19,432.74	19,474.07			18,651.21	18,203.20
p3f3	19,432.74	19,474.07			18,651.21	18,203.20
p3g3	19,432.74	19,474.07			18,651.21	18,203.20
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET						
p4a4	15,182.26	15,116.82			14,753.89	14,711.48
p4c4	15,182.26	15,116.82			14,753.89	14,711.48
p4f4	15,182.26	15,116.82			14,753.89	14,711.48
p4g4	15,182.26	15,116.82			14,753.89	14,711.48
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-						
p5a5	26,446.25	26,958.27			22,452.63	23,089.38
p5c5	26446.25054	26958.27354			22452.63295	23089.37514
p5f5	26446.25054	26958.27354			22452.63295	23089.37514
p5g5	26446.25054	26958.27354			22452.63295	23089.37514
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-						
dp/dgas1	9,104	23,152			23,014	18,761
dp/dgas2	18,179	43,649			14,847	14,847
dp/dgas3	20,064	44,758			83,718	26,464
dp/dgas4	33,413	43,280			29,062	39,721
dp/dgas5	132,821	5,258			133,326	3,983
sum of dpdgas	213,582	160,097	-	-	283,967	103,777
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET						
VMT1	11,762	11,889			11,828	11,852
VMT2	11,762	11,885			11,697	11,764
VMT3	11,740	11,870			11,854	11,798
VMT4	11,799	11,868			11,752	11,835
VMT5	11,799	11,868			11,752	11,835

QUARTER	1	1	2	2	3	3
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-						
tpma1	0.02584	0.01210			0.01867	0.01608
tpmc1	0.02584	0.01210			0.01867	0.01608
tpmf1	0.02584	0.01210			0.01867	0.01608
tpmg1	0.02584	0.01210			0.01867	0.01608
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2						
tpma2	0.02586	0.01246			0.03287	0.02557
tpmc2	0.02586	0.01246			0.03287	0.02557
tpmf2	0.02586	0.01246			0.03287	0.02557
tpmg2	0.02586	0.01246			0.03287	0.02557
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-						
tpma3	0.02817	0.01408			0.01584	0.02192
tpmc3	0.02817	0.01408			0.01584	0.02192
tpmf3	0.02817	0.01408			0.01584	0.02192
tpmg3	0.02817	0.01408			0.01584	0.02192
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4						
tpma4	0.02183	0.01432			0.02688	0.01789
tpmc4	0.02183	0.01432			0.02688	0.01789
tpmf4	0.02183	0.01432			0.02688	0.01789
tpmg4	0.02183	0.01432			0.02688	0.01789
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-						
tpma5	0.02183	0.01432			0.02688	0.01789
tpmc5	0.021830458	0.014318726			0.026882583	0.017889773
tpmf5	0.021830458	0.014318726			0.026882583	0.017889773
tpmg5	0.021830458	0.014318726			0.026882583	0.017889773
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-						
cstravelpmetseg1	5,889,094,975	6,049,358,044			6,767,943,020	6,808,642,640
cstravelpmetseg2	11,898,767,556	12,155,147,559			13,555,636,254	13,718,438,717
cstravelpmetseg3	1,659,355,543	1,695,612,924			2,026,637,164	1,993,451,071
cstravelpmetseg4	4,566,039,454	4,601,489,211			4,799,614,102	4,789,085,075
cstravelpmetseg5	2,057,779,833	2,075,220,482			2,299,644,158	2,301,964,198
cstravelpmetsum	26,071,037,361	26,576,828,221			29,449,474,697	29,611,581,700
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-						
epm_a1	3.57	3.00			1.96	2.78
epm_c1	3.57	3.00			1.96	2.78
epm_f1	3.57	3.00			1.96	2.78
epm_g1	3.57	3.00			1.96	2.78
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET						
epm_a2	3.57	3.09			3.44	4.43
epm_c2	3.57	3.09			3.44	4.43
epm_f2	3.57	3.09			3.44	4.43
epm_g2	3.57	3.09			3.44	4.43

QUARTER	1	1	2	2	3	3
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET						
epm_a3	3.89	3.49			1.66	3.79
epm_c3	3.89	3.49			1.66	3.79
epm_f3	3.89	3.49			1.66	3.79
epm_g3	3.89	3.49			1.66	3.79
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET						
epm_a4	3.02	3.55			2.82	3.10
epm_c4	3.02	3.55			2.82	3.10
epm_f4	3.02	3.55			2.82	3.10
epm_g4	3.02	3.55			2.82	3.10
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-						
epm_a5	3.02	3.55			2.82	3.10
epm_c5	3.016094206	3.549992966			2.81596214	3.095943086
epm_f5	3.016094206	3.549992966			2.81596214	3.095943086
epm_g5	3.016094206	3.549992966			2.81596214	3.095943086
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC						
Asub1n	359349.7855	324648.7058			252801.0402	215125.523
Csub1n	113355.9007	80550.79465			134197.9074	178.2701529
Fsub1n	222311.3166	187605.6329			81278.7352	69051.34291
Gsub1n	167441.4043	130640.4905			0	46380.06566
Asub2n	245952.0637	218416.8826			164474.0135	95575.4894
Csub2n	250318.0268	222952.1998			240252.4806	0
Fsub2n	371277.5508	344436.423			180736.138	157172.434
Gsub2n	649304.4812	623545.8291			419194.2417	499083.3711
Asub3n	36069.55441	35977.67777			30810.28322	48683.47758
Csub3n	56242.77233	56429.44037			58851.88064	73111.79985
Fsub3n	43593.07118	43330.57226			33582.97182	51978.1996
Gsub3n	81263.20865	80646.66118			85412.21239	104618.4352
asub4n	94596.88213	107068.6702			279411.6668	453779.929
Csub4n	36451.17294	47999.92029			67.01851616	332876.4303
fsub4n	176354.5955	189132.6864			398498.2805	526983.7018
gsub4n	190423.0599	205132.6904			541205.9791	561415.1589
asub5n	78529.50119	85548.50599			88001.17579	117854.1953
Csub5n	0	5677.032693			0	24894.1241
fsub5n	72580.55266	79600.53289			68233.39525	98693.51135
gsub5n	96771.4313	103936.3625			99520.87281	130658.2718
TOTAL SALES FOR EACH SEGMENT AFTER PMET-						
tseg1n	862,458	723,446			468,278	330,735
tseg2n	1,516,852	1,409,351			1,004,657	751,831
tseg3n	217,169	216,384			208,657	278,392
tseg4n	497,826	549,334			1,219,183	1,875,055
tseg5n	247,881	274,762			255,755	372,100
tsumn	3,342,186	3,173,278			3,156,530	3,608,114
-CONSUMER SURPLUS UNDER PMET						
CSPMETseg1	4,874,638,599	2,795,716,638			1,935,068,271	1,572,041,249
CSPMETseg2	11,845,383,615	5,292,480,408			3,836,883,983	6,041,896,700

QUARTER	1	1	2	2	3	3
CSPMETseg3	2,973,419,748	2,161,909,309			1,143,273,131	2,308,977,393
CSPMETseg4	3,780,189,407	3,497,199,316			7,927,834,244	12,467,517,529
CSPMETseg5	5,472,493,853	5,563,411,102			3,041,792,420	6,398,537,441
CsPMETsum	28,946,125,222	19,310,716,773			17,884,852,049	28,788,970,312
PRODUCER SURPLUS UNDER PMET-						
PSpmetseg1	2,735,854,258	1,637,588,303			1,046,398,740	1,016,641,731
PSpmetseg2	7,026,487,915	3,199,942,877			2,191,426,645	4,306,123,667
PSpmetseg3	1,617,955,362	1,149,346,745			648,212,048	1,269,772,591
PSpmetseg4	2,179,352,615	2,123,420,189			4,904,797,206	6,642,434,206
PSpmetseg5	3,541,970,288	3,529,339,988			2,028,994,630	3,821,097,170
Pspmetsum	17,101,620,438	11,639,638,102			10,819,829,269	17,056,069,364
-TOTAL SURPLUS UNDER PMET						
TSPMETseg1	7,610,492,857	4,433,304,942			2,981,467,011	2,588,682,980
TSPMETseg2	18,871,871,529	8,492,423,286			6,028,310,628	10,348,020,367
TSPMETseg3	4,591,375,110	3,311,256,054			1,791,485,179	3,578,749,984
TSPMETseg4	5,959,542,023	5,620,619,504			12,832,631,450	19,109,951,735
TSPMETseg5	9,014,464,141	9,092,751,090			5,070,787,050	10,219,634,610
TSPMETsum	46,047,745,660	30,950,354,875			28,704,681,319	45,845,039,677
dwlpmet	4,649,023,910	3,886,151,902			6,370,876,427	4,401,394,741
pmetsurplus	316,309,970,977	301,469,256,519			332,739,684,839	350,983,325,167
pmetsurplus10	81,670,634,731	62,277,802,535			67,694,412,565	84,479,089,864
TOTAL TAX REVENUE UNDER PMET-						
taxrevpmetseg1	262,141,681	104,044,724			103,391,028	63,049,001
taxrevpmetseg2	419,753,439	187,616,131			345,458,622	226,216,927
taxrevpmetseg3	71,826,829	36,165,957			39,176,315	71,987,375
taxrevpmetseg4	128,226,681	93,351,176			385,177,486	397,001,226
taxrevpmetseg5	73,236,541	53,883,956			80,822,204	143,992,319
taxrevpmetsum	955,185,171	475,061,944			954,025,655	902,246,849
pmetrev10	9,551,851,710	4,750,619,439			9,540,256,549	9,022,468,487
SALES LOST AS RESULT OF PMET-						
lostsales1	(74,760)	64,252			411,349	548,892
lostsales2	65,850	173,351			780,542	1,033,368
lostsales3	4,524	5,309			55,798	(13,937)
lostsales4	103,180	51,672			(555,010)	(1,210,882)
lostsales5	23,757	(3,124)			49,051	(67,294)
lostsum	122,551	291,459			741,730	290,146
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-						
taxa1p	235.2743929	280.0718762			429.5900146	301.7701734
taxc1p	235.2743929	280.0718762			429.5900146	301.7701734
taxf1p	235.2743929	280.0718762			429.5900146	301.7701734
taxg1p	235.2743929	280.0718762			429.5900146	301.7701734
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-						
taxa2p	470.1598134	543.8522427			487.9814637	379.6532903
taxc2p	470.1598134	543.8522427			487.9814637	379.6532903
taxf2p	470.1598134	543.8522427			487.9814637	379.6532903
taxg2p	470.1598134	543.8522427			487.9814637	379.6532903
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-						

QUARTER	1	1	2	2	3	3
taxa3p	565.2399816	630.2092719			1325.998251	580.020734
taxc3p	565.2399816	630.2092719			1325.998251	580.020734
taxf3p	565.2399816	630.2092719			1325.998251	580.020734
taxg3p	565.2399816	630.2092719			1325.998251	580.020734
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-						
taxa4p	729.4201871	619.7195378			781.2605037	710.6073785
taxc4p	729.4201871	619.7195378			781.2605037	710.6073785
taxf4p	729.4201871	619.7195378			781.2605037	710.6073785
taxg4p	729.4201871	619.7195378			781.2605037	710.6073785
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5						
taxa5p	729.4201871	619.7195378			781.2605037	710.6073785
taxc5p	729.4201871	619.7195378			781.2605037	710.6073785
taxf5p	729.4201871	619.7195378			781.2605037	710.6073785
taxg5p	729.4201871	619.7195378			781.2605037	710.6073785
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-						
pollution reduction 1p	10210944229	8121811686			-3518492518	-15978105985
pollution reduction 2p	10092440549	12423442674			-20732545811	-4216811290(
pollution reduction 3p	4300954282	5187457363			832850545(	6250462608
pollution reduction 4p	12664382924	11871674494			53438805071	8411114030(
pollution reduction 5p	2731278026	2395613520			2483729464	7784615589
Total reductionp	40.00000001	39.99999974			40.00000166	39.9999996
DIFFERENCE-						
Tsdiff	(6,814)	(435)			(5,992)	(2,501)

QUARTER	4	4	5	5	6
COEFFICIENTS OF DEMAND					
a P1/q1	-0.008662657	-0.007353258	-0.006313026	-0.006971579	-0.005174776
b p2/q1	-1E-08	-6.41093E-14	-0.002647762	-0.003520749	-0.001314375
c p3/q1	-0.001052959	3.00256E-14	-1E-08	1.15641E-16	-0.001219343
d p4/q1	-0.003333629	-0.007353258	-1.38758E-17	-6.93792E-18	-0.003550294
f P1/q2	-1E-08	-2.7093E-14	-0.002647762	-0.003520749	-0.001314375
g p2/q2	-0.013399219	-0.01445932	-0.011095585	-0.004544191	-0.002965066
h p3/q2	-0.002389671	3.1082E-13	-1E-08	-0.002033766	-8.18257E-17
i p4/q2	-1E-08	-5.06813E-14	-0.000911222	-0.004544191	-0.002965066
k P1/q3	-0.001052959	-4.2077E-15	-1E-08	3.85359E-18	-0.001219343
l p2/q3	-0.002389671	3.02548E-14	-1E-08	-0.002033766	2.59645E-17
m p3/q3	-0.066253282	-0.087741317	-0.108346012	-0.047641113	-0.061624302
n p4/q3	-0.000404111	6.88717E-14	-0.006891703	-1E-08	-1E-08
p P1/q4	-0.003333629	-0.007353258	8.7053E-18	-2.35531E-17	-0.003550294
q p2/q4	-1E-08	-3.92393E-17	-0.000911222	-0.004544191	-0.002965066
r p3/q4	-0.000404111	6.86038E-17	-0.006891703	-1E-08	-1E-08
s p4/q4	-0.024467927	-0.020238659	-0.019796191	-0.009614713	-0.009481975
u P1/q5	-0.000184873	-1.00001E-08	-0.005694251	-1E-08	-0.004995469
v p2/q5	-3.11864E-05	-0.000992145	-7.64161E-18	-0.00132991	-0.002965066
w p3/q5	-1E-08	-0.007444165	-1E-08	-1E-08	-0.001234971
x p4/q5	-1E-08	-0.00221862	-0.004961253	-1E-08	-0.007722194
y p5/q5	-0.053285299	-0.209425597	-0.151544711	-0.13772761	-0.007722194
e p5/q1	-0.000184873	-0.00000001	-0.005694251	-0.00000001	-0.004995469
j p5/q2	-3.11864E-05	-0.000992145	-0.00000001	-0.00132991	-0.002965066
o p5/q3	-0.00000001	-0.007444165	-0.00000001	-0.00000001	-0.001234971
t p5/q4	-0.00000001	-0.00221862	-0.004961253	-0.00000001	-0.007722194
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.008662657	-0.007353258	-0.006313026	-0.006971579	-0.005174776
bb	-1E-08	-6.41093E-14	-0.002647762	-0.003520749	-0.001314375
cc	-0.001052959	-0.00000001	-1E-08	-0.00000001	-0.001219343
dd	-0.003333629	-0.007353258	-1.38758E-17	-6.93792E-18	-0.003550294
ee	-0.000184873	-0.00000001	-0.005694251	-0.00000001	-0.004995469
ff	-1E-08	-2.7093E-14	-0.002647762	-0.003520749	-0.001314375
gg	-0.013399219	-0.01445932	-0.011095585	-0.004544191	-0.002965066
hh	-0.002389671	-0.00000001	-1E-08	-0.002033766	-8.18257E-17
ii	-1E-08	-5.06813E-14	-0.000911222	-0.004544191	-0.002965066
jj	-3.11864E-05	-0.000992145	-0.00000001	-0.00132991	-0.002965066
kk	-0.001052959	-4.2077E-15	-1E-08	-0.00000001	-0.001219343
ll	-0.002389671	-0.00000001	-1E-08	-0.002033766	-0.00000001
mm	-0.066253282	-0.087741317	-0.108346012	-0.047641113	-0.061624302
nn	-0.000404111	-0.00000001	-0.006891703	-1E-08	-1E-08
oo	-0.00000001	-0.007444165	-0.00000001	-0.00000001	-0.001234971
pp	-0.003333629	-0.007353258	-0.00000001	-2.35531E-17	-0.003550294
qq	-1E-08	-3.92393E-17	-0.000911222	-0.004544191	-0.002965066
rr	-0.000404111	-0.00000001	-0.006891703	-1E-08	-1E-08
ss	-0.024467927	-0.020238659	-0.019796191	-0.009614713	-0.009481975
tt	-0.00000001	-0.00221862	-0.004961253	-0.00000001	-0.007722194
uu	-0.000184873	-1.00001E-08	-0.005694251	-1E-08	-0.004995469
vv	-3.11864E-05	-0.000992145	-7.64161E-18	-0.00132991	-0.002965066
ww	-1E-08	-0.007444165	-1E-08	-1E-08	-0.001234971
xx	-1E-08	-0.00221862	-0.004961253	-1E-08	-0.007722194
yy	-0.053285299	-0.209425597	-0.151544711	-0.13772761	-0.007722194
KNOWN PRICE BEFORE TAXES					
P1	11,163	11,163	11,487	11,487	12,131
P2	16,243	16,243	15,746	15,746	16,123
P3	16,850	16,850	17,927	17,927	18,404
P4	14,174	14,174	14,044	14,044	14,603
P5	30,185	30,185	28,041	28,041	27,445

QUARTER	4	4	5	5	6
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	315377	315377	336769	336769	376397
Csub1	85255	85255	85031	85031	82658
Fsub1	153583	153583	169238	169238	170484
Gsub1	148809	148809	180062	180062	195366
Asub2	305455	305455	323708	323708	364097
Csub2	231420	231420	245399	245399	254159
Fsub2	306549	306549	355644	355644	388505
Gsub2	512975	512975	636437	636437	745505
Asub3	47875	47875	48106	48106	43228
Csub3	54576	54576	51453	51453	51088
Fsub3	42193	42193	39112	39112	59782
Gsub3	83997	83997	77682	77682	87547
asub4	111484	111484	108388	108388	133626
Csub4	57752	57752	55791	55791	51941
fsub4	182598	182598	210264	210264	214292
gsub4	182337	182337	219400	219400	230441
asub5	92695	92695	88574	88574	108382
Csub5	14082	14082	14366	14366	12376
fsub5	77381	77381	91591	91591	94954
gsub5	93193	93193	118393	118393	115452
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	703,024	703,024	771,100	771,100	824,905
tseg2	1,356,399	1,356,399	1,561,188	1,561,188	1,752,266
tseg3	228,641	228,641	216,353	216,353	241,645
tseg4	534,171	534,171	593,843	593,843	630,300
tseg5	277,351	277,351	312,924	312,924	331,164
tsum	3,099,586	3,099,586	3,455,408	3,455,408	3,780,280
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	1.83	2.16	2.36	2.14	2.84
Elasiticity21	0.00	0.00	0.77	2.27	1.67
Elasiticity31	0.04	0.00	0.00	0.00	0.09
Elasiticity41	0.32	1.00	0.00	0.00	1.28
Elasiticity51	0.02	0.00	0.22	0.00	4.16
Elasiticity12	0.00	0.00	0.28	0.82	0.59
Elasiticity22	0.89	0.83	0.91	2.22	3.10
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.00	0.04	0.94	0.88
Elasiticity52	0.00	0.01	0.00	0.04	2.03
Elasiticity13	0.09	0.00	0.00	0.00	0.19
Elasiticity23	0.19	0.00	0.00	0.68	0.00
Elasiticity33	1.11	0.84	0.76	1.74	1.24
Elasiticity43	0.02	0.00	0.21	0.00	0.00
Elasiticity53	0.00	0.05	0.00	0.00	0.29
Elasiticity14	0.33	1.03	0.00	0.00	1.39
Elasiticity24	0.00	0.00	0.11	2.76	2.70
Elasiticity34	0.01	0.00	0.10	0.00	0.00
Elasiticity44	1.08	1.31	1.19	2.46	2.44
Elasiticity54	0.00	0.03	0.08	0.00	4.59
Elasiticity15	0.02	0.00	0.22	0.00	4.58
Elasiticity25	0.00	0.02	0.00	0.11	6.30
Elasiticity35	0.00	0.02	0.00	0.00	0.14
Elasiticity45	0.00	0.03	0.07	0.00	4.65
Elasiticity55	2.04	0.52	0.59	0.65	10.73
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	4	4	5	5	6
MCasub1	8,000	8,032	8,000	8,000	8,631
MCcsub1	10,179	10,119	10,220	10,031	11,059
MCfsub1	9,174	8,700	8,964	9,064	9,425
MCgsub1	9,174	8,741	8,000	8,000	8,631
MCasub2	12,036	11,738	11,155	12,371	13,825
MCcsub2	13,013	12,884	12,740	13,946	15,069
MCfsub2	12,036	11,738	11,155	12,371	13,825
MCgsub2	9,174	8,741	8,000	10,899	12,623
MCasub3	12,542	11,932	11,968	14,974	15,143
MCcsub3	12,542	11,932	11,968	14,974	15,143
MCfsub3	13,056	12,543	12,241	15,338	14,389
MCgsub3	9,782	8,741	8,000	12,927	12,623
MCasub4	10,372	9,389	10,836	11,535	10,088
MCcsub4	12,450	12,342	12,291	12,393	12,973
MCfsub4	9,174	9,174	8,837	10,409	10,088
MCgsub4	9,174	9,174	8,000	9,044	8,631
MCasub5	25,185	9,894	12,168	15,415	22,551
MCcsub5	29,410	26,486	25,102	25,733	25,710
MCfsub5	26,028	12,983	12,168	14,966	22,977
MCgsub5	25,185	9,174	8,000	10,899	21,473
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.000184873	-0.00000001	-0.005694251	-0.00000001	-0.004995469
j	-3.11864E-05	-0.000992145	0	-0.00132991	-0.00296506
o	-0.00000001	-0.007444165	-0.00000001	-0.00000001	-0.001234971
t	-0.00000001	-0.00221862	-0.004961253	-0.00000001	-0.007722194
y	-0.05328529	-0.209425597	-0.151544711	-0.13772761	-0.007722194
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	3163.404492	3131.294052	3486.833922	3486.833922	3500
XMCcsub1	984.0947689	1044.817123	1267.270804	1455.716249	1072.652929
XMCfsub1	1989.130863	2463.472984	2522.583042	2422.932144	2706.561513
XMCgsub1	1989.130863	2421.965129	3486.833922	3486.833922	3500
XMCasub2	4206.577185	4505.061626	4590.90573	3374.66097	2298.69501
XMCcsub2	3230.09236	3358.647612	3005.835385	1799.750759	1054.688315
XMCfsub2	4206.577185	4505.061626	4590.90573	3374.66097	2298.69501
XMCgsub2	7068.608799	7501.443065	7745.687093	4846.698039	3500
XMCasub3	4307.911788	4918.078132	5958.666593	2953.426959	3260.690457
XMCcsub3	4307.911788	4918.078132	5958.666593	2953.426959	3260.690457
XMCfsub3	3794.041821	4307.274381	5685.8983	2589.437751	4014.82867
XMCgsub3	7068.608799	8108.706089	9927.102041	5000	5780.325604
XMCasub4	3802.722025	4785.493451	3207.392862	2509.101157	4514.513363
XMCcsub4	1724.143634	1831.814232	1753.020867	1650.961075	1629.960956
XMCfsub4	5000	5000	5206.977657	3634.475326	4514.513363
XMCgsub4	5000	5000	6043.643519	5000	5971.296746
XMCasub5	5000	20290.4769	15872.9413	12626.53702	4893.498798
XMCcsub5	774.6983691	3699.07252	2939.232697	2308.205294	1734.489772
XMCfsub5	4156.396797	17201.62153	15872.9413	13075.47854	4467.893164
XMCgsub5	5000	21010.51425	20041.23611	17142.24706	5971.296746
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	19,326	20,261	22,270	22,359	22,890
constant2	34,973	36,131	35,651	29,110	25,254
constant3	36,196	38,976	45,461	31,409	34,710
constant4	29,680	30,770	30,266	26,848	31,261
constant5	45,136	92,502	82,800	73,216	44,484

QUARTER	4	4	5	5	6
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	4,552,390,79€	5,013,222,851	6,494,355,664	6,527,767,21(	6,988,650,697
TSseg2	19,650,460,00€	20,870,309,098	24,323,920,05€	16,250,632,627	12,606,954,21⁴
TSseg3	3,406,782,307	3,896,150,823	4,565,271,434	2,242,205,931	3,023,735,29(
TSseg4	6,489,642,424	6,896,458,20€	7,682,908,14(	6,027,039,238	8,281,152,961
TSseg5	3,335,313,81€	13,863,912,305	13,842,421,64€	11,446,758,075	4,486,893,213
Tssum	37,434,589,353	50,540,053,28€	56,908,876,943	42,494,403,082	35,387,386,374
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	2,869,329,518	3,197,851,063	4,157,577,58€	4,191,830,14€	4,437,391,418
CSseg2	12,702,490,372	13,487,882,37€	15,537,808,213	10,431,774,952	7,999,625,724
CSseg3	2,211,608,49€	2,529,444,987	2,978,488,552	1,458,477,607	1,970,135,355
CSseg4	4,141,452,018	4,432,486,321	4,816,647,117	3,801,774,693	5,249,779,105
CSseg5	2,073,338,37€	8,641,884,681	8,567,706,097	7,068,097,297	2,821,417,501
Cssum	23,998,218,781	32,289,549,428	36,058,227,567	26,951,954,698	22,478,349,10⁴
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	1,683,061,278	1,815,371,788	2,336,778,07€	2,335,937,061	2,551,259,27€
PSseg2	6,947,969,63€	7,382,426,722	8,786,111,843	5,818,857,67€	4,607,328,49(
PSseg3	1,195,173,81(	1,366,705,83€	1,586,782,882	783,728,324	1,053,599,934
PSseg4	2,348,190,405	2,463,971,887	2,866,261,023	2,225,264,545	3,031,373,85€
PSseg5	1,261,975,443	5,222,027,625	5,274,715,552	4,378,660,778	1,665,475,712
Pssum	13,436,370,573	18,250,503,85€	20,850,649,37€	15,542,448,384	12,909,037,27(
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	5,492,375,00(	5,492,375,00(	6,024,218,75(	6,024,218,75(	6,444,570,313
CStravseg2	10,596,867,188	10,596,867,188	12,196,781,25(	12,196,781,25(	13,689,578,125
CStravseg3	1,786,257,813	1,786,257,813	1,690,257,813	1,690,257,813	1,887,851,563
CStravseg4	4,173,210,938	4,173,210,938	4,639,398,438	4,639,398,438	4,924,218,75(
CStravseg5	2,166,804,688	2,166,804,688	2,444,718,75(	2,444,718,75(	2,587,218,75(
Cstravsum	24,215,515,625	24,215,515,625	26,995,375,00(	26,995,375,00(	29,533,437,50(
FIRST ORDER CONDITIONS					
foc1l	-1.17833E-07	6.87107E-06	2.57821E-05	-1.74942E-1(	5.90799E-06
foc2l	-1.66571E-07	-0.000236881	4.1255E-06	9.60165E-09	1.79466E-06
foc3l	-1.90907E-07	6.21629E-06	1.04023E-06	-8.87076E-1(	-3.33519E-05
foc4l	-1.90751E-07	1.61048E-05	4.95592E-05	3.57747E-08	-1.61838E-07
foc5l	-1.17829E-07	6.87976E-06	2.5421E-05	-1.72577E-1(	7.05095E-06
foc6l	-1.66576E-07	-0.000237173	3.97213E-06	9.29731E-09	1.9981E-06
foc7l	-1.90912E-07	3.71291E-06	1.04025E-06	-9.13815E-1(	-4.28623E-05
foc8l	-1.90754E-07	1.6218E-05	4.95609E-05	3.57734E-08	2.97285E-07
foc9l	-1.17831E-07	6.85532E-06	2.26586E-05	-1.8179E-1(	1.22789E-05
foc10l	-1.66569E-07	-0.000237084	2.7996E-06	9.63324E-09	3.40614E-06
foc11l	-1.90908E-07	4.20666E-06	1.04015E-06	-9.50313E-1(	-8.40082E-05
foc12l	-1.90746E-07	1.58345E-05	4.95751E-05	3.58315E-08	1.27175E-06
foc13l	-1.1783E-07	6.9674E-06	2.27723E-05	-1.83515E-1(	9.60239E-06
foc14l	-1.66563E-07	-0.000237187	2.84812E-06	9.77573E-09	2.7937E-06
foc15l	-1.90906E-07	4.74223E-06	1.04066E-06	-8.86554E-1(	-6.23951E-05
foc16l	-1.90743E-07	1.6191E-05	4.95749E-05	3.58516E-08	5.15409E-07
foc17l	-1.90666E-07	2.85969E-05	7.91358E-06	-7.41564E-07	-3.28866E-06
foc18l	-1.90713E-07	2.82813E-05	7.62366E-06	-7.39527E-07	-4.17911E-06
foc19l	-1.90809E-07	2.87409E-05	5.40679E-06	-7.42672E-07	-7.13644E-06
foc20l	-1.90832E-07	2.82211E-05	5.49828E-06	-7.43563E-07	-5.36983E-06

QUARTER	4	4	5	5	6
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	11713.8553	11749.30435	12071.47442	12070.85045	12737.15938
p1c1l	11713.8553	11749.30435	12071.47442	12070.85045	12737.15938
p1f1l	11713.8553	11749.30435	12071.47442	12070.85045	12737.15938
p1g1l	11713.8553	11749.30435	12071.47442	12070.85045	12737.15938
p2a2l	17014.42924	17064.83817	16561.19839	16559.57253	16981.95323
p2c2l	17014.42924	17064.83817	16561.19839	16559.57253	16981.95323
p2f2l	17014.42924	17064.83817	16561.19839	16559.57253	16981.95323
p2g2l	17014.42924	17064.83817	16561.19839	16559.57253	16981.95323
p3a3l	17702.41314	17761.48018	18867.44108	18862.9823	19389.00769
p3c3l	17702.41314	17761.48018	18867.44108	18862.9823	19389.00769
p3f3l	17702.41314	17761.48018	18867.44108	18862.9823	19389.00769
p3g3l	17702.41314	17761.48018	18867.44108	18862.9823	19389.00769
p4a4l	15048.94399	15106.54396	14985.51313	14984.19137	15595.37262
p4c4l	15048.94399	15106.54396	14985.51313	14984.19137	15595.37262
p4f4l	15048.94399	15106.54396	14985.51313	14984.19137	15595.37262
p4g4l	15048.94399	15106.54396	14985.51313	14984.19137	15595.37262
p5a5l	33619.02757	30914.73017	38786.96343	27251.93142	28420.89442
p5c5l	33619.02757	30914.73017	38786.96343	27251.93142	28420.89442
p5f5l	33619.02757	30914.73017	38786.96343	27251.93142	28420.89442
p5g5l	33619.02757	30914.73017	38786.96343	27251.93142	28420.89442
lemp_a1	2.47	2.32	2.31	2.32	2.20
lemp_c1	2.47	2.32	2.31	2.32	2.20
lemp_f1	2.47	2.32	2.31	2.32	2.20
lemp_g1	2.47	2.32	2.31	2.32	2.20
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	3.50	3.28	3.27	3.28	3.12
lemp_c2	3.50	3.28	3.27	3.28	3.12
lemp_f2	3.50	3.28	3.27	3.28	3.12
lemp_g2	3.50	3.28	3.27	3.28	3.12
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	4.01	3.76	3.75	3.75	3.57
lemp_c3	4.01	3.76	3.75	3.75	3.57
lemp_f3	4.01	3.76	3.75	3.75	3.57
lemp_g3	4.01	3.76	3.75	3.75	3.57
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	4.01	3.76	3.75	3.75	3.57
lemp_c4	4.01	3.76	3.75	3.75	3.57
lemp_f4	4.01	3.76	3.75	3.75	3.57
lemp_g4	4.01	3.76	3.75	3.75	3.57
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	4.01	3.76	3.75	3.75	3.57
lemp_c5	4.005346552	3.758353852	3.745933688	3.75002311	3.565269216
lemp_f5	4.005346552	3.758353852	3.745933688	3.75002311	3.565269216
lemp_g5	4.005346552	3.758353852	3.745933688	3.75002311	3.565269216

QUARTER	4	4	5	5	6
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	301757.1017	302206.1458	251774.5137	305914.4325	313651.9499
Csub1nl	71720.97435	72235.64915	0	57355.93642	21257.06511
Fsub1nl	139859.5143	140276.0076	82933.95316	137144.6729	130764.2116
Gsub1nl	134389.4377	134115.2489	93635.30971	146465.8297	147942.768
Asub2nl	291472.5927	291438.391	328141.0022	344565.3266	277250.7608
Csub2nl	217593.4607	217542.0729	249672.1657	259847.0683	165627.9023
Fsub2nl	292516.6215	292488.6449	360061.7066	376572.7011	310677.4045
Gsub2nl	498572.3009	498638.88	641081.1086	660295.9601	665166.1537
Asub3nl	45359.16954	45402.60886	47779.3375	42299.94462	38536.9415
Csub3nl	52007.51687	52066.15139	51114.24987	45916.52362	46318.85193
Fsub3nl	39704.82484	39739.80412	38778.90108	33293.3208	55514.17198
Gsub3nl	81784.26573	81732.15971	77339.47777	71779.76157	83100.66812
asub4nl	104405.2544	104931.0834	79471.00909	73902.46241	78700.07898
Csub4nl	50685.60423	51153.04059	27042.68614	24690.03253	0
fsub4nl	175488.9031	176041.4871	181389.8636	175821.9434	182273.7379
gsub4nl	175539.1007	176557.3991	190577.1195	183750.5485	189248.5087
asub5nl	136450.9792	90675.42484	155835.9759	74100.32855	206079.1354
Csub5nl	57996.4977	12134.98887	81666.90055	0	106461.8467
fsub5nl	121180.2355	75369.23525	158843.507	77050.90139	150150.7509
gsub5nl	136910.4289	91081.82864	185646.0122	103838.8604	186225.8874
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	647,727	648,833	428,344	646,881	613,616
tseg2nl	1,300,155	1,300,108	1,578,956	1,641,281	1,418,722
tseg3nl	218,856	218,941	215,012	193,290	223,471
tseg4nl	506,119	508,683	478,481	458,165	450,222
tseg5nl	452,538	269,261	581,992	254,990	648,918
tsumnl	3,125,395	2,945,826	3,282,785	3,194,607	3,354,949
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	55,297	54,191	342,756	124,219	211,289
lostsales2l	56,244	56,291	(17,768)	(80,093)	333,544
lostsales3l	9,785	9,700	1,341	23,063	18,174
lostsales4l	28,052	25,488	115,362	135,678	180,078
lostsales5l	(175,187)	8,090	(269,068)	57,934	(317,754)
lostsuml	(25,809)	153,760	172,623	260,801	425,331
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	2,465,368,947	2,761,276,654	2,184,308,533	3,327,659,375	3,114,903,612
CSlsetseg2	11,674,207,596	12,393,815,147	15,070,816,808	10,299,045,105	5,867,929,951
CSlsetseg3	2,023,695,717	2,322,367,133	2,858,934,734	1,212,554,476	1,711,877,644
CSlsetseg4	3,702,618,938	3,983,875,027	3,655,612,735	2,717,702,878	3,526,407,015
CSlsetseg5	2,605,888,242	8,291,553,358	12,807,701,400	5,860,161,167	5,211,831,067
Cslsetsum	22,471,779,440	29,752,887,320	36,577,374,211	23,417,123,001	19,432,949,289
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	1,487,542,781	1,602,938,124	1,353,126,867	1,901,951,790	1,896,181,562
PSlsetseg2	6,438,681,012	6,840,336,912	8,542,505,046	5,754,477,816	3,542,135,644
PSlsetseg3	1,094,293,550	1,256,480,115	1,527,153,272	659,754,885	924,289,480
PSlsetseg4	2,126,253,014	2,237,546,310	2,287,213,927	1,677,313,450	2,199,600,963
PSlsetseg5	2,972,406,948	4,976,199,045	14,525,821,778	3,222,687,944	2,808,627,951
Pslsetsum	14,119,177,305	16,913,500,505	28,235,820,891	13,216,185,885	11,370,835,600

QUARTER	4	4	5	5	6
-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	3,952,911,728	4,364,214,778	3,537,435,400	5,229,611,165	5,011,085,174
TSlsetseg2	18,112,888,608	19,234,152,059	23,613,321,855	16,053,522,921	9,410,065,595
TSlsetseg3	3,117,989,266	3,578,847,248	4,386,088,007	1,872,309,361	2,636,167,124
TSlsetseg4	5,828,871,953	6,221,421,337	5,942,826,662	4,395,016,328	5,726,007,978
TSlsetseg5	5,578,295,190	13,267,752,402	27,333,523,178	9,082,849,111	8,020,459,019
Tslsetsum	36,590,956,745	46,666,387,826	64,813,195,103	36,633,308,887	30,803,784,889
dwllset	843,632,608	3,873,665,461	(7,904,318,159)	5,861,094,195	4,583,601,485
surpluslset	278,746,112,995	288,821,544,076	334,766,945,103	306,587,058,887	326,138,159,889
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	137.13	155.75	156.78	156.44	173.08
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	219,838,071	234,685,513	155,447,363	234,499,191	233,967,387
taxrevlsetseg2	624,052,325	665,039,960	810,356,126	841,424,191	765,016,889
taxrevlsetseg3	120,210,000	128,159,724	126,277,282	113,395,838	137,895,728
taxrevlsetseg4	277,993,797	297,764,039	281,013,381	268,788,469	277,816,080
taxrevlsetseg5	248,563,738	157,615,614	341,806,176	149,593,264	400,423,833
taxrevlsetsum	1,490,657,931	1,483,264,850	1,714,900,329	1,607,700,953	1,815,119,917
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	339.40	361.70	362.90	362.51	381.29
taxc1	339.40	361.70	362.90	362.51	381.29
taxf1	339.40	361.70	362.90	362.51	381.29
taxg1	339.40	361.70	362.90	362.51	381.29
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	479.98	511.53	513.22	512.66	539.23
taxc2	479.98	511.53	513.22	512.66	539.23
taxf2	479.98	511.53	513.22	512.66	539.23

QUARTER	4	4	5	5	6
taxg2	479.98	511.53	513.22	512.66	539.23
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	549.27	585.36	587.30	586.66	617.06
taxc3	549.27	585.36	587.30	586.66	617.06
taxf3	549.27	585.36	587.30	586.66	617.06
taxg3	549.27	585.36	587.30	586.66	617.06
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	549.27	585.36	587.30	586.66	617.06
taxc4	549.27	585.36	587.30	586.66	617.06
taxf4	549.27	585.36	587.30	586.66	617.06
taxg4	549.27	585.36	587.30	586.66	617.06
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	549.27	585.36	587.30	586.66	617.06
taxc5	549.2658304	585.3626579	587.3035091	586.6630512	617.0642009
taxf5	549.2658304	585.3626579	587.3035091	586.6630512	617.0642009
taxg5	549.2658304	585.3626579	587.3035091	586.6630512	617.0642009
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	11,218,490,715	12,473,485,898	(3,882,294,934)	9,696,342,898	6,337,419,934
pollution reduction 2	8,692,107,816	12,057,201,210	18,259,724,339	21,350,394,626	5,253,955,667
pollution reduction 3	3,690,517,148	4,343,000,604	4,493,558,148	3,505,504,175	4,752,081,372
pollution reduction 4	8,404,416,334	10,019,637,909	7,302,746,345	6,365,065,351	6,130,843,726
pollution reduction 5	7,994,468,111	1,106,674,447	13,826,266,154	(917,307,050)	17,525,699,245
Total reduction	40.00000012	40.00000007	40.00000005	40	39.99999994
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.00686	0.00433	0.01239	0.01247	0.01173
	82.32976973	51.98076027	148.7324093	149.587369	140.7353515
FOC-PMET					
foc1p	-2.4497E-05	-0.000165217	-0.000324057	0.00014089	5.66167E-06
foc2p	-0.000174612	-0.000696741	-0.000144665	-3.76022E-05	1.22088E-06
foc3p	-0.00010568	-0.000340413	-3.1129E-05	8.09903E-05	-3.94785E-05
foc4p	-7.46882E-05	-0.000792296	-2.24492E-05	3.99587E-05	3.97176E-07
foc5p	-2.4497E-05	-0.000164562	-0.00032492	0.00014089	6.81785E-06
foc6p	-0.000174612	-0.000597774	-0.000145018	-3.76827E-05	1.53163E-06
foc7p	-0.00010568	-0.000339825	-3.1129E-05	8.09904E-05	-4.78571E-05
foc8p	-7.46883E-05	-0.000792704	-2.25357E-05	3.99483E-05	6.4222E-07
foc9p	-2.4497E-05	-0.000165208	-0.000327181	0.00014089	1.20337E-05
foc10p	-0.000174612	-0.000696727	-0.000145991	-3.76021E-05	2.83213E-06
foc11p	-0.00010568	-0.00033992	-3.11291E-05	8.09902E-05	-9.01414E-05
foc12p	-7.46882E-05	-0.000792379	-2.24332E-05	3.99587E-05	1.83093E-06
foc13p	-2.44969E-05	-0.000165095	-0.000327067	0.00014089	9.35646E-06
foc14p	-0.000174612	-0.000696436	-0.000145942	-3.76022E-05	2.21996E-06
foc15p	-0.00010568	-0.000339175	-3.11286E-05	8.09902E-05	-6.85232E-05
foc16p	-7.46881E-05	-0.00079238	-2.24334E-05	3.99587E-05	1.07441E-06
foc17p	-0.000204056	0.000460639	-0.000256604	2.99819E-05	-4.01667E-06
foc18p	-0.000254017	0.000208631	-0.000257245	-8.18514E-06	-4.95201E-06
foc19p	-0.000204056	0.000460596	-0.000259111	2.99808E-05	-7.86522E-06
foc20p	-0.000204056	0.00046047	-0.00025902	2.99798E-05	-6.0984E-06

QUARTER	4	4	5	5	6
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	11,315.85	11,315.82	11,678.22	11,678.77	12,419.93
p1c1	11,315.85	11,315.82	11,678.22	11,678.77	12,419.93
p1f1	11,315.85	11,315.82	11,678.22	11,678.77	12,419.93
p1g1	11,315.85	11,315.82	11,678.22	11,678.77	12,419.93
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	16,564.57	16,591.27	16,046.00	16,178.81	16,435.08
p2c2	16,564.57	16,591.27	16,046.00	16,178.81	16,435.08
p2f2	16,564.57	16,591.27	16,046.00	16,178.81	16,435.08
p2g2	16,564.57	16,591.27	16,046.00	16,178.81	16,435.08
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	17,449.26	17,251.92	18,813.59	18,466.68	19,317.36
p3c3	17,449.26	17,251.92	18,813.59	18,466.68	19,317.36
p3f3	17,449.26	17,251.92	18,813.59	18,466.68	19,317.36
p3g3	17,449.26	17,251.92	18,813.59	18,466.68	19,317.36
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	14,567.37	14,513.60	14,311.71	14,312.17	14,926.19
p4c4	14,567.37	14,513.60	14,311.71	14,312.17	14,926.19
p4f4	14,567.37	14,513.60	14,311.71	14,312.17	14,926.19
p4g4	14,567.37	14,513.60	14,311.71	14,312.17	14,926.19
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	29,961.63	30,589.57	26,438.34	28,409.59	27,710.11
p5c5	29961.62911	30589.57306	26438.33761	28409.59027	27710.10821
p5f5	29961.62911	30589.57306	26438.33761	28409.59027	27710.10821
p5g5	29961.62911	30589.57306	26438.33761	28409.59027	27710.10821
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	10,138	16,103	9,369	9,369	24,181
dp/dgas2	24,388	45,399	12,488	25,621	14,068
dp/dgas3	72,042	53,151	79,938	29,794	90,264
dp/dgas4	29,042	34,420	7,202	7,202	10,895
dp/dgas5	160,201	23,118	160,669	3,987	15,658
sum of dpdgas	295,812	172,190	269,665	75,973	155,065
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,780	11,861	11,693	11,692	11,814
VMT2	11,800	11,883	11,624	11,737	11,655
VMT3	11,867	11,877	11,830	11,720	11,844
VMT4	11,790	11,847	11,433	11,431	11,552
VMT5	11,790	11,847	11,433	11,431	11,552

QUARTER	4	4	5	5	6
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.02384	0.01503	0.03334	0.03343	0.02018
tpmc1	0.02384	0.01503	0.03334	0.03343	0.02018
tpmf1	0.02384	0.01503	0.03334	0.03343	0.02018
tpmg1	0.02384	0.01503	0.03334	0.03343	0.02018
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.02174	0.01266	0.04083	0.02859	0.03742
tpmc2	0.02174	0.01266	0.04083	0.02859	0.03742
tpmf2	0.02174	0.01266	0.04083	0.02859	0.03742
tpmg2	0.02174	0.01266	0.04083	0.02859	0.03742
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.01447	0.01339	0.01847	0.03034	0.01691
tpmc3	0.01447	0.01339	0.01847	0.03034	0.01691
tpmf3	0.01447	0.01339	0.01847	0.03034	0.01691
tpmg3	0.01447	0.01339	0.01847	0.03034	0.01691
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.02280	0.01664	0.06153	0.06171	0.04866
tpmc4	0.02280	0.01664	0.06153	0.06171	0.04866
tpmf4	0.02280	0.01664	0.06153	0.06171	0.04866
tpmg4	0.02280	0.01664	0.06153	0.06171	0.04866
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.02280	0.01664	0.06153	0.06171	0.04866
tpmc5	0.022797304	0.016639441	0.061533376	0.061709979	0.048664283
tpmf5	0.022797304	0.016639441	0.061533376	0.061709979	0.048664283
tpmg5	0.022797304	0.016639441	0.061533376	0.061709979	0.048664283
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	5,300,557,915	5,368,791,974	5,719,985,392	5,552,469,060	6,309,680,113
cstravelpmetseg2	10,261,363,877	10,401,416,551	11,478,466,502	11,998,010,106	13,064,722,098
cstravelpmetseg3	1,750,560,886	1,751,701,401	1,647,283,087	1,608,328,251	1,847,370,214
cstravelpmetseg4	4,038,979,353	4,075,112,920	4,219,691,079	3,930,390,025	4,646,981,403
cstravelpmetseg5	2,109,010,791	2,112,295,569	2,258,228,601	2,214,899,318	2,213,309,854
cstravelpmetsum	23,460,472,822	23,709,318,414	25,323,654,660	25,304,096,760	28,082,063,682
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	3.48	3.47	2.69	2.68	1.72
epm_c1	3.48	3.47	2.69	2.68	1.72
epm_f1	3.48	3.47	2.69	2.68	1.72
epm_g1	3.48	3.47	2.69	2.68	1.72
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	3.17	2.92	3.29	2.29	3.19
epm_c2	3.17	2.92	3.29	2.29	3.19
epm_f2	3.17	2.92	3.29	2.29	3.19
epm_g2	3.17	2.92	3.29	2.29	3.19

QUARTER	4	4	5	5	6
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	2.11	3.09	1.49	2.43	1.44
epm_c3	2.11	3.09	1.49	2.43	1.44
epm_f3	2.11	3.09	1.49	2.43	1.44
epm_g3	2.11	3.09	1.49	2.43	1.44
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	3.32	3.84	4.96	4.95	4.15
epm_c4	3.32	3.84	4.96	4.95	4.15
epm_f4	3.32	3.84	4.96	4.95	4.15
epm_g4	3.32	3.84	4.96	4.95	4.15
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	3.32	3.84	4.96	4.95	4.15
epm_c5	3.322827733	3.841292234	4.964624128	4.950416258	4.149429312
epm_f5	3.322827733	3.841292234	4.964624128	4.950416258	4.149429312
epm_g5	3.322827733	3.841292234	4.964624128	4.950416258	4.149429312
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	308998.6624	312272.5035	337171.8038	442677.1022	303284.538
Csub1n	78906.65399	82300.3023	85865.57197	191410.5777	0
Fsub1n	147101.075	150342.3653	168331.2432	273907.3426	120396.7997
Gsub1n	141630.9984	144181.6066	179032.5998	283228.4994	137575.3561
Asub2n	290658.1568	289594.1208	305754.943	79355.97411	276599.154
Csub2n	216773.0749	215698.4751	227164.1542	0	160546.6714
Fsub2n	291702.1856	290644.3747	337675.6474	111363.3486	310025.7976
Gsub2n	497757.865	496794.6098	618695.0495	395086.6076	664514.5468
Asub3n	42310.87221	44710.09892	42850.28296	50957.67864	32926.25818
Csub3n	48960.27556	51374.48125	46177.291	54345.3471	40513.92607
Fsub3n	36656.52751	39047.29416	33849.84654	41951.05482	49903.48867
Gsub3n	78735.96841	81039.64974	72410.42323	80437.49559	77489.98481
asub4n	101624.6127	101372.895	105358.8621	205166.2982	89887.72947
Csub4n	47912.55757	47596.55668	53054.80501	153419.5004	0
fsub4n	172708.2614	172483.2987	207277.7166	307085.7792	193461.3883
gsub4n	172758.459	172999.2107	216464.9725	315014.3843	200436.1592
asub5n	75979.00639	92049.29203	75121.42334	90359.085	201858.4134
Csub5n	0	13498.95733	489.8860693	14115.18634	122685.6505
fsub5n	60708.26268	76743.10244	78128.95449	93309.65785	145930.0288
gsub5n	76438.45612	92455.69583	104931.4597	120097.6168	182005.1654
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	676,637	689,097	770,401	1,191,224	561,257
tseg2n	1,296,891	1,292,732	1,489,290	585,806	1,411,686
tseg3n	206,664	216,172	195,288	227,692	200,834
tseg4n	495,004	494,452	582,156	980,686	483,785
tseg5n	213,126	274,747	258,672	317,882	652,479
tsumn	2,888,322	2,967,199	3,295,807	3,303,289	3,310,041
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	2,628,282,532	2,998,584,531	3,959,781,681	6,174,818,960	2,801,167,035
CSPMETseg2	11,592,811,429	12,258,074,339	14,218,887,244	3,572,906,959	5,853,223,726

QUARTER	4	4	5	5	6
CSPMETseg3	1,829,365,666	2,271,145,219	2,457,769,070	1,370,575,977	1,392,419,490
CSPMETseg4	3,576,627,631	3,877,420,650	4,514,842,111	5,928,753,699	3,822,913,317
CSPMETseg5	1,227,818,374	8,452,299,765	6,010,938,081	7,082,426,063	5,223,733,825
CsPMETsum	20,854,905,631	29,857,524,505	31,162,218,187	24,129,481,658	19,093,457,394
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	1,569,058,084	1,721,594,025	2,240,196,529	3,328,936,725	1,756,977,931
PSpmetseg2	6,397,991,317	6,772,464,866	8,116,781,203	2,383,101,513	3,540,245,724
PSpmetseg3	997,127,909	1,230,868,542	1,326,577,737	738,861,945	764,719,380
PSpmetseg4	2,063,240,937	2,184,314,763	2,716,542,800	3,286,761,273	2,376,132,133
PSpmetseg5	825,746,361	5,134,164,497	4,007,679,221	4,428,138,710	2,766,664,208
Pspmetsum	11,853,164,609	17,043,406,692	18,407,777,490	14,165,800,166	11,204,739,376
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	4,197,340,616	4,720,178,556	6,199,978,210	9,503,755,685	4,558,144,967
TSPMETseg2	17,990,802,747	19,030,539,205	22,335,668,447	5,956,008,472	9,393,469,450
TSPMETseg3	2,826,493,575	3,502,013,761	3,784,346,807	2,109,437,922	2,157,138,871
TSPMETseg4	5,639,868,567	6,061,735,413	7,231,384,911	9,215,514,972	6,199,045,450
TSPMETseg5	2,053,564,735	13,586,464,261	10,018,617,302	11,510,564,773	7,990,398,033
TSPMETsum	32,708,070,240	46,900,931,197	49,569,995,677	38,295,281,824	30,298,196,770
dwlpmet	4,755,498,952	3,655,303,245	7,399,332,023	4,068,719,674	5,251,012,161
pmetsurplus	274,573,428,100	288,894,275,891	318,919,238,117	309,553,047,659	324,014,346,203
pmetsurplus10	63,429,172,703	75,510,410,167	91,006,346,175	81,816,176,821	71,275,773,065
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	190,044,703	122,865,537	300,288,449	465,614,858	133,836,521
taxrevpmetseg2	297,313,406	174,425,558	639,806,529	260,791,719	545,718,663
taxrevpmetseg3	35,497,406	34,377,810	42,667,764	80,963,816	40,216,815
taxrevpmetseg4	133,046,121	97,467,185	409,550,168	691,799,509	271,957,933
taxrevpmetseg5	70,161,329	60,879,966	218,956,674	322,509,922	297,821,329
taxrevpmetsum	726,062,964	490,016,056	1,611,269,584	1,821,679,824	1,289,551,261
pmetrev10	7,260,629,641	4,900,160,556	16,112,695,839	18,216,798,237	12,895,512,613
SALES LOST AS RESULT OF PMET-					
lostsales1	26,387	13,927	699	(420,124)	263,648
lostsales2	59,508	63,667	71,898	975,382	340,580
lostsales3	21,977	12,469	21,065	(11,339)	40,811
lostsales4	39,167	39,719	11,687	(386,843)	146,515
lostsales5	64,225	2,604	54,252	(4,958)	(321,315)
lostsum	211,264	132,387	159,601	152,119	470,239
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	241.7188136	242.0634403	312.3200396	313.2164092	488.0725372
taxc1p	241.7188136	242.0634403	312.3200396	313.2164092	488.0725372
taxf1p	241.7188136	242.0634403	312.3200396	313.2164092	488.0725372
taxg1p	241.7188136	242.0634403	312.3200396	313.2164092	488.0725372
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	530.1908433	574.7865339	509.935894	732.5045985	526.4829149
taxc2p	530.1908433	574.7865339	509.935894	732.5045985	526.4829149
taxf2p	530.1908433	574.7865339	509.935894	732.5045985	526.4829149
taxg2p	530.1908433	574.7865339	509.935894	732.5045985	526.4829149
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	4	4	5	5	6
taxa3p	1042.77879	711.6989331	1476.384015	903.9296242	1526.084766
taxc3p	1042.77879	711.6989331	1476.384015	903.9296242	1526.084766
taxf3p	1042.77879	711.6989331	1476.384015	903.9296242	1526.084766
taxg3p	1042.77879	711.6989331	1476.384015	903.9296242	1526.084766
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	662.0866855	572.723934	443.1352592	444.4070731	530.1933916
taxc4p	662.0866855	572.723934	443.1352592	444.4070731	530.1933916
taxf4p	662.0866855	572.723934	443.1352592	444.4070731	530.1933916
taxg4p	662.0866855	572.723934	443.1352592	444.4070731	530.1933916
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	662.0866855	572.723934	443.1352592	444.4070731	530.1933916
taxc5p	662.0866855	572.723934	443.1352592	444.4070731	530.1933916
taxf5p	662.0866855	572.723934	443.1352592	444.4070731	530.1933916
taxg5p	662.0866855	572.723934	443.1352592	444.4070731	530.1933916
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	5357592699	5814879649	14572734110	39322617884	6435103005
pollution reduction 2p	14517097253	17732192981	15181318833	-24869064970	5159607326
pollution reduction 3p	7938409050	6031776051	8940921495	8804797744	8846405259
pollution reduction 4p	12338069347	9179819968	5098591171	18512879737	5224594822
pollution reduction 5p	-151156578.4	1241372408	-379356635(	-177124031(	14334289454
Total reductionp	40.00001177	40.00004106	39.99999926	39.99999008	39.99999987
DIFFERENCE-					
Tsdiff	(4,173)	(73)	(15,848)	(2,966)	(2,124)

QUARTER	6	7	7	8	8
COEFFICIENTS OF DEMAND					
a P1/q1	-0.005120192	-0.003179364	-0.006600685	-0.003149692	-0.003147423
b p2/q1	-0.001314375	-0.001598593	-0.002148196	-0.001880631	-0.001597378
c p3/q1	-2.43916E-17	-1E-08	-1E-08	-0.000932055	-0.002008887
d p4/q1	-0.003997391	-1E-08	-0.003739084	-9.9956E-09	-0.000379411
f P1/q2	-0.001314375	-0.001598593	-0.002148196	-0.001880631	-0.001597378
g p2/q2	-0.002965066	-0.005885159	-0.003136807	-0.007717596	-0.007095684
h p3/q2	0	-1E-08	2.19627E-17	-0.007717596	-0.007095684
i p4/q2	-0.002965066	-0.004825902	-0.003136807	-0.001218344	-0.005901235
k P1/q3	0	-1E-08	-1E-08	-0.000932055	-0.002008887
l p2/q3	1.07642E-17	-1E-08	4.853E-18	-0.007717596	-0.007095684
m p3/q3	-0.045736496	-0.077694573	-0.046923806	-0.007717596	-0.018580191
n p4/q3	-0.004304001	-0.004825902	-0.004549934	-0.004389915	-0.002298659
p P1/q4	-0.003997391	-1E-08	-0.003739084	-9.9956E-09	-0.000379411
q p2/q4	-0.002965066	-0.004825902	-0.003136807	-0.001218344	-0.005901235
r p3/q4	-0.004304001	-0.004825902	-0.004549934	-0.004389915	-0.002298659
s p4/q4	-0.008453685	-0.004825902	-0.008215363	-0.018301948	-0.005901235
u P1/q5	-0.005120192	-0.003179364	-1E-08	-1E-08	-1E-08
v p2/q5	-0.002965066	-0.005885159	-0.003136807	-0.005751853	-0.001670229
w p3/q5	-1.1718E-16	-0.002461586	-1E-08	-0.002021204	-1E-08
x p4/q5	-2.63656E-17	-0.003111427	-1E-08	-0.005757617	-0.005901235
y p5/q5	-0.018107945	-0.087719961	-0.096082047	-0.007599999	-0.104363977
e p5/q1	-0.005120192	-0.003179364	-0.00000001	-1E-08	-0.00000001
j p5/q2	-0.002965066	-0.005885159	-0.003136807	-0.005751853	-0.001670229
o p5/q3	0	-0.002461586	-0.00000001	-0.002021204	-0.00000001
t p5/q4	0	-0.003111427	-0.00000001	-0.005757617	-0.005901235
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.005120192	-0.003179364	-0.006600685	-0.003149692	-0.003147423
bb	-0.001314375	-0.001598593	-0.002148196	-0.001880631	-0.001597378
cc	-2.43916E-17	-1E-08	-1E-08	-0.000932055	-0.002008887
dd	-0.003997391	-1E-08	-0.003739084	-9.9956E-09	-0.000379411
ee	-0.005120192	-0.003179364	-0.00000001	-1E-08	-0.00000001
ff	-0.001314375	-0.001598593	-0.002148196	-0.001880631	-0.001597378
gg	-0.002965066	-0.005885159	-0.003136807	-0.007717596	-0.007095684
hh	-0.00000001	-1E-08	-0.00000001	-0.007717596	-0.007095684
ii	-0.002965066	-0.004825902	-0.003136807	-0.001218344	-0.005901235
jj	-0.002965066	-0.005885159	-0.003136807	-0.005751853	-0.001670229
kk	-0.00000001	-1E-08	-1E-08	-0.000932055	-0.002008887
ll	-0.00000001	-1E-08	-0.00000001	-0.007717596	-0.007095684
mm	-0.045736496	-0.077694573	-0.046923806	-0.007717596	-0.018580191
nn	-0.004304001	-0.004825902	-0.004549934	-0.004389915	-0.002298659
oo	-0.00000001	-0.002461586	-0.00000001	-0.002021204	-0.00000001
pp	-0.003997391	-1E-08	-0.003739084	-9.9956E-09	-0.000379411
qq	-0.002965066	-0.004825902	-0.003136807	-0.001218344	-0.005901235
rr	-0.004304001	-0.004825902	-0.004549934	-0.004389915	-0.002298659
ss	-0.008453685	-0.004825902	-0.008215363	-0.018301948	-0.005901235
tt	-0.00000001	-0.003111427	-0.00000001	-0.005757617	-0.005901235
uu	-0.005120192	-0.003179364	-1E-08	-1E-08	-1E-08
vv	-0.002965066	-0.005885159	-0.003136807	-0.005751853	-0.001670229
ww	-1.1718E-16	-0.002461586	-1E-08	-0.002021204	-1E-08
xx	-2.63656E-17	-0.003111427	-1E-08	-0.005757617	-0.005901235
yy	-0.018107945	-0.087719961	-0.096082047	-0.007599999	-0.104363977
KNOWN PRICE BEFORE TAXES					
P1	12,131	11,747	11,747	11,655	11,655
P2	16,123	16,065	16,065	15,723	15,723
P3	18,404	18,128	18,128	19,151	19,151
P4	14,603	14,746	14,746	15,051	15,051
P5	27,445	25,316	25,316	23,923	23,923

QUARTER	6	7	7	8	8
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	376397	338148	338148	304592	304592
Csub1	82658	77491	77491	73562	73562
Fsub1	170484	178772	178772	151362	151362
Gsub1	195366	190532	190532	185158	185158
Asub2	364097	376375	376375	317133	317133
Csub2	254159	215406	215406	226938	226938
Fsub2	388505	344341	344341	293130	293130
Gsub2	745505	653796	653796	507707	507707
Asub3	43228	42358	42358	48100	48100
Csub3	51088	50377	50377	43229	43229
Fsub3	59782	67142	67142	67090	67090
Gsub3	87547	84772	84772	68000	68000
asub4	133626	123469	123469	102108	102108
Csub4	51941	41299	41299	37752	37752
fsub4	214292	194261	194261	157810	157810
gsub4	230441	224881	224881	187211	187211
asub5	108382	102833	102833	106831	106831
Csub5	12376	11642	11642	20969	20969
fsub5	94954	79332	79332	77027	77027
gsub5	115452	111395	111395	114206	114206
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	824,905	784,943	784,943	714,674	714,674
tseg2	1,752,266	1,589,918	1,589,918	1,344,908	1,344,908
tseg3	241,645	244,649	244,649	226,419	226,419
tseg4	630,300	583,910	583,910	484,881	484,881
tseg5	331,164	305,202	305,202	319,033	319,033
tsum	3,780,280	3,508,622	3,508,622	3,089,915	3,089,915
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	2.87	4.71	2.27	5.18	5.18
Elasiticity21	1.69	1.75	2.12	1.70	1.57
Elasiticity31	0.00	0.00	0.00	1.03	0.92
Elasiticity41	1.63	0.00	1.30	0.00	0.43
Elasiticity51	1.84	0.37	0.00	0.00	0.00
Elasiticity12	0.60	0.63	0.77	0.67	0.62
Elasiticity22	3.10	1.72	3.22	1.51	1.65
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.99	1.58	1.13	0.10	1.58
Elasiticity52	0.86	0.18	0.17	1.74	0.04
Elasiticity13	0.00	0.00	0.00	1.97	1.77
Elasiticity23	0.00	0.00	0.00	9.00	3.74
Elasiticity33	1.67	0.95	1.58	10.96	4.55
Elasiticity43	0.67	0.78	0.71	2.07	1.39
Elasiticity53	0.00	0.04	0.00	3.64	0.00
Elasiticity14	1.78	0.00	1.39	0.00	0.49
Elasiticity24	3.03	4.68	3.35	0.28	4.57
Elasiticity34	0.33	0.40	0.37	1.23	0.83
Elasiticity44	2.74	5.23	3.07	1.70	5.26
Elasiticity54	0.00	0.32	0.00	2.04	0.47
Elasiticity15	2.02	0.44	0.00	0.00	0.00
Elasiticity25	2.69	0.60	0.55	4.83	0.11
Elasiticity35	0.00	0.02	0.00	2.07	0.00
Elasiticity45	0.00	0.36	0.00	1.95	0.45
Elasiticity55	4.58	0.95	0.86	9.87	0.72
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	6	7	7	8	8
MCasub1	8,631	9,746	8,247	10,051	10,051
MCcsub1	11,101	11,122	10,621	10,955	10,958
MCfsub1	9,399	10,380	9,104	10,562	10,513
MCgsub1	8,631	9,746	8,247	10,051	10,051
MCasub2	13,825	12,116	13,457	11,596	11,867
MCcsub2	15,069	14,408	15,060	13,335	13,433
MCfsub2	13,825	12,354	13,750	12,025	11,867
MCgsub2	12,623	10,185	12,565	10,051	10,051
MCasub3	15,848	13,989	15,579	15,381	15,157
MCcsub3	15,848	13,989	15,579	16,787	16,501
MCfsub3	14,742	11,783	14,097	15,381	15,157
MCgsub3	13,404	10,185	13,128	13,479	13,479
MCasub4	10,708	11,809	11,094	11,973	11,724
MCcsub4	12,865	13,226	13,211	13,774	13,239
MCfsub4	10,708	11,574	11,094	11,068	11,724
MCgsub4	9,296	9,746	9,746	10,051	10,051
MCasub5	22,464	12,518	14,257	20,604	11,641
MCcsub5	26,035	22,531	23,525	22,154	21,132
MCfsub5	23,698	14,995	16,617	20,604	14,458
MCgsub5	22,138	10,185	12,565	18,923	10,051
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.005120192	-0.003179364	-0.00000001	-1E-08	-0.00000001
j	-0.0029650€	-0.005885159	-0.00313680	-0.005751853	-0.001670229
o	0	-0.00246158€	-0.00000001	-0.00202120	-0.00000001
t	0	-0.003111427	-0.00000001	-0.005757617	-0.00590123
y	-0.018107945	-0.087719961	-0.09608204	-0.00759999	-0.10436397
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	3500	2000.754909	3500	1603.48804€	1603.488046
XMCcsub1	1030.610251	624.5207278	1126.06704	700.1607992	696.5731238
XMCfsub1	2732.000727	1367.14028	2643.194359	1093.085914	1141.816217
XMCgsub1	3500	2000.754909	3500	1603.48804€	1603.488046
XMCasub2	2298.69501	3949.402511	2608.39358	4127.537692	3856.195203
XMCcsub2	1054.688315	1657.312672	1005.442211	2388.16777	2290.518766
XMCfsub2	2298.69501	3711.059554	2315.512309	3698.559768	3856.195203
XMCgsub2	3500	5880.455648	3500	5672.06467€	5672.064676
XMCasub3	2556.113252	4138.974694	2549.365099	3770.213724	3994.024097
XMCcsub3	2556.113252	4138.974694	2549.365099	2364.248817	2650.570216
XMCfsub3	3662.099053	6345.335516	4031.424167	3770.213724	3994.024097
XMCgsub3	5000	7943.231404	5000	5672.06467€	5672.064676
XMCasub4	3894.440254	2936.720815	3652.126937	3078.52665	3327.515815
XMCcsub4	1737.720247	1519.824428	1535.505741	1277.04027€	1811.972337
XMCfsub4	3894.440254	3172.436338	3652.126937	3983.825275	3327.515815
XMCgsub4	5306.864194	5000	5000	5000	5000
XMCasub5	4980.720404	12798.47959	11059.73332	3318.924309	12282.51502
XMCcsub5	1409.218836	2785.22981	1791.137183	1769.101575	2790.876136
XMCfsub5	3746.415506	10321.17844	8699.398817	3318.924309	9464.609634
XMCgsub5	5306.864194	15131.6135	12751.15785	5000	13871.6927
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	22,873	17,754	22,527	16,646	16,691
constant2	25,254	31,291	25,528	31,620	31,409
constant3	32,169	40,705	32,265	34,718	35,451
constant4	29,464	27,367	28,579	28,395	28,524
constant5	42,861	66,360	59,628	37,333	62,326

QUARTER	6	7	7	8	8
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	6,982,680,197	3,708,375,108	6,640,976,905	2,785,848,630	2,809,116,015
TSseg2	12,606,954,214	19,069,812,820	11,806,184,574	16,504,640,374	16,300,621,604
TSseg3	2,560,843,413	4,244,962,075	2,660,208,810	2,684,459,380	2,805,694,379
TSseg4	7,351,706,551	5,850,797,966	6,386,650,303	5,162,338,765	5,135,574,933
TSseg5	4,078,289,240	10,116,252,455	8,504,716,006	3,357,416,460	9,809,889,751
Tssum	33,580,473,614	42,990,200,424	35,998,736,598	30,494,703,609	36,860,896,683
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	4,430,559,103	2,357,814,865	4,230,807,702	1,783,583,461	1,799,738,846
CSseg2	7,999,625,724	12,103,873,018	7,522,260,331	10,689,790,180	10,547,775,663
CSseg3	1,663,098,430	2,761,732,127	1,729,255,556	1,762,263,951	1,845,340,846
CSseg4	4,683,582,667	3,684,751,100	4,038,440,160	3,235,043,274	3,266,233,098
CSseg5	2,552,603,086	6,263,334,944	5,236,002,094	2,139,079,383	6,125,953,485
Cssum	21,329,469,010	27,171,506,053	22,756,765,843	19,609,760,250	23,585,041,938
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	2,552,121,094	1,350,560,243	2,410,169,203	1,002,265,170	1,009,377,169
PSseg2	4,607,328,490	6,965,939,803	4,283,924,242	5,814,850,193	5,752,845,941
PSseg3	897,744,983	1,483,229,948	930,953,254	922,195,429	960,353,534
PSseg4	2,668,123,883	2,166,046,867	2,348,210,143	1,927,295,490	1,869,341,835
PSseg5	1,525,686,154	3,852,917,511	3,268,713,912	1,218,337,076	3,683,936,267
Pssum	12,251,004,604	15,818,694,372	13,241,970,754	10,884,943,359	13,275,854,746
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	6,444,570,313	6,132,367,188	6,132,367,188	5,583,390,625	5,583,390,625
CStravseg2	13,689,578,125	12,421,234,375	12,421,234,375	10,507,093,750	10,507,093,750
CStravseg3	1,887,851,563	1,911,320,313	1,911,320,313	1,768,898,438	1,768,898,438
CStravseg4	4,924,218,750	4,561,796,875	4,561,796,875	3,788,132,813	3,788,132,813
CStravseg5	2,587,218,750	2,384,390,625	2,384,390,625	2,492,445,313	2,492,445,313
Cstravsum	29,533,437,500	27,411,109,375	27,411,109,375	24,139,960,938	24,139,960,938
FIRST ORDER CONDITIONS					
foc1l	2.04636E-12	6.39706E-07	1.19422E-11	6.05232E-06	5.73569E-05
foc2l	-1.7792E-11	4.70089E-05	-8.52651E-12	3.37368E-06	-5.52367E-05
foc3l	5.00222E-11	8.63049E-05	-1.14137E-10	5.45294E-06	3.56454E-05
foc4l	4.27463E-11	0.000106153	5.68485E-11	6.94597E-07	0.000107278
foc5l	4.40536E-12	6.40406E-07	1.19371E-11	6.10739E-06	5.72931E-05
foc6l	-1.49782E-11	5.44388E-05	-4.43379E-12	3.39351E-06	-5.51766E-05
foc7l	5.36602E-11	8.98527E-05	-1.14142E-10	5.48584E-06	3.581E-05
foc8l	4.45652E-11	0.000100716	5.32054E-11	7.16325E-07	0.000107087
foc9l	5.79803E-12	6.41131E-07	1.1901E-11	6.14927E-06	5.71228E-05
foc10l	-2.20552E-11	5.23794E-05	-6.62226E-12	3.41023E-06	-5.5016E-05
foc11l	5.36602E-11	9.26239E-05	-1.15997E-10	5.51357E-06	3.59731E-05
foc12l	4.82032E-11	0.00010809	5.49883E-11	7.29805E-07	0.000106677
foc13l	4.20641E-12	6.39656E-07	1.18214E-11	6.0324E-06	5.62826E-05
foc14l	-1.55183E-11	4.95615E-05	-9.15179E-12	3.36633E-06	-5.42063E-05
foc15l	5.54792E-11	0.000100251	-1.088E-10	5.44069E-06	3.50734E-05
foc16l	5.00222E-11	0.000124313	5.67277E-11	6.86906E-07	0.000105227
foc17l	-4.54747E-11	-5.09641E-05	0	1.20523E-05	-4.59729E-05
foc18l	-5.15001E-11	-4.28234E-05	7.7307E-12	1.18197E-05	-4.59219E-05
foc19l	-5.45697E-11	-4.48803E-05	7.27596E-12	1.16389E-05	-4.57852E-05
foc20l	-5.45697E-11	-4.74954E-05	0	1.21372E-05	-4.51101E-05

QUARTER	6	7	7	8	8
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	12772.56931	12363.84592	12327.14959	12275.11442	12258.67506
p1c1l	12772.56931	12363.84592	12327.14959	12275.11442	12258.67506
p1f1l	12772.56931	12363.84592	12327.14959	12275.11442	12258.67506
p1g1l	12772.56931	12363.84592	12327.14959	12275.11442	12258.67506
p2a2l	17032.01959	16939.29232	16889.57723	16605.20049	16581.96594
p2c2l	17032.01959	16939.29232	16889.57723	16605.20049	16581.96594
p2f2l	17032.01959	16939.29232	16889.57723	16605.20049	16581.96594
p2g2l	17032.01959	16939.29232	16889.57723	16605.20049	16581.96594
p3a3l	19446.49819	19124.03116	19065.04757	20155.738	20129.08961
p3c3l	19446.49819	19124.03116	19065.04757	20155.738	20129.08961
p3f3l	19446.49819	19124.03116	19065.04757	20155.738	20129.08961
p3g3l	19446.49819	19124.03116	19065.04757	20155.738	20129.08961
p4a4l	15652.71097	15738.32212	15680.29513	16058.89728	16032.47826
p4c4l	15652.71097	15738.32212	15680.29513	16058.89728	16032.47826
p4f4l	15652.71097	15738.32212	15680.29513	16058.89728	16032.47826
p4g4l	15652.71097	15738.32212	15680.29513	16058.89728	16032.47826
p5a5l	28569.16231	33162.12379	25242.19498	25246.95435	23200.71715
p5c5l	28569.16231	33162.12379	25242.19498	25246.95435	23200.71715
p5f5l	28569.16231	33162.12379	25242.19498	25246.95435	23200.71715
p5g5l	28569.16231	33162.12379	25242.19498	25246.95435	23200.71715
lemp_a1	2.08	2.19	2.32	2.16	2.22
lemp_c1	2.08	2.19	2.32	2.16	2.22
lemp_f1	2.08	2.19	2.32	2.16	2.22
lemp_g1	2.08	2.19	2.32	2.16	2.22
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	2.94	3.10	3.29	3.06	3.14
lemp_c2	2.94	3.10	3.29	3.06	3.14
lemp_f2	2.94	3.10	3.29	3.06	3.14
lemp_g2	2.94	3.10	3.29	3.06	3.14
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	3.37	3.54	3.76	3.50	3.59
lemp_c3	3.37	3.54	3.76	3.50	3.59
lemp_f3	3.37	3.54	3.76	3.50	3.59
lemp_g3	3.37	3.54	3.76	3.50	3.59
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	3.37	3.54	3.76	3.50	3.59
lemp_c4	3.37	3.54	3.76	3.50	3.59
lemp_f4	3.37	3.54	3.76	3.50	3.59
lemp_g4	3.37	3.54	3.76	3.50	3.59
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	3.37	3.54	3.76	3.50	3.59
lemp_c5	3.369724209	3.541895521	3.762063511	3.496649827	3.591648947
lemp_f5	3.369724209	3.541895521	3.762063511	3.496649827	3.591648947
lemp_g5	3.369724209	3.541895521	3.762063511	3.496649827	3.591648947

QUARTER	6	7	7	8	8
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	299821.5988	289460.1938	335209.436	257498.0532	285705.992
Csub1nl	0	50666.20721	73884.36879	26155.07413	54058.49139
Fsub1nl	99478.22226	127454.8196	175375.1296	104428.7651	131980.038
Gsub1nl	127074.7327	87409.1604	187668.6733	137839.8605	164302.7113
Asub2nl	229285.9496	205768.2031	332325.1187	335415.6957	223873.9366
Csub2nl	111434.222	0	174470.6701	244858.8324	134194.6085
Fsub2nl	258684.369	178541.4126	300877.1909	311146.1843	201749.6625
Gsub2nl	618642.7112	593657.853	605270.2052	525879.3651	421380.0898
Asub3nl	32075.2645	31862.88162	38193.40025	4680.606974	64322.64864
Csub3nl	39193.0526	36871.88288	46230.1396	0	59279.4055
Fsub3nl	49129.5038	56893.1002	62885.78759	23306.9916	82636.70731
Gsub3nl	77108.5121	81506.33408	80369.58944	24737.1408	82560.88244
asub4nl	191926.1768	197234.7724	115289.824	93488.58657	169360.7986
Csub4nl	116288.9503	162811.3487	32407.10348	29051.32559	104949.9079
fsub4nl	267666.0908	263487.9973	186367.8101	149145.7887	223969.4121
gsub4nl	281197.4886	182719.4281	218932.8715	178745.027	248369.8367
asub5nl	142727.3143	188993.0061	91311.89472	119404.7747	85870.13269
Csub5nl	49568.2146	98383.27223	0	34077.77512	0
fsub5nl	126398.7723	165398.0424	67772.76504	90654.19703	56135.64292
gsub5nl	145829.536	196011.8993	100004.9695	126529.1958	93468.99682
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	526,375	554,990	772,138	525,922	636,047
tseg2nl	1,218,047	977,967	1,412,943	1,417,300	981,198
tseg3nl	197,506	207,134	227,679	52,725	288,800
tseg4nl	857,079	806,254	552,998	450,431	746,650
tseg5nl	464,524	648,786	259,090	370,666	235,475
tsumnl	3,263,531	3,195,132	3,224,847	2,817,043	2,888,170
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	298,530	229,953	12,805	188,752	78,627
lostsales2l	534,219	611,951	176,975	(72,392)	363,710
lostsales3l	44,139	37,515	16,970	173,694	(62,381)
lostsales4l	(226,779)	(222,344)	30,912	34,450	(261,769)
lostsales5l	(133,360)	(343,584)	46,112	(51,633)	83,558
lostsuml	516,749	313,490	283,775	272,872	201,745
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	2,658,360,047	1,495,872,769	3,937,757,045	1,149,417,808	1,409,706,469
CSlsetseg2	5,007,433,268	7,017,802,348	6,102,639,006	10,640,321,123	7,274,095,205
CSlsetseg3	1,256,349,148	2,235,098,434	1,502,643,736	383,883,223	2,212,532,923
CSlsetseg4	5,918,663,602	4,687,857,479	3,566,342,462	2,778,285,441	4,663,275,431
CSlsetseg5	3,319,355,375	10,769,274,077	4,454,527,915	2,239,910,804	4,606,545,972
Cslsetsum	18,160,161,440	26,205,905,107	19,563,910,164	17,191,818,400	20,166,156,000
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	1,678,800,622	876,312,270	2,266,863,277	683,659,410	812,516,807
PSlsetseg2	3,121,273,465	4,759,275,447	3,577,921,659	5,794,055,842	4,130,741,208
PSlsetseg3	695,675,001	1,241,895,850	817,630,965	232,451,601	1,141,010,705
PSlsetseg4	3,265,179,238	2,374,552,695	2,115,950,359	1,699,827,402	2,558,681,328
PSlsetseg5	1,943,990,969	11,650,099,084	2,552,376,792	1,414,399,332	2,424,011,423
Pslsetsum	10,704,919,295	20,902,135,345	11,330,743,051	9,824,393,587	11,066,961,472

QUARTER	6	7	7	8	8
-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	4,337,160,669	2,372,185,039	6,204,620,322	1,833,077,218	2,222,223,276
TSlsetseg2	8,128,706,733	11,777,077,795	9,680,560,665	16,434,376,965	11,404,836,413
TSlsetseg3	1,952,024,150	3,476,994,284	2,320,274,701	616,334,824	3,353,543,628
TSlsetseg4	9,183,842,840	7,062,410,174	5,682,292,821	4,478,112,844	7,221,956,759
TSlsetseg5	5,263,346,344	22,419,373,160	7,006,904,707	3,654,310,135	7,030,557,396
Tslsetsum	28,865,080,735	47,108,040,452	30,894,653,216	27,016,211,987	31,233,117,472
dwllset	4,715,392,879	(4,117,840,028)	5,104,083,382	3,478,491,622	5,627,779,211
surpluslset	324,199,455,735	321,219,134,202	305,005,746,966	268,415,821,362	272,632,726,847
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	193.75	175.37	155.44	179.94	170.54
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	212,349,632	213,010,344	279,009,870	204,465,470	240,739,010
taxrevlsetseg2	694,921,518	530,829,003	722,045,486	779,247,917	525,205,041
taxrevlsetseg3	128,946,438	128,658,577	133,143,318	33,173,018	176,899,030
taxrevlsetseg4	559,563,049	500,793,372	323,384,955	283,399,154	457,347,009
taxrevlsetseg5	303,274,802	402,984,694	151,511,845	233,213,251	144,235,839
taxrevlsetsum	1,899,055,438	1,776,275,991	1,609,095,474	1,533,498,810	1,544,425,929
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	403.42	383.81	361.35	388.78	378.49
taxc1	403.42	383.81	361.35	388.78	378.49
taxf1	403.42	383.81	361.35	388.78	378.49
taxg1	403.42	383.81	361.35	388.78	378.49
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	570.52	542.79	511.02	549.81	535.27
taxc2	570.52	542.79	511.02	549.81	535.27
taxf2	570.52	542.79	511.02	549.81	535.27

QUARTER	6	7	7	8	8
taxg2	570.52	542.79	511.02	549.81	535.27
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	652.87	621.14	584.79	629.17	612.53
taxc3	652.87	621.14	584.79	629.17	612.53
taxf3	652.87	621.14	584.79	629.17	612.53
taxg3	652.87	621.14	584.79	629.17	612.53
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	652.87	621.14	584.79	629.17	612.53
taxc4	652.87	621.14	584.79	629.17	612.53
taxf4	652.87	621.14	584.79	629.17	612.53
taxg4	652.87	621.14	584.79	629.17	612.53
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	652.87	621.14	584.79	629.17	612.53
taxc5	652.8724204	621.1363342	584.7854491	629.1736688	612.5320243
taxf5	652.8724204	621.1363342	584.7854491	629.1736688	612.5320243
taxg5	652.8724204	621.1363342	584.7854491	629.1736688	612.5320243
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	1,555,260,078	4,289,646,856	16,869,401,788	5,395,998,221	12,003,964,370
pollution reduction 2	(2,806,549,086)	(11,266,930,737)	8,463,055,195	22,330,351,494	(1,905,680,836)
pollution reduction 3	3,989,587,511	3,966,729,600	4,341,015,973	(2,901,148,866)	8,110,708,709
pollution reduction 4	27,352,457,185	24,280,989,287	10,790,999,295	10,001,639,188	23,380,897,671
pollution reduction 5	9,909,244,308	18,729,564,523	(464,472,250)	5,173,159,988	(1,589,889,902)
Total reduction	40	39.99999953	40	40.00000002	40.00000001
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.00463	0.01338	0.00462	0.02000	0.00576
	55.53490855	160.5303161	55.41532766	240	69.11828751
FOC-PMET					
foc1p	2.84052E-06	6.25807E-06	1.66408E-05	-1.49655E-05	1.44698E-05
foc2p	8.57765E-06	-0.000249141	7.81968E-05	-6.42387E-06	-0.000270111
foc3p	4.38917E-05	-8.16212E-05	3.02272E-05	-1.06171E-05	-0.000180421
foc4p	9.69674E-06	-5.03128E-05	7.73964E-05	-4.03982E-06	-0.000128575
foc5p	2.84054E-06	6.25787E-06	1.66408E-05	-1.13228E-05	1.49496E-05
foc6p	8.57768E-06	-0.000222037	7.81968E-05	-4.95577E-06	-0.000270572
foc7p	4.38917E-05	-4.61006E-05	3.02272E-05	-8.18854E-06	-0.000181518
foc8p	9.6967E-06	-3.16738E-05	7.73964E-05	-2.88668E-06	-0.000127339
foc9p	2.84052E-06	6.2588E-06	1.66408E-05	-1.48685E-05	1.42357E-05
foc10p	8.57766E-06	-0.000243672	7.81968E-05	-6.38731E-06	-0.0002698
foc11p	4.38917E-05	-7.51497E-05	3.02272E-05	-1.05563E-05	-0.000180093
foc12p	9.69673E-06	-4.82793E-05	7.73964E-05	-4.00455E-06	-0.000129176
foc13p	2.84052E-06	6.25877E-06	1.66408E-05	-1.49854E-05	1.33953E-05
foc14p	8.57767E-06	-0.000246585	7.81968E-05	-6.43121E-06	-0.0002690
foc15p	4.38917E-05	-6.76693E-05	3.02272E-05	-1.06293E-05	-0.000180993
foc16p	9.69675E-06	-3.21489E-05	7.73964E-05	-4.04751E-06	-0.000130626
foc17p	5.00356E-06	7.06745E-06	3.7446E-05	6.57662E-05	-0.000188973
foc18p	4.44379E-06	-1.38629E-05	3.78455E-05	4.99972E-05	-0.00013316
foc19p	5.00354E-06	1.32614E-05	3.7446E-05	6.53522E-05	-0.000188786
foc20p	5.00355E-06	1.05418E-05	3.7446E-05	6.58508E-05	-0.00018811

QUARTER	6	7	7	8	8
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	12,311.06	11,917.76	11,933.34	11,823.19	11,809.41
p1c1	12,311.06	11,917.76	11,933.34	11,823.19	11,809.41
p1f1	12,311.06	11,917.76	11,933.34	11,823.19	11,809.41
p1g1	12,311.06	11,917.76	11,933.34	11,823.19	11,809.41
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	16,463.42	16,406.29	16,432.81	16,078.23	16,130.91
p2c2	16,463.42	16,406.29	16,432.81	16,078.23	16,130.91
p2f2	16,463.42	16,406.29	16,432.81	16,078.23	16,130.91
p2g2	16,463.42	16,406.29	16,432.81	16,078.23	16,130.91
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	18,770.20	19,130.92	18,464.23	19,386.27	19,447.09
p3c3	18,770.20	19,130.92	18,464.23	19,386.27	19,447.09
p3f3	18,770.20	19,130.92	18,464.23	19,386.27	19,447.09
p3g3	18,770.20	19,130.92	18,464.23	19,386.27	19,447.09
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	14,995.58	15,017.10	15,078.85	15,849.47	15,403.59
p4c4	14,995.58	15,017.10	15,078.85	15,849.47	15,403.59
p4f4	14,995.58	15,017.10	15,078.85	15,849.47	15,403.59
p4g4	14,995.58	15,017.10	15,078.85	15,849.47	15,403.59
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	27,928.97	24,711.27	25,758.62	24,424.06	24,384.49
p5c5	27928.97108	24711.27256	25758.62044	24424.05847	24384.48829
p5f5	27928.97108	24711.27256	25758.62044	24424.05847	24384.48829
p5g5	27928.97108	24711.27256	25758.62044	24424.05847	24384.48829
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	24,181	6,977	24,335	4,785	14,029
dp/dgas2	42,337	13,909	46,626	10,286	47,173
dp/dgas3	37,008	94,517	30,655	3,552	19,473
dp/dgas4	40,960	7,013	30,540	40,127	27,032
dp/dgas5	3,944	76,498	3,951	62,570	5,443
sum of dpdgas	148,429	198,915	136,107	121,319	113,150
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,883	11,630	11,884	11,454	11,829
VMT2	11,875	11,630	11,881	11,473	11,868
VMT3	11,847	11,837	11,832	10,974	11,765
VMT4	11,855	11,403	11,832	11,695	11,800
VMT5	11,855	11,403	11,832	11,695	11,800

QUARTER	6	7	7	8	8
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.01268	0.04013	0.01263	0.05925	0.01857
tpmc1	0.01268	0.04013	0.01263	0.05925	0.01857
tpmf1	0.01268	0.04013	0.01263	0.05925	0.01857
tpmg1	0.01268	0.04013	0.01263	0.05925	0.01857
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.01355	0.04020	0.01290	0.05715	0.01432
tpmc2	0.01355	0.04020	0.01290	0.05715	0.01432
tpmf2	0.01355	0.04020	0.01290	0.05715	0.01432
tpmg2	0.01355	0.04020	0.01290	0.05715	0.01432
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.01659	0.01765	0.01820	0.11129	0.02551
tpmc3	0.01659	0.01765	0.01820	0.11129	0.02551
tpmf3	0.01659	0.01765	0.01820	0.11129	0.02551
tpmg3	0.01659	0.01765	0.01820	0.11129	0.02551
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.01577	0.06478	0.01824	0.03311	0.02165
tpmc4	0.01577	0.06478	0.01824	0.03311	0.02165
tpmf4	0.01577	0.06478	0.01824	0.03311	0.02165
tpmg4	0.01577	0.06478	0.01824	0.03311	0.02165
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.01577	0.06478	0.01824	0.03311	0.02165
tpmc5	0.015766059	0.064778654	0.018239123	0.033113923	0.021651059
tpmf5	0.015766059	0.064778654	0.018239123	0.033113923	0.021651059
tpmg5	0.015766059	0.064778654	0.018239123	0.033113923	0.021651059
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	6,351,376,495	5,893,668,545	6,010,075,768	5,148,376,862	5,441,307,616
cstravelpmetseg2	13,485,893,495	11,489,900,038	12,232,502,692	9,749,420,500	10,300,663,382
cstravelpmetseg3	1,847,427,971	1,860,400,499	1,863,039,409	1,160,601,705	1,694,086,089
cstravelpmetseg4	4,774,086,119	4,489,570,962	4,428,105,981	3,642,000,925	3,669,106,425
cstravelpmetseg5	2,504,299,173	2,188,582,912	2,316,635,333	2,428,756,635	2,410,776,262
cstravelpmetsum	28,963,083,252	25,922,122,956	26,850,359,183	22,129,156,626	23,515,939,774
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	2.74	3.00	2.73	2.96	3.22
epm_c1	2.74	3.00	2.73	2.96	3.22
epm_f1	2.74	3.00	2.73	2.96	3.22
epm_g1	2.74	3.00	2.73	2.96	3.22
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	2.93	3.00	2.79	2.86	2.49
epm_c2	2.93	3.00	2.79	2.86	2.49
epm_f2	2.93	3.00	2.79	2.86	2.49
epm_g2	2.93	3.00	2.79	2.86	2.49

QUARTER	6	7	7	8	8
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	3.58	1.32	3.94	5.56	4.43
epm_c3	3.58	1.32	3.94	5.56	4.43
epm_f3	3.58	1.32	3.94	5.56	4.43
epm_g3	3.58	1.32	3.94	5.56	4.43
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	3.41	4.84	3.95	1.66	3.76
epm_c4	3.41	4.84	3.95	1.66	3.76
epm_f4	3.41	4.84	3.95	1.66	3.76
epm_g4	3.41	4.84	3.95	1.66	3.76
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	3.41	4.84	3.95	1.66	3.76
epm_c5	3.406734863	4.842349181	3.949619743	1.655696146	3.758957479
epm_f5	3.406734863	4.842349181	3.949619743	1.655696146	3.758957479
epm_g5	3.406734863	4.842349181	3.949619743	1.655696146	3.758957479
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	329529.7	274043.4917	344981.6778	291339.2788	287728.0774
Csub1n	0	45344.49316	83541.89297	24743.77464	54099.02425
Fsub1n	129186.3235	112038.1175	185147.3714	138269.9906	134002.1234
Gsub1n	156782.8339	71992.45833	197440.9151	171681.086	166324.7968
Asub2n	247007.0451	456041.0082	285207.4464	231230.7316	278505.832
Csub2n	99307.71299	232227.7762	128214.4589	269609.1471	196838.7717
Fsub2n	276405.4645	428814.2178	253759.5186	206961.2203	256381.5579
Gsub2n	636363.8067	843930.6582	558152.5329	421694.401	476011.9852
Asub3n	34403.50258	40908.11318	36907.826	145708.9646	54338.15598
Csub3n	39098.08333	44712.92776	44972.91938	0	47248.3783
Fsub3n	51457.74188	65938.33176	61600.21335	164335.3492	72652.21465
Gsub3n	79436.75018	90551.56564	79084.01519	165765.4984	72576.38977
asub4n	170813.177	14515.34437	130896.7883	69579.49385	99804.18204
Csub4n	120926.1808	0	47721.65185	22834.69108	28934.39588
fsub4n	246553.091	80768.56911	201974.7743	125236.696	154412.7955
gsub4n	260084.4887	0	234539.8357	154835.9343	178813.2202
asub5n	132517.3579	91631.68837	104600.3239	61322.37641	106402.0131
Csub5n	56624.87362	0	12797.94665	0	19903.07896
fsub5n	116188.8158	68036.72467	81061.19426	32571.79875	76667.5233
gsub5n	135619.5795	98650.58162	113293.3987	68446.79751	114000.8772
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	615,499	503,419	811,112	626,034	642,154
tseg2n	1,259,084	1,961,014	1,225,334	1,129,496	1,207,738
tseg3n	204,396	242,111	222,565	475,810	246,815
tseg4n	798,377	95,284	615,133	372,487	461,965
tseg5n	440,951	258,319	311,753	162,341	316,973
tsumn	3,318,307	3,060,146	3,185,897	2,766,167	2,875,645
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	3,156,142,239	1,398,674,777	4,171,625,541	1,420,929,302	1,483,840,226
CSPMETseg2	5,172,906,680	14,046,467,262	5,203,702,989	8,445,245,967	8,817,932,686

QUARTER	6	7	7	8	8
CSPMETseg3	1,306,558,536	2,409,782,963	1,473,649,581	3,553,324,625	1,913,745,141
CSPMETseg4	5,517,821,405	566,731,611	3,980,726,441	2,089,057,178	2,895,320,931
CSPMETseg5	3,278,344,865	4,739,327,778	5,268,234,693	879,631,130	5,994,599,541
CsPMETsum	18,431,773,725	23,160,984,391	20,097,939,245	16,388,188,202	21,105,438,525
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	1,977,008,430	818,892,559	2,383,977,215	838,800,329	850,702,776
PSpmetseg2	3,240,822,166	8,312,264,254	3,127,289,141	4,492,360,237	4,889,613,905
PSpmetseg3	722,930,223	1,331,047,555	803,106,017	2,032,936,717	994,537,370
PSpmetseg4	3,014,013,559	281,391,762	2,323,705,131	1,318,805,591	1,684,746,091
PSpmetseg5	1,823,640,364	3,094,010,893	3,293,767,909	519,484,464	3,630,190,927
Pspmetsum	10,778,414,742	13,837,607,024	11,931,845,414	9,202,387,337	12,049,791,069
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	5,133,150,669	2,217,567,336	6,555,602,756	2,259,729,631	2,334,543,002
TSPMETseg2	8,413,728,845	22,358,731,516	8,330,992,130	12,937,606,204	13,707,546,591
TSPMETseg3	2,029,488,759	3,740,830,518	2,276,755,598	5,586,261,342	2,908,282,511
TSPMETseg4	8,531,834,964	848,123,373	6,304,431,572	3,407,862,769	4,580,067,022
TSPMETseg5	5,101,985,229	7,833,338,671	8,562,002,602	1,399,115,593	9,624,790,468
TSPMETsum	29,210,188,467	36,998,591,415	32,029,784,658	25,590,575,539	33,155,229,594
dwlpmet	4,377,448,382	6,104,495,218	3,971,557,716	5,112,846,869	3,732,206,998
pmetsurplus	324,472,931,116	309,980,823,080	306,114,820,645	264,902,996,921	274,289,439,881
pmetsurplus10	63,805,181,851	76,681,716,474	64,461,587,999	65,740,587,289	62,645,981,919
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	92,737,848	234,962,614	121,695,645	424,885,153	141,062,513
taxrevpmetseg2	186,637,978	829,368,963	180,945,754	580,099,636	181,026,167
taxrevpmetseg3	40,164,474	50,572,425	47,941,014	581,139,551	74,072,274
taxrevpmetseg4	149,218,167	70,383,462	132,747,943	144,249,779	118,028,505
taxrevpmetseg5	94,432,547	190,812,746	74,814,061	71,711,394	83,291,795
taxrevpmetsum	563,191,013	1,376,100,210	558,144,416	1,802,085,512	597,481,255
pmetrev10	5,631,910,132	13,761,002,103	5,581,444,158	18,020,855,124	5,974,812,552
SALES LOST AS RESULT OF PMET-					
lostsales1	209,406	281,524	(26,169)	88,640	72,520
lostsales2	493,182	(371,096)	364,584	215,412	137,170
lostsales3	37,249	2,538	22,084	(249,391)	(20,396)
lostsales4	(168,077)	488,626	(31,223)	112,394	22,916
lostsales5	(109,787)	46,883	(6,551)	156,692	2,060
lostsum	461,973	448,476	322,725	323,748	214,270
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	306.5955174	280.0082587	307.2439289	283.5238529	260.53207
taxc1p	306.5955174	280.0082587	307.2439289	283.5238529	260.53207
taxf1p	306.5955174	280.0082587	307.2439289	283.5238529	260.53207
taxg1p	306.5955174	280.0082587	307.2439289	283.5238529	260.53207
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	573.7278372	559.0946779	601.4399833	587.8753313	675.625959
taxc2p	573.7278372	559.0946779	601.4399833	587.8753313	675.625959
taxf2p	573.7278372	559.0946779	601.4399833	587.8753313	675.625959
taxg2p	573.7278372	559.0946779	601.4399833	587.8753313	675.625959
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	6	7	7	8	8
taxa3p	613.8346927	1667.840605	558.0683223	395.3513782	496.7513483
taxc3p	613.8346927	1667.840605	558.0683223	395.3513782	496.7513483
taxf3p	613.8346927	1667.840605	558.0683223	395.3513782	496.7513483
taxg3p	613.8346927	1667.840605	558.0683223	395.3513782	496.7513483
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	645.779636	454.3249398	557.0156479	1328.746223	585.2686583
taxc4p	645.779636	454.3249398	557.0156479	1328.746223	585.2686583
taxf4p	645.779636	454.3249398	557.0156479	1328.746223	585.2686583
taxg4p	645.779636	454.3249398	557.0156479	1328.746223	585.2686583
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	645.779636	454.3249398	557.0156479	1328.746223	585.2686583
taxc5p	645.779636	454.3249398	557.0156479	1328.746223	585.2686583
taxf5p	645.779636	454.3249398	557.0156479	1328.746223	585.2686583
taxg5p	645.779636	454.3249398	557.0156479	1328.746223	585.2686583
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	2689836735	-3340052982	15563548038	6797723647	5002145110
pollution reduction 2p	145820173.7	45002635345	6653547955	11362685557	19796782501
pollution reduction 3p	3917415203	12138006601	3777808688	8331849578	3919218006
pollution reduction 4p	24483617259	-10699608924	1260202076(	14674180397	9448101844
pollution reduction 5p	8763309469	-3100969006	1403067607	-116643917(	1833774275
Total reductionp	39.99999884	40.00001103	39.99999305	40	40.00002174
DIFFERENCE-					
Tsdiff	(273)	(11,238)	(1,109)	(3,513)	(1,657)

QUARTER	9	9	10	10	11
COEFFICIENTS OF DEMAND					
a P1/q1	-0.010085496	-0.010647927	-0.004532014	-0.004585689	-0.005698003
b p2/q1	-1E-08	-6.74066E-05	-0.00178242	-0.001351471	-0.004563012
c p3/q1	-0.010085496	-0.009365336	-1E-08	-0.000161602	-0.002110257
d p4/q1	-0.00145559	-0.000966692	-0.000967849	-0.002122009	-0.000264456
f P1/q2	-1E-08	-6.74066E-05	-0.00178242	-0.001351471	-0.004563012
g p2/q2	-0.013467391	-0.006629418	-0.004929363	-0.00394104	-0.011256396
h p3/q2	-0.001074978	-1E-08	-0.000323737	0	-1E-08
i p4/q2	-0.004232488	-0.006629418	-0.004929363	-0.00394104	-0.008603495
k P1/q3	-0.010085496	-0.009365336	-1E-08	-0.000161602	-0.002110257
l p2/q3	-0.001074978	-1E-08	-0.000323737	-5.68405E-18	-1E-08
m p3/q3	-0.085955488	-0.045613286	-0.067938239	-0.070309486	-0.085477158
n p4/q3	-1E-08	-0.004043622	-1E-08	1.5185E-17	-0.008603495
p P1/q4	-0.00145559	-0.000966692	-0.000967849	-0.002122009	-0.000264456
q p2/q4	-0.004232488	-0.006629418	-0.004929363	-0.00394104	-0.008603495
r p3/q4	-1E-08	-0.004043622	-1E-08	-8.78845E-18	-0.008603495
s p4/q4	-0.013002444	-0.008015439	-0.008081286	-0.010172262	-0.008603495
u P1/q5	-1E-08	-5.3889E-16	-0.004532014	-0.004585689	-1E-08
v p2/q5	-1E-08	-0.001880499	-0.004929363	-1.14289E-18	-1E-08
w p3/q5	-1E-08	-1E-08	-1E-08	-1E-08	-0.032558687
x p4/q5	-0.004773417	-1E-08	-0.000951372	-0.000507123	-0.002676127
y p5/q5	-0.041677975	-0.131858676	-0.115038148	-0.03367122	-0.099679229
e p5/q1	-0.00000001	-0.00000001	-0.004532014	-0.004585689	-0.00000001
j p5/q2	-0.00000001	-0.001880499	-0.004929363	-0.00000001	-0.00000001
o p5/q3	-0.00000001	-0.00000001	-1E-08	-0.00000001	-0.032558687
t p5/q4	-0.004773417	-0.00000001	-0.000951372	-0.000507123	-0.002676127
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.010085496	-0.010647927	-0.004532014	-0.004585689	-0.005698003
bb	-1E-08	-6.74066E-05	-0.00178242	-0.001351471	-0.004563012
cc	-0.010085496	-0.009365336	-1E-08	-0.000161602	-0.002110257
dd	-0.00145559	-0.000966692	-0.000967849	-0.002122009	-0.000264456
ee	-0.00000001	-0.00000001	-0.004532014	-0.004585689	-0.00000001
ff	-1E-08	-6.74066E-05	-0.00178242	-0.001351471	-0.004563012
gg	-0.013467391	-0.006629418	-0.004929363	-0.00394104	-0.011256396
hh	-0.001074978	-1E-08	-0.000323737	-0.00000001	-1E-08
ii	-0.004232488	-0.006629418	-0.004929363	-0.00394104	-0.008603495
jj	-0.00000001	-0.001880499	-0.004929363	-0.00000001	-0.00000001
kk	-0.010085496	-0.009365336	-1E-08	-0.000161602	-0.002110257
ll	-0.001074978	-1E-08	-0.000323737	-5.68405E-18	-1E-08
mm	-0.085955488	-0.045613286	-0.067938239	-0.070309486	-0.085477158
nn	-1E-08	-0.004043622	-1E-08	-0.00000001	-0.008603495
oo	-0.00000001	-0.00000001	-1E-08	-0.00000001	-0.032558687
pp	-0.00145559	-0.000966692	-0.000967849	-0.002122009	-0.000264456
qq	-0.004232488	-0.006629418	-0.004929363	-0.00394104	-0.008603495
rr	-1E-08	-0.004043622	-1E-08	-8.78845E-18	-0.008603495
ss	-0.013002444	-0.008015439	-0.008081286	-0.010172262	-0.008603495
tt	-0.004773417	-0.00000001	-0.000951372	-0.000507123	-0.002676127
uu	-1E-08	-5.3889E-16	-0.004532014	-0.004585689	-1E-08
vv	-1E-08	-0.001880499	-0.004929363	-1.14289E-18	-1E-08
ww	-1E-08	-1E-08	-1E-08	-1E-08	-0.032558687
xx	-0.004773417	-1E-08	-0.000951372	-0.000507123	-0.002676127
yy	-0.041677975	-0.131858676	-0.115038148	-0.03367122	-0.099679229
KNOWN PRICE BEFORE TAXES					
P1	11,738	11,738	11,297	11,297	11,725
P2	16,572	16,572	15,760	15,760	16,631
P3	20,204	20,204	18,353	18,353	20,621
P4	14,209	14,209	13,559	13,559	15,384
P5	26,188	26,188	28,426	28,426	23,362

QUARTER	9	9	10	10	11
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	278030	278030	340952	340952	364548
Csub1	50556	50556	69068	69068	69817
Fsub1	168588	168588	165279	165279	188904
Gsub1	166562	166562	200491	200491	197882
Asub2	304095	304095	356553	356553	329887
Csub2	214939	214939	225622	225622	188374
Fsub2	251955	251955	294650	294650	261875
Gsub2	489213	489213	615980	615980	524061
Asub3	44302	44302	47383	47383	54273
Csub3	35836	35836	48031	48031	47448
Fsub3	62571	62571	74563	74563	69684
Gsub3	59766	59766	70465	70465	73565
asub4	89438	89438	105964	105964	120260
Csub4	40736	40736	47594	47594	40712
fsub4	136512	136512	167893	167893	193441
gsub4	171028	171028	205314	205314	214698
asub5	72376	72376	100120	100120	108634
Csub5	17169	17169	18308	18308	13918
fsub5	67085	67085	72831	72831	60180
gsub5	100614	100614	117480	117480	124564
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	663,736	663,736	775,790	775,790	821,151
tseg2	1,260,202	1,260,202	1,492,805	1,492,805	1,304,197
tseg3	202,475	202,475	240,442	240,442	244,970
tseg4	437,714	437,714	526,765	526,765	569,111
tseg5	257,244	257,244	308,739	308,739	307,296
tsum	2,821,371	2,821,371	3,344,541	3,344,541	3,246,725
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	1.75	1.66	3.21	3.18	2.51
Elasiticity21	0.00	0.02	1.62	1.52	1.44
Elasiticity31	0.35	0.59	0.00	0.01	0.11
Elasiticity41	0.24	0.24	0.46	0.80	0.10
Elasiticity51	0.00	0.00	0.32	1.09	0.00
Elasiticity12	0.00	0.01	0.60	0.57	0.64
Elasiticity22	0.98	1.98	2.14	2.68	1.13
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.27	1.41	1.12	0.89	1.05
Elasiticity52	0.00	0.04	0.17	0.00	0.00
Elasiticity13	0.67	1.12	0.00	0.02	0.21
Elasiticity23	0.08	0.00	0.06	0.00	0.00
Elasiticity33	1.16	2.19	1.12	1.09	0.98
Elasiticity43	0.00	0.78	0.00	0.00	0.73
Elasiticity53	0.00	0.00	0.00	0.00	0.36
Elasiticity14	0.30	0.30	0.57	0.98	0.11
Elasiticity24	0.92	4.72	3.70	2.94	2.60
Elasiticity34	0.00	0.51	0.00	0.00	0.42
Elasiticity44	2.50	4.05	3.19	2.53	3.14
Elasiticity54	0.53	0.00	0.06	0.08	0.13
Elasiticity15	0.00	0.00	0.32	1.09	0.00
Elasiticity25	0.00	0.14	0.44	0.00	0.00
Elasiticity35	0.00	0.00	0.00	0.00	0.26
Elasiticity45	0.49	0.00	0.04	0.07	0.16
Elasiticity55	2.44	0.77	0.80	2.73	0.76
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	9	9	10	10	11
MCasub1	8,357	8,256	8,559	8,559	8,000
MCcsub1	10,807	10,810	10,454	10,484	10,357
MCfsub1	9,209	9,209	9,530	9,439	9,259
MCgsub1	9,209	9,209	8,559	8,559	8,000
MCasub2	12,061	13,821	12,367	13,480	10,234
MCcsub2	13,472	14,848	14,186	14,591	13,848
MCfsub2	12,545	13,872	12,810	13,721	11,167
MCgsub2	9,209	12,010	10,760	12,260	8,000
MCasub3	13,252	15,204	15,015	14,963	10,634
MCcsub3	16,373	17,920	15,015	14,963	15,607
MCfsub3	12,841	15,204	13,182	13,074	10,634
MCgsub3	12,841	15,204	13,353	13,353	8,000
MCasub4	11,018	11,037	10,522	10,303	10,652
MCcsub4	12,620	12,270	11,979	12,031	12,944
MCfsub4	10,811	11,037	10,522	10,303	10,652
MCgsub4	9,209	9,209	8,559	8,559	8,000
MCasub5	22,750	16,078	13,499	23,426	10,457
MCcsub5	25,284	23,526	24,848	27,464	20,332
MCfsub5	22,750	16,877	17,685	25,127	14,598
MCgsub5	21,188	12,010	10,760	23,426	8,000
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.00000001	-0.00000001	-0.004532014	-0.004585689	-0.00000001
j	-0.00000001	-0.001880499	-0.004929363	0	-0.00000001
o	-0.00000001	-0.00000001	-1E-08	-0.00000001	-0.032558687
t	-0.004773417	-0.00000001	-0.000951372	-0.000507123	-0.002676127
y	-0.041677975	-0.131858676	-0.115038148	-0.03367122	-0.099679229
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	3381.480047	3482.725394	2737.399219	2737.399219	3724.899225
XMCcsub1	931.6599948	928.8614352	842.7447041	812.9122657	1367.570144
XMCfsub1	2529.790042	2529.790042	1766.141149	1857.788889	2465.577517
XMCgsub1	2529.790042	2529.790042	2737.399219	2737.399219	3724.899225
XMCasub2	4510.984083	2751.492093	3392.955246	2280.036098	6396.511323
XMCcsub2	3099.670727	1723.780562	1574.417888	1168.845564	2782.946564
XMCfsub2	4027.272974	2700.097549	2950.377934	2038.761477	5463.566667
XMCgsub2	7363.441065	4562.132282	5000	3500	8630.836155
XMCasub3	6951.67717	5000	3338.036973	3390.0282	9987.090131
XMCcsub3	3831.306165	2283.685614	3338.036973	3390.0282	5014.144962
XMCfsub3	7363.441065	5000	5171.787743	5279.854614	9987.090131
XMCgsub3	7363.441065	5000	5000	5000	12620.6849
XMCasub4	3190.977194	3171.774173	3037.571066	3255.973803	4731.451187
XMCcsub4	1588.108188	1938.511548	1580.315311	1528.526729	2440.030276
XMCfsub4	3398.05783	3171.774173	3037.571066	3255.973803	4731.451187
XMCgsub4	5000	5000	5000	5000	7383.832308
XMCasub5	3438.319829	10109.91774	14927.53285	5000	12905.03683
XMCcsub5	903.7962276	2662.200644	3578.717335	962.609407	3030.195947
XMCfsub5	3438.319829	9310.612258	10740.9854	3299.873863	8763.550807
XMCgsub5	5000	14178.06214	17666.22353	5000	15361.77775
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	21,112	21,210	19,382	19,444	23,022
constant2	35,614	28,357	28,698	24,768	39,955
constant3	45,657	37,426	35,172	35,384	58,194
constant4	27,428	27,532	26,219	26,604	34,648
constant5	38,999	62,478	75,319	42,647	63,492

QUARTER	9	9	10	10	11
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	4,945,816,279	5,006,488,116	4,968,675,645	5,005,701,053	7,294,686,238
TSseg2	18,653,321,787	11,544,921,871	15,170,955,238	10,556,665,531	23,797,650,908
TSseg3	3,922,854,855	2,658,507,524	3,078,381,121	3,116,913,868	7,006,534,988
TSseg4	4,562,218,870	4,566,653,784	5,268,090,284	5,426,656,170	8,650,603,766
TSseg5	2,645,852,298	7,496,187,341	11,656,522,275	3,541,135,197	10,050,903,792
Tssum	34,730,064,089	31,272,758,636	40,142,624,564	27,647,071,819	56,800,379,691
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	3,110,703,247	3,143,367,323	3,136,417,265	3,160,355,693	4,638,454,067
CSseg2	11,998,331,300	7,425,541,715	9,656,734,695	6,723,343,477	15,209,434,054
CSseg3	2,576,761,675	1,743,474,366	2,021,936,652	2,047,450,917	4,602,213,421
CSseg4	2,893,115,406	2,915,884,203	3,334,446,658	3,435,666,251	5,481,710,255
CSseg5	1,647,753,499	4,667,650,644	7,238,753,882	2,195,178,631	6,165,888,782
Cssum	22,226,665,127	19,895,918,252	25,388,289,152	17,561,994,970	36,097,700,580
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	1,835,113,033	1,863,120,793	1,832,258,380	1,845,345,359	2,656,232,171
PSseg2	6,654,990,487	4,119,380,156	5,514,220,543	3,833,322,054	8,588,216,854
PSseg3	1,346,093,179	915,033,158	1,056,444,469	1,069,462,950	2,404,321,567
PSseg4	1,669,103,464	1,650,769,581	1,933,643,626	1,990,989,919	3,168,893,510
PSseg5	998,098,799	2,828,536,697	4,417,768,394	1,345,956,566	3,885,015,010
Pssum	12,503,398,962	11,376,840,384	14,754,335,412	10,085,076,849	20,702,679,112
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	5,185,437,500	5,185,437,500	6,060,859,375	6,060,859,375	6,415,242,188
CStravseg2	9,845,328,125	9,845,328,125	11,662,539,063	11,662,539,063	10,189,039,063
CStravseg3	1,581,835,938	1,581,835,938	1,878,453,125	1,878,453,125	1,913,828,125
CStravseg4	3,419,640,625	3,419,640,625	4,115,351,563	4,115,351,563	4,446,179,688
CStravseg5	2,009,718,750	2,009,718,750	2,412,023,438	2,412,023,438	2,400,750,000
Cstravsum	22,041,960,938	22,041,960,938	26,129,226,563	26,129,226,563	25,365,039,063
FIRST ORDER CONDITIONS					
foc1l	4.84742E-12	4.33635E-06	-0.00018407	0	5.05027E-06
foc2l	2.24432E-05	3.24173E-05	-5.24597E-06	-1.04592E-11	-6.77418E-07
foc3l	-4.45466E-10	-1.251E-09	6.16378E-07	-1.28368E-11	4.33586E-07
foc4l	-6.42096E-05	8.93582E-06	2.13982E-05	7.50333E-12	5.39335E-06
foc5l	3.54461E-11	2.75001E-06	-0.000184256	-9.09495E-13	5.03671E-06
foc6l	2.24473E-05	1.83807E-05	-5.20717E-06	-1.04592E-11	-6.7838E-07
foc7l	1.79942E-10	-4.5452E-10	6.16434E-07	-1.27329E-11	4.32605E-07
foc8l	-6.42215E-05	5.77624E-06	2.11684E-05	7.27596E-12	5.38985E-06
foc9l	7.43938E-12	4.61065E-06	-0.000183819	-8.2423E-13	5.03691E-06
foc10l	2.24309E-05	3.48194E-05	-5.30832E-06	-1.04592E-11	-6.78371E-07
foc11l	-3.21002E-10	-1.02553E-09	6.16507E-07	-1.18242E-11	4.32233E-07
foc12l	-6.41741E-05	9.4815E-06	2.17566E-05	9.04521E-12	5.39006E-06
foc13l	1.0309E-11	2.5534E-06	-0.000183828	0	5.06269E-06
foc14l	2.24983E-05	1.70154E-05	-5.3105E-06	-1.04592E-11	-6.76344E-07
foc15l	-3.87254E-10	-2.38972E-09	6.16255E-07	-1.26226E-11	4.34244E-07
foc16l	-6.4367E-05	5.38835E-06	2.1754E-05	5.14433E-12	5.39617E-06
foc17l	-2.45564E-11	6.08075E-06	0.000478714	-2.31921E-11	-1.14745E-05
foc18l	-3.04681E-11	6.13571E-06	0.00047923	-2.18279E-11	-1.14425E-05
foc19l	-2.63753E-11	6.06293E-06	0.000477985	-2.29647E-11	-1.1443E-05
foc20l	-3.00133E-11	6.49662E-06	0.000478016	3.5925E-11	-1.15042E-05

QUARTER	9	9	10	10	11
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	12286.66001	12362.71089	11955.26357	11888.67643	12237.73791
p1c1l	12286.66001	12362.71089	11955.26357	11888.67643	12237.73791
p1f1l	12286.66001	12362.71089	11955.26357	11888.67643	12237.73791
p1g1l	12286.66001	12362.71089	11955.26357	11888.67643	12237.73791
p2a2l	17355.3552	17464.24032	16695.20241	16601.07622	17361.99245
p2c2l	17355.3552	17464.24032	16695.20241	16601.07622	17361.99245
p2f2l	17355.3552	17464.24032	16695.20241	16601.07622	17361.99245
p2g2l	17355.3552	17464.24032	16695.20241	16601.07622	17361.99245
p3a3l	21079.75775	21201.87468	19412.94081	19305.2481	21438.87915
p3c3l	21079.75775	21201.87468	19412.94081	19305.2481	21438.87915
p3f3l	21079.75775	21201.87468	19412.94081	19305.2481	21438.87915
p3g3l	21079.75775	21201.87468	19412.94081	19305.2481	21438.87915
p4a4l	15104.11348	15227.02102	14625.43735	14517.56679	16204.56086
p4c4l	15104.11348	15227.02102	14625.43735	14517.56679	16204.56086
p4f4l	15104.11348	15227.02102	14625.43735	14517.56679	16204.56086
p4g4l	15104.11348	15227.02102	14625.43735	14517.56679	16204.56086
p5a5l	29929.95681	25216.79375	39317.54757	29010.20383	35752.09225
p5c5l	29929.95681	25216.79375	39317.54757	29010.20383	35752.09225
p5f5l	29929.95681	25216.79375	39317.54757	29010.20383	35752.09225
p5g5l	29929.95681	25216.79375	39317.54757	29010.20383	35752.09225
lemp_a1	2.45	2.15	2.04	2.27	2.64
lemp_c1	2.45	2.15	2.04	2.27	2.64
lemp_f1	2.45	2.15	2.04	2.27	2.64
lemp_g1	2.45	2.15	2.04	2.27	2.64
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	3.47	3.04	2.89	3.21	3.73
lemp_c2	3.47	3.04	2.89	3.21	3.73
lemp_f2	3.47	3.04	2.89	3.21	3.73
lemp_g2	3.47	3.04	2.89	3.21	3.73
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	3.97	3.48	3.30	3.68	4.27
lemp_c3	3.97	3.48	3.30	3.68	4.27
lemp_f3	3.97	3.48	3.30	3.68	4.27
lemp_g3	3.97	3.48	3.30	3.68	4.27
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	3.97	3.48	3.30	3.68	4.27
lemp_c4	3.97	3.48	3.30	3.68	4.27
lemp_f4	3.97	3.48	3.30	3.68	4.27
lemp_g4	3.97	3.48	3.30	3.68	4.27
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	3.97	3.48	3.30	3.68	4.27
lemp_c5	3.967960722	3.48449518	3.30406443	3.67575622	4.265331511
lemp_f5	3.967960722	3.48449518	3.30406443	3.67575622	4.265331511
lemp_g5	3.967960722	3.48449518	3.30406443	3.67575622	4.265331511

QUARTER	9	9	10	10	11
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	272253.2955	266639.4779	272678.7314	343713.7636	339691.1949
Csub1nl	44878.01034	39322.04239	0	71361.364	47785.61922
Fsub1nl	162701.8096	157083.3937	97411.48675	168258.2547	166461.9028
Gsub1nl	160525.0923	154761.3089	132700.4222	202964.0808	170057.2732
Asub2nl	302499.2828	313233.2533	150816.58	306514.0769	357065.724
Csub2nl	213665.1164	227753.6702	21454.78608	176507.9416	212732.546
Fsub2nl	250298.6296	260437.875	86334.12648	242802.627	286002.0479
Gsub2nl	487591.6079	503379.1897	407389.4307	564264.0126	554434.6314
Asub3nl	42434.33931	44491.335	44407.89385	43937.72545	7232.591674
Csub3nl	33921.99509	36183.75433	45024.38459	44563.72392	0
Fsub3nl	60731.70601	62760.13781	71706.6215	71219.6875	22300.01262
Gsub3nl	58019.46385	60713.1074	67648.13689	67159.58652	27038.66232
asub4nl	48622.81878	51555.93287	195540.1495	102086.8409	76355.44585
Csub4nl	0	0	136418.8491	43535.11778	0
fsub4nl	95788.30422	99218.65177	259071.4326	164744.8702	152769.0269
gsub4nl	129661.0758	127687.2185	296579.1071	202156.8927	167795.4252
asub5nl	140105.7723	55263.50176	194037.1965	81932.71043	239006.1725
Csub5nl	84862.6043	0	112159.0183	0	144352.3909
fsub5nl	134703.9003	49954.6022	166786.9444	54392.35601	190485.0159
gsub5nl	168294.5196	83404.04018	211528.8528	99594.26951	254728.3646
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	640,358	617,806	502,791	786,297	723,996
tseg2nl	1,254,055	1,304,804	665,995	1,290,089	1,410,235
tseg3nl	195,108	204,148	228,787	226,881	56,571
tseg4nl	274,072	278,462	887,610	512,524	396,920
tseg5nl	527,967	188,622	684,512	235,919	828,572
tsumnl	2,891,559	2,593,842	2,969,694	3,051,710	3,416,294
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	23,378	45,930	272,999	(10,507)	97,155
lostsales2l	6,147	(44,602)	826,810	202,716	(106,038)
lostsales3l	7,367	(1,673)	11,655	13,561	188,399
lostsales4l	163,642	159,252	(360,845)	14,241	172,191
lostsales5l	(270,723)	68,622	(375,773)	72,820	(521,276)
lostsuml	(70,188)	227,529	374,847	292,831	(169,569)
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	2,825,593,594	2,732,993,907	1,867,120,425	2,970,368,477	3,904,005,807
CSlsetseg2	11,448,640,476	7,106,276,555	3,996,881,858	5,267,965,133	15,930,488,507
CSlsetseg3	2,397,576,596	1,656,035,834	1,802,729,314	1,824,000,426	1,039,652,476
CSlsetseg4	1,688,789,944	1,713,210,363	5,145,388,381	3,097,177,641	3,660,273,803
CSlsetseg5	2,394,020,953	3,514,110,562	12,321,660,475	1,608,562,314	11,492,147,864
Cslsetsum	20,754,621,564	16,722,627,221	25,133,780,452	14,768,073,992	36,026,568,457
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	1,692,448,563	1,657,718,924	1,199,186,933	1,751,062,171	2,284,337,557
PSlsetseg2	6,392,365,521	3,978,499,586	2,684,809,928	3,110,382,818	8,983,665,280
PSlsetseg3	1,253,869,369	868,364,229	945,341,931	956,208,912	624,120,121
PSlsetseg4	1,070,476,683	1,048,627,623	2,843,813,345	1,823,826,827	2,239,376,249
PSlsetseg5	3,253,248,345	1,784,960,228	15,369,773,428	942,435,773	18,515,739,787
Pslsetsum	13,662,408,480	9,338,170,590	23,042,925,566	8,583,916,501	32,647,238,995

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-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	4,518,042,157	4,390,712,832	3,066,307,358	4,721,430,648	6,188,343,363
TSlsetseg2	17,841,005,997	11,084,776,141	6,681,691,786	8,378,347,952	24,914,153,787
TSlsetseg3	3,651,445,965	2,524,400,063	2,748,071,245	2,780,209,339	1,663,772,597
TSlsetseg4	2,759,266,627	2,761,837,985	7,989,201,726	4,921,004,468	5,899,650,053
TSlsetseg5	5,647,269,298	5,299,070,790	27,691,433,903	2,550,998,087	30,007,887,651
Tslsetsum	34,417,030,044	26,060,797,811	48,176,706,017	23,351,990,494	68,673,807,451
dwllset	313,034,046	5,211,960,826	(8,034,081,454)	4,295,081,325	(11,873,427,760)
surpluslset	254,836,639,419	246,480,407,186	309,468,971,642	284,644,256,119	322,324,198,076
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	139.73	181.19	201.52	162.83	120.93
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	219,384,833	241,025,723	206,866,259	290,797,827	230,746,091
taxrevlsetseg2	607,596,236	719,898,699	387,514,888	674,743,699	635,630,405
taxrevlsetseg3	108,175,594	128,892,799	152,337,066	135,791,810	29,178,690
taxrevlsetseg4	151,956,856	175,811,971	591,011,775	306,753,800	204,725,887
taxrevlsetseg5	292,726,424	119,090,053	455,779,982	141,201,567	427,366,143
taxrevlsetsum	1,379,839,944	1,384,719,245	1,793,509,970	1,549,288,704	1,527,647,217
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	342.60	390.13	411.44	369.83	318.71
taxc1	342.60	390.13	411.44	369.83	318.71
taxf1	342.60	390.13	411.44	369.83	318.71
taxg1	342.60	390.13	411.44	369.83	318.71
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	484.51	551.73	581.86	523.02	450.73
taxc2	484.51	551.73	581.86	523.02	450.73
taxf2	484.51	551.73	581.86	523.02	450.73

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taxg2	484.51	551.73	581.86	523.02	450.73
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	554.44	631.37	665.85	598.52	515.79
taxc3	554.44	631.37	665.85	598.52	515.79
taxf3	554.44	631.37	665.85	598.52	515.79
taxg3	554.44	631.37	665.85	598.52	515.79
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	554.44	631.37	665.85	598.52	515.79
taxc4	554.44	631.37	665.85	598.52	515.79
taxf4	554.44	631.37	665.85	598.52	515.79
taxg4	554.44	631.37	665.85	598.52	515.79
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	554.44	631.37	665.85	598.52	515.79
taxc5	554.4409721	631.3683579	665.8465797	598.5162966	515.7864036
taxf5	554.4409721	631.3683579	665.8465797	598.5162966	515.7864036
taxg5	554.4409721	631.3683579	665.8465797	598.5162966	515.7864036
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	12,507,469,053	13,356,085,611	2,211,730,645	18,614,453,745	9,744,009,442
pollution reduction 2	10,780,402,121	19,851,275,232	(22,250,655,147)	7,266,067,821	12,198,266,476
pollution reduction 3	3,410,128,422	4,977,703,457	5,749,099,989	4,641,158,344	(3,683,408,478)
pollution reduction 4	1,111,269,253	2,912,840,553	32,049,869,209	10,877,827,852	1,748,187,439
pollution reduction 5	12,190,731,151	(1,097,904,852)	22,239,955,189	(1,399,507,762)	19,992,945,092
Total reduction	40	40	39.99999989	40	39.99999997
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.00766	0.01923	0.00982	0.00453	0.01606
	91.95241842	230.7215925	117.8994575	54.30558824	192.7488696
FOC-PMET					
foc1p	5.30645E-12	6.12796E-05	4.28098E-05	-6.45604E-06	-5.28229E-07
foc2p	4.57492E-07	0.000170852	-7.18157E-06	-5.87963E-05	4.25858E-08
foc3p	4.09463E-10	0.0001522	6.92143E-08	-1.77821E-05	-2.54158E-08
foc4p	-1.30865E-06	-0.001729214	5.14807E-05	-1.52722E-05	-3.00716E-07
foc5p	3.44471E-11	6.07946E-05	4.32421E-05	-6.45601E-06	-5.35159E-07
foc6p	4.97666E-07	0.000168004	-7.12782E-06	-5.87958E-05	4.11814E-08
foc7p	3.29692E-11	0.0001522	6.90653E-08	-1.7782E-05	-2.53594E-08
foc8p	-1.42375E-06	-0.001730162	5.16815E-05	-1.52731E-05	-3.00778E-07
foc9p	1.69934E-11	6.15538E-05	4.30612E-05	-6.45602E-06	-5.41532E-07
foc10p	4.45143E-07	0.000173254	-7.24383E-06	-5.87962E-05	4.16589E-08
foc11p	-2.15496E-10	0.000152201	6.90126E-08	-1.77821E-05	-2.68897E-08
foc12p	-1.27322E-06	-0.001728668	5.18393E-05	-1.52722E-05	-3.04005E-07
foc13p	2.8958E-11	5.94965E-05	4.30523E-05	-6.45603E-06	-5.15774E-07
foc14p	5.12742E-07	0.000155448	-7.2461E-06	-5.87963E-05	4.36898E-08
foc15p	2.74801E-11	0.0001522	6.91026E-08	-1.77821E-05	-2.47469E-08
foc16p	-1.46649E-06	-0.0017327	5.18365E-05	-1.52721E-05	-2.97889E-07
foc17p	-7.63521E-10	0.000214214	-0.00012495	3.95188E-06	1.21615E-06
foc18p	-8.40714E-10	0.001123017	-0.000126315	-1.78121E-05	1.23308E-06
foc19p	-7.52379E-10	0.000214197	-0.000125679	3.95188E-06	1.24773E-06
foc20p	-7.57609E-10	0.00021463	-0.000125648	3.95192E-06	1.18658E-06

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PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	11,930.07	12,041.95	11,469.13	11,452.48	11,872.23
p1c1	11,930.07	12,041.95	11,469.13	11,452.48	11,872.23
p1f1	11,930.07	12,041.95	11,469.13	11,452.48	11,872.23
p1g1	11,930.07	12,041.95	11,469.13	11,452.48	11,872.23
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	16,929.22	17,134.42	16,172.47	16,110.24	16,930.09
p2c2	16,929.22	17,134.42	16,172.47	16,110.24	16,930.09
p2f2	16,929.22	17,134.42	16,172.47	16,110.24	16,930.09
p2g2	16,929.22	17,134.42	16,172.47	16,110.24	16,930.09
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	20,559.44	20,772.69	19,250.07	18,776.24	21,846.55
p3c3	20,559.44	20,772.69	19,250.07	18,776.24	21,846.55
p3f3	20,559.44	20,772.69	19,250.07	18,776.24	21,846.55
p3g3	20,559.44	20,772.69	19,250.07	18,776.24	21,846.55
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	14,584.45	14,574.29	13,809.94	13,927.98	15,703.90
p4c4	14,584.45	14,574.29	13,809.94	13,927.98	15,703.90
p4f4	14,584.45	14,574.29	13,809.94	13,927.98	15,703.90
p4g4	14,584.45	14,574.29	13,809.94	13,927.98	15,703.90
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	26,029.86	26,679.31	27,165.03	28,861.90	22,325.98
p5c5	26029.8628	26679.31457	27165.0292	28861.8991	22325.9802
p5f5	26029.8628	26679.31457	27165.0292	28861.8991	22325.9802
p5g5	26029.8628	26679.31457	27165.0292	28861.8991	22325.9802
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	15,837	15,837	9,976	17,677	4,295
dp/dgas2	26,293	26,293	28,048	43,740	8,613
dp/dgas3	22,168	22,168	104,671	51,257	119,493
dp/dgas4	22,247	8,391	8,023	37,792	8,283
dp/dgas5	117,696	3,958	158,282	12,167	112,580
sum of dpdgas	204,241	76,648	308,999	162,633	253,263
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,814	11,706	11,735	11,865	11,483
VMT2	11,796	11,677	11,776	11,878	11,484
VMT3	11,746	11,597	11,868	11,872	11,842
VMT4	11,746	11,346	11,522	11,850	11,398
VMT5	11,746	11,346	11,522	11,850	11,398

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TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.02016	0.03193	0.02876	0.01466	0.05605
tpmc1	0.02016	0.03193	0.02876	0.01466	0.05605
tpmf1	0.02016	0.03193	0.02876	0.01466	0.05605
tpmg1	0.02016	0.03193	0.02876	0.01466	0.05605
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.02213	0.03505	0.02426	0.01318	0.05597
tpmc2	0.02213	0.03505	0.02426	0.01318	0.05597
tpmf2	0.02213	0.03505	0.02426	0.01318	0.05597
tpmg2	0.02213	0.03505	0.02426	0.01318	0.05597
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.02758	0.04368	0.01437	0.01394	0.01720
tpmc3	0.02758	0.04368	0.01437	0.01394	0.01720
tpmf3	0.02758	0.04368	0.01437	0.01394	0.01720
tpmg3	0.02758	0.04368	0.01437	0.01394	0.01720
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.02753	0.07100	0.05191	0.01623	0.06532
tpmc4	0.02753	0.07100	0.05191	0.01623	0.06532
tpmf4	0.02753	0.07100	0.05191	0.01623	0.06532
tpmg4	0.02753	0.07100	0.05191	0.01623	0.06532
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.02753	0.07100	0.05191	0.01623	0.06532
tpmc5	0.027527738	0.070999068	0.051906021	0.016230905	0.065318058
tpmf5	0.027527738	0.070999068	0.051906021	0.016230905	0.065318058
tpmg5	0.027527738	0.070999068	0.051906021	0.016230905	0.065318058
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	5,036,041,838	4,956,935,743	5,784,233,317	5,925,280,477	5,880,588,049
cstravelpmetseg2	9,529,698,928	9,688,636,474	11,305,829,104	11,463,373,264	9,375,693,866
cstravelpmetseg3	1,517,384,330	1,518,531,316	1,843,070,313	1,841,146,094	1,866,916,196
cstravelpmetseg4	3,284,857,893	2,512,027,748	3,747,721,012	4,014,802,248	4,010,453,624
cstravelpmetseg5	1,948,860,082	1,790,948,166	2,254,974,297	2,355,855,941	2,210,356,824
cstravelpmetsum	21,316,843,072	20,467,079,447	24,935,828,044	25,600,458,025	23,344,008,560
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	2.63	1.66	2.93	3.24	3.49
epm_c1	2.63	1.66	2.93	3.24	3.49
epm_f1	2.63	1.66	2.93	3.24	3.49
epm_g1	2.63	1.66	2.93	3.24	3.49
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	2.89	1.82	2.47	2.91	3.48
epm_c2	2.89	1.82	2.47	2.91	3.48
epm_f2	2.89	1.82	2.47	2.91	3.48
epm_g2	2.89	1.82	2.47	2.91	3.48

QUARTER	9	9	10	10	11
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	3.60	2.27	1.46	3.08	1.07
epm_c3	3.60	2.27	1.46	3.08	1.07
epm_f3	3.60	2.27	1.46	3.08	1.07
epm_g3	3.60	2.27	1.46	3.08	1.07
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	3.59	3.69	5.28	3.59	4.07
epm_c4	3.59	3.69	5.28	3.59	4.07
epm_f4	3.59	3.69	5.28	3.59	4.07
epm_g4	3.59	3.69	5.28	3.59	4.07
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	3.59	3.69	5.28	3.59	4.07
epm_c5	3.592432512	3.692713835	5.283079892	3.586571184	4.066517724
epm_f5	3.592432512	3.692713835	5.283079892	3.586571184	4.066517724
epm_g5	3.592432512	3.692713835	5.283079892	3.586571184	4.066517724
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	267738.5173	263100.9864	349288.0795	341201.7145	361855.3275
Csub1n	40417.38707	35814.88805	77793.32146	67404.10612	69678.29981
Fsub1n	158187.0314	153544.9022	174020.8348	165746.2056	188626.0354
Gsub1n	156010.3141	151222.8173	209309.7703	200452.0317	192221.4058
Asub2n	288682.7399	80092.61846	292289.6232	300209.5675	313767.7492
Csub2n	199950.497	0	167924.4262	170625.0242	169893.5481
Fsub2n	236482.0867	27297.24017	227807.1697	236498.1176	242704.0731
Gsub2n	473775.065	270238.5548	548862.474	557959.5032	511136.6566
Asub3n	42872.19482	24059.70445	38798.1291	43284.43073	50350.62514
Csub3n	34352.22166	16159.20605	39390.81086	43913.75075	42915.75671
Fsub3n	61169.56152	42328.50726	66096.85674	70566.39278	65418.04608
Gsub3n	58457.31936	40281.47685	62038.37214	66506.2918	70156.69578
asub4n	83280.38601	256892.8699	124916.0641	103807.8845	119790.8481
Csub4n	34335.19183	200672.339	62903.21198	45330.16378	42978.86784
fsub4n	130445.8715	304555.5888	188447.3473	166465.9138	196204.4291
gsub4n	164318.643	333024.1555	225955.0218	203877.9363	211230.8274
asub5n	54471.9278	74738.20434	87858.28711	95177.71291	93984.50818
Csub5n	0	16926.97628	3448.511661	14531.6004	0
fsub5n	49070.05579	69429.30479	60608.03504	67637.35849	45463.35157
gsub5n	82660.67507	102878.7428	105349.9434	112839.272	109706.7003
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	622,353	603,684	810,412	774,804	812,381
tseg2n	1,198,890	377,628	1,236,884	1,265,292	1,237,502
tseg3n	196,851	122,829	206,324	224,271	228,841
tseg4n	412,380	1,095,145	602,222	519,482	570,205
tseg5n	186,203	263,973	257,265	290,186	249,155
tsumn	2,616,678	2,463,259	3,113,106	3,074,035	3,098,084
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	2,757,757,511	2,614,685,966	3,090,195,922	2,995,511,288	4,431,293,574
CSPMETseg2	10,851,719,298	1,944,923,360	7,325,480,096	5,112,408,235	13,948,181,186

QUARTER	9	9	10	10	11
CSPMETseg3	2,410,048,178	963,266,448	1,487,364,329	1,782,233,748	3,923,816,900
CSPMETseg4	2,521,901,103	6,768,968,515	3,611,188,057	3,133,040,732	5,246,752,625
CSPMETseg5	905,785,812	4,687,808,521	5,137,326,792	1,971,431,660	4,212,239,680
CsPMETsum	19,447,211,902	16,979,652,809	20,651,555,197	14,994,625,663	31,762,283,966
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	1,658,454,080	1,598,519,896	1,809,329,880	1,765,401,730	2,548,375,901
PSpmetseg2	6,093,736,662	1,391,301,585	4,340,839,575	3,032,149,791	7,991,118,388
PSpmetseg3	1,260,124,585	521,150,232	787,680,246	935,322,663	2,067,089,945
PSpmetseg4	1,487,582,309	3,582,951,292	2,081,292,109	1,841,630,223	3,033,702,968
PSpmetseg5	625,844,273	2,878,146,592	3,404,321,130	1,225,625,974	2,903,716,720
Pspmetsum	11,125,741,909	9,972,069,598	12,423,462,940	8,800,130,381	18,544,003,923
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	4,416,211,591	4,213,205,862	4,899,525,802	4,760,913,018	6,979,669,475
TSPMETseg2	16,945,455,960	3,336,224,945	11,666,319,670	8,144,558,026	21,939,299,575
TSPMETseg3	3,670,172,762	1,484,416,680	2,275,044,576	2,717,556,411	5,990,906,845
TSPMETseg4	4,009,483,412	10,351,919,808	5,692,480,166	4,974,670,955	8,280,455,594
TSPMETseg5	1,531,630,085	7,565,955,113	8,541,647,922	3,197,057,634	7,115,956,401
TSPMETsum	30,572,953,810	26,951,722,407	33,075,018,137	23,794,756,044	50,306,287,889
dwlpmet	4,194,298,364	4,195,989,838	7,075,109,316	3,865,521,763	6,572,560,586
pmetsurplus	250,620,682,335	248,621,795,696	294,292,254,868	284,954,961,786	303,171,990,673
pmetsurplus10	58,769,094,692	64,418,080,674	69,869,802,476	54,550,839,562	93,075,913,636
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	148,230,090	225,664,904	273,536,637	134,811,100	522,893,382
taxrevpmetseg2	271,284,384	169,212,097	327,606,958	181,987,345	731,059,810
taxrevpmetseg3	63,761,803	62,224,647	35,186,480	37,106,297	46,600,085
taxrevpmetseg4	133,342,769	882,174,502	360,153,947	99,918,693	424,515,950
taxrevpmetseg5	71,310,735	360,651,733	189,411,608	61,739,115	217,492,491
taxrevpmetsum	687,929,781	1,699,927,882	1,185,895,630	515,562,549	1,942,561,719
pmetrev10	6,879,297,810	16,999,278,820	11,858,956,295	5,155,625,494	19,425,617,187
SALES LOST AS RESULT OF PMET-					
lostsales1	41,383	60,052	(34,622)	986	8,770
lostsales2	61,312	882,574	255,921	227,513	66,695
lostsales3	5,624	79,646	34,118	16,171	16,129
lostsales4	25,334	(657,431)	(75,457)	7,283	(1,094)
lostsales5	71,041	(6,729)	51,474	18,553	58,141
lostsum	204,693	358,112	231,435	270,506	148,641
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	319.2759719	505.7417162	286.9329735	259.2215325	240.7179029
taxc1p	319.2759719	505.7417162	286.9329735	259.2215325	240.7179029
taxf1p	319.2759719	505.7417162	286.9329735	259.2215325	240.7179029
taxg1p	319.2759719	505.7417162	286.9329735	259.2215325	240.7179029
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	581.7935227	921.5765685	680.4091344	576.667679	482.0983748
taxc2p	581.7935227	921.5765685	680.4091344	576.667679	482.0983748
taxf2p	581.7935227	921.5765685	680.4091344	576.667679	482.0983748
taxg2p	581.7935227	921.5765685	680.4091344	576.667679	482.0983748
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	9	9	10	10	11
taxa3p	611.3176731	968.3436158	1504.142903	714.3628979	2054.886847
taxc3p	611.3176731	968.3436158	1504.142903	714.3628979	2054.886847
taxf3p	611.3176731	968.3436158	1504.142903	714.3628979	2054.886847
taxg3p	611.3176731	968.3436158	1504.142903	714.3628979	2054.886847
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	612.3984215	595.7678007	416.4237613	613.3992293	541.0034209
taxc4p	612.3984215	595.7678007	416.4237613	613.3992293	541.0034209
taxf4p	612.3984215	595.7678007	416.4237613	613.3992293	541.0034209
taxg4p	612.3984215	595.7678007	416.4237613	613.3992293	541.0034209
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	612.3984215	595.7678007	416.4237613	613.3992293	541.0034209
taxc5p	612.3984215	595.7678007	416.4237613	613.3992293	541.0034209
taxf5p	612.3984215	595.7678007	416.4237613	613.3992293	541.0034209
taxg5p	612.3984215	595.7678007	416.4237613	613.3992293	541.0034209
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	10383482642	16310579945	14374789377	9221638762	8042852055
pollution reduction 2p	17158790497	-23955906818	16239319701	10975150454	10204692808
pollution reduction 3p	4536156298	2958850779	9217229595	6214327109	11815231521
pollution reduction 4p	9207537295	42175364041	4900529068	12031803952	11230619942
pollution reduction 5p	-1285966732	2511220733	-473186773(	1557082954	-129339632(
Total reductionp	40	40.00010868	40.00000001	40.00000323	40
DIFFERENCE-					
Tsdiff	(4,216)	(2,141)	(15,177)	(311)	(19,152)

QUARTER	11	12	12	13	13
COEFFICIENTS OF DEMAND					
a P1/q1	-0.005624632	-0.010149869	-0.010605844	-0.009391364	-0.002354711
b p2/q1	-0.003424679	-0.004773291	-0.005271543	-0.004267951	-1E-08
c p3/q1	-0.005624632	-1E-08	-0.010605844	2.0207E-17	-0.001405813
d p4/q1	-0.0016966	-0.003331593	-0.001722584	-1E-08	-0.002047257
f P1/q2	-0.003424679	-0.004773291	-0.005271543	-0.004267951	-1E-08
g p2/q2	-0.003424679	-0.01409087	-0.006001555	-0.013924007	-0.010041584
h p3/q2	-0.001589984	-0.007661137	-0.002614083	2.34402E-17	-0.004460493
i p4/q2	-0.003423907	-0.001187829	-0.005644588	-0.010916061	-0.005747599
k P1/q3	-0.005624632	-1E-08	-0.010605844	-8.00802E-18	-0.001405813
l p2/q3	-0.001589984	-0.007661137	-0.002614083	-8.16202E-18	-0.004460493
m p3/q3	-0.046540965	-0.128112219	-0.08769157	-0.104678299	-0.090482399
n p4/q3	-0.008189108	-0.014365099	-0.009791468	-0.010916061	-0.006083901
p P1/q4	-0.0016966	-0.003331593	-0.001722584	-1E-08	-0.002047257
q p2/q4	-0.003423907	-0.001187829	-0.005644588	-0.010916061	-0.005747599
r p3/q4	-0.008189108	-0.014365099	-0.009791468	-0.010916061	-0.006083901
s p4/q4	-0.008189108	-0.014365099	-0.009791468	-0.010916061	-0.006083901
u P1/q5	-0.000361385	-0.004442115	-0.003743268	9.6856E-18	-0.001362791
v p2/q5	-0.003424679	-1E-08	-0.006001555	-0.000732806	-0.006116838
w p3/q5	-0.004582583	-1E-08	-0.011180292	-0.014934405	-0.005087302
x p4/q5	-0.003992625	-0.004396116	-0.009791468	-1E-08	-0.005978884
y p5/q5	-0.059558257	-0.031508313	-0.011180292	-0.220822429	-0.006116838
e p5/q1	-0.000361385	-0.004442115	-0.003743268	0	-0.001362791
j p5/q2	-0.003424679	-0.00000001	-0.006001555	-0.000732806	-0.006116838
o p5/q3	-0.004582583	-0.00000001	-0.011180292	-0.014934405	-0.005087302
t p5/q4	-0.003992625	-0.004396116	-0.009791468	-1E-08	-0.005978884
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.005624632	-0.010149869	-0.010605844	-0.009391364	-0.002354711
bb	-0.003424679	-0.004773291	-0.005271543	-0.004267951	-1E-08
cc	-0.005624632	-1E-08	-0.010605844	-0.00000001	-0.001405813
dd	-0.0016966	-0.003331593	-0.001722584	-1E-08	-0.002047257
ee	-0.000361385	-0.004442115	-0.003743268	-0.00000001	-0.001362791
ff	-0.003424679	-0.004773291	-0.005271543	-0.004267951	-1E-08
gg	-0.003424679	-0.01409087	-0.006001555	-0.013924007	-0.010041584
hh	-0.001589984	-0.007661137	-0.002614083	-0.00000001	-0.004460493
ii	-0.003423907	-0.001187829	-0.005644588	-0.010916061	-0.005747599
jj	-0.003424679	-0.00000001	-0.006001555	-0.000732806	-0.006116838
kk	-0.005624632	-1E-08	-0.010605844	-8.00802E-18	-0.001405813
ll	-0.001589984	-0.007661137	-0.002614083	-8.16202E-18	-0.004460493
mm	-0.046540965	-0.128112219	-0.08769157	-0.104678299	-0.090482399
nn	-0.008189108	-0.014365099	-0.009791468	-0.010916061	-0.006083901
oo	-0.004582583	-0.00000001	-0.011180292	-0.014934405	-0.005087302
pp	-0.0016966	-0.003331593	-0.001722584	-1E-08	-0.002047257
qq	-0.003423907	-0.001187829	-0.005644588	-0.010916061	-0.005747599
rr	-0.008189108	-0.014365099	-0.009791468	-0.010916061	-0.006083901
ss	-0.008189108	-0.014365099	-0.009791468	-0.010916061	-0.006083901
tt	-0.003992625	-0.004396116	-0.009791468	-1E-08	-0.005978884
uu	-0.000361385	-0.004442115	-0.003743268	-0.00000001	-0.001362791
vv	-0.003424679	-1E-08	-0.006001555	-0.000732806	-0.006116838
ww	-0.004582583	-1E-08	-0.011180292	-0.014934405	-0.005087302
xx	-0.003992625	-0.004396116	-0.009791468	-1E-08	-0.005978884
yy	-0.059558257	-0.031508313	-0.011180292	-0.220822429	-0.006116838
KNOWN PRICE BEFORE TAXES					
P1	11,725	13,548	13,548	11,828	11,828
P2	16,631	16,725	16,725	17,799	17,799
P3	20,621	22,112	22,112	20,462	20,462
P4	15,384	14,394	14,394	16,150	16,150
P5	23,362	27,524	27,524	31,004	31,004

QUARTER	11	12	12	13	13
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	364548	276245	276245	267700	267700
Csub1	69817	59560	59560	56644	56644
Fsub1	188904	158917	158917	166464	166464
Gsub1	197882	159493	159493	175133	175133
Asub2	329887	296755	296755	306972	306972
Csub2	188374	211477	211477	204165	204165
Fsub2	261875	246277	246277	271186	271186
Gsub2	524061	480433	480433	509372	509372
Asub3	54273	47055	47055	38724	38724
Csub3	47448	45403	45403	54144	54144
Fsub3	69684	72294	72294	76858	76858
Gsub3	73565	56916	56916	61248	61248
asub4	120260	93512	93512	88429	88429
Csub4	40712	44804	44804	52202	52202
fsub4	193441	168301	168301	152379	152379
gsub4	214698	180532	180532	174908	174908
asub5	108634	106221	106221	95924	95924
Csub5	13918	18299	18299	14790	14790
fsub5	60180	55662	55662	60482	60482
gsub5	124564	110280	110280	98309	98309
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	821,151	654,215	654,215	665,941	665,941
tseg2	1,304,197	1,234,942	1,234,942	1,291,695	1,291,695
tseg3	244,970	221,668	221,668	230,974	230,974
tseg4	569,111	487,149	487,149	467,918	467,918
tseg5	307,296	290,462	290,462	269,505	269,505
tsum	3,246,725	2,888,436	2,888,436	2,926,033	2,926,033
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	2.54	2.04	1.95	1.89	7.54
Elasiticity21	3.60	0.85	2.12	0.87	0.00
Elasiticity31	0.54	0.00	0.39	0.00	0.20
Elasiticity41	0.69	0.50	0.36	0.00	3.47
Elasiticity51	0.03	0.58	1.33	0.00	4.41
Elasiticity12	1.60	0.37	0.91	0.30	0.00
Elasiticity22	3.72	0.96	2.26	0.99	1.37
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	1.44	0.07	1.12	0.90	1.18
Elasiticity52	0.30	0.00	1.99	0.01	2.39
Elasiticity13	1.03	0.00	0.70	0.00	0.34
Elasiticity23	0.68	0.32	0.37	0.00	0.38
Elasiticity33	1.81	0.78	1.14	0.85	0.98
Elasiticity43	1.35	0.51	0.74	0.67	0.77
Elasiticity53	0.16	0.00	1.42	0.09	1.23
Elasiticity14	0.76	0.64	0.46	0.00	3.61
Elasiticity24	3.57	0.20	3.30	2.73	3.58
Elasiticity34	0.78	0.35	0.52	0.42	0.48
Elasiticity44	3.30	2.06	3.02	3.16	5.67
Elasiticity54	0.34	0.55	5.05	0.00	10.65
Elasiticity15	0.04	0.65	1.47	0.00	4.15
Elasiticity25	0.91	0.00	5.15	0.02	6.58
Elasiticity35	0.11	0.00	0.87	0.05	0.70
Elasiticity45	0.41	0.48	4.43	0.00	9.63
Elasiticity55	1.28	3.01	8.48	0.52	18.81
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	11	12	12	13	13
MCasub1	8,000	8,548	8,000	8,000	10,828
MCcsub1	10,347	11,706	11,176	10,420	11,487
MCfsub1	9,028	9,954	9,302	9,099	10,924
MCgsub1	8,000	8,548	8,000	8,000	10,828
MCasub2	13,404	10,755	12,201	11,358	13,460
MCcsub2	15,494	13,062	14,663	14,142	15,126
MCfsub2	14,123	11,747	12,941	11,621	13,505
MCgsub2	12,906	8,548	11,177	8,000	10,828
MCasub3	14,028	12,470	12,182	14,003	14,179
MCcsub3	17,314	14,034	16,306	14,003	14,179
MCfsub3	14,028	8,548	11,177	9,849	10,828
MCgsub3	12,906	8,548	11,177	10,663	10,828
MCasub4	11,767	10,636	9,827	11,409	12,489
MCcsub4	13,837	12,569	12,036	12,756	14,121
MCfsub4	11,767	9,869	9,827	10,676	12,483
MCgsub4	10,384	9,394	8,000	8,000	10,828
MCasub5	14,912	22,524	22,067	9,011	27,441
MCcsub5	21,493	26,474	24,870	26,779	28,998
MCfsub5	17,742	24,302	22,352	16,297	27,441
MCgsub5	12,906	22,524	20,386	8,000	25,682
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.000361385	-0.004442115	-0.003743268	0	-0.001362791
j	-0.003424679	-0.00000001	-0.006001555	-0.000732806	-0.006116838
o	-0.004582583	-0.00000001	-0.011180292	-0.014934405	-0.005087302
t	-0.003992625	-0.004396116	-0.009791468	-1E-08	-0.005978884
y	-0.059558257	-0.031508313	-0.011180292	-0.220822429	-0.006116838
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	3724.899225	5000	5548.30814	3827.702564	1000
XMCcsub1	1378.126047	1842.633261	2371.854085	1407.358266	340.9010707
XMCfsub1	2697.296493	3594.519992	4246.754556	2729.170627	903.3954003
XMCgsub1	3724.899225	5000	5548.30814	3827.702564	1000
XMCasub2	3226.723507	5970.753742	4524.079692	6441.18544	4338.903512
XMCcsub2	1137.260358	3663.419717	2062.370393	3656.753924	2673.061283
XMCfsub2	2507.868028	4978.703278	3784.25686	6177.592324	4294.3056
XMCgsub2	3724.899225	8177.080169	5548.30814	9798.974537	6971.271973
XMCasub3	6592.786856	9642.817255	9930.90365	6458.919542	6282.946323
XMCcsub3	3306.985925	8078.58601	5806.169587	6458.919542	6282.946323
XMCfsub3	6592.786856	13564.11078	10935.33875	10613.8315	9634.700033
XMCgsub3	7714.747974	13564.11078	10935.33875	9798.974537	9634.700033
XMCasub4	3617.061078	3758.859517	4567.802067	4741.305474	3660.962501
XMCcsub4	1547.14422	1825.617301	2358.848774	3394.462475	2029.69592
XMCfsub4	3617.061078	4525.387853	4567.802067	5473.916895	3667.086529
XMCgsub4	5000	5000	6394.389474	8150.22093	5322.518366
XMCasub5	8450.237265	5000	5457.780409	21993.14701	3563.150229
XMCcsub5	1868.662896	1050.172203	2654.108207	4225.475047	2005.981455
XMCfsub5	5620.119645	3222.823175	5172.51289	14707.87392	3563.150229
XMCgsub5	10455.84082	5000	7138.306668	23004.38095	5322.518366
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	23,264	28,996	31,274	23,595	15,046
constant2	27,300	39,526	32,658	43,932	36,138
constant3	44,783	66,970	59,735	53,773	52,277
constant4	29,136	29,500	32,276	37,880	30,801
constant5	49,822	41,724	47,881	94,913	45,434

QUARTER	11	12	12	13	13
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	7,438,618,907	7,912,884,604	9,032,052,208	6,147,120,691	1,684,040,023
TSseg2	10,844,815,034	21,780,244,843	15,214,253,421	26,268,435,339	18,437,295,029
TSseg3	4,501,172,604	7,544,877,308	6,313,724,775	5,862,703,289	5,588,277,277
TSseg4	6,184,396,778	5,776,920,278	6,811,608,098	7,939,898,885	5,347,120,174
TSseg5	6,650,167,290	3,343,339,390	4,659,766,096	13,935,131,810	3,054,670,660
Tssum	35,619,170,613	46,358,266,423	42,031,404,597	60,153,290,014	34,111,403,164
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	4,737,877,113	5,053,217,033	5,798,294,393	3,918,060,620	1,071,514,211
CSseg2	6,957,308,262	14,078,985,540	9,838,000,497	16,877,990,787	11,844,101,277
CSseg3	2,959,505,221	4,971,723,748	4,169,853,466	3,846,950,895	3,674,182,736
CSseg4	3,913,243,766	3,679,339,549	4,355,620,354	5,083,783,428	3,427,692,714
CSseg5	4,065,536,008	2,062,228,505	2,956,342,805	8,611,867,083	1,944,452,662
Cssum	22,633,470,369	29,845,494,375	27,118,111,515	38,338,652,813	21,961,943,600
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	2,700,741,794	2,859,667,571	3,233,757,815	2,229,060,070	612,525,812
PSseg2	3,887,506,773	7,701,259,302	5,376,252,924	9,390,444,552	6,593,193,752
PSseg3	1,541,667,383	2,573,153,560	2,143,871,309	2,015,752,394	1,914,094,542
PSseg4	2,271,153,013	2,097,580,730	2,455,987,743	2,856,115,457	1,919,427,460
PSseg5	2,584,631,281	1,281,110,885	1,703,423,291	5,323,264,727	1,110,217,999
Pssum	12,985,700,244	16,512,772,048	14,913,293,082	21,814,637,200	12,149,459,564
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	6,415,242,188	5,111,054,688	5,111,054,688	5,202,664,063	5,202,664,063
CStravseg2	10,189,039,063	9,647,984,375	9,647,984,375	10,091,367,188	10,091,367,188
CStravseg3	1,913,828,125	1,731,781,250	1,731,781,250	1,804,484,375	1,804,484,375
CStravseg4	4,446,179,688	3,805,851,563	3,805,851,563	3,655,609,375	3,655,609,375
CStravseg5	2,400,750,000	2,269,234,375	2,269,234,375	2,105,507,813	2,105,507,813
Cstravsum	25,365,039,063	22,565,906,250	22,565,906,250	22,859,632,813	22,859,632,813
FIRST ORDER CONDITIONS					
foc1l	3.61141E-05	0.000363032	4.299E-05	4.51887E-06	3.91164E-06
foc2l	-0.000104518	9.46009E-05	-1.27087E-05	6.06747E-06	-2.93309E-06
foc3l	-0.000756744	-6.62501E-05	0.000143854	7.31201E-06	2.65342E-05
foc4l	-7.86428E-05	0.000822753	1.02271E-05	7.31296E-06	-5.11133E-06
foc5l	2.77455E-05	0.000361489	4.05879E-05	4.5189E-06	3.53503E-06
foc6l	-7.47807E-05	9.5437E-05	-1.29524E-05	6.06738E-06	-7.32118E-06
foc7l	-0.000479133	-6.58002E-05	0.000125278	7.31208E-06	3.05722E-05
foc8l	-4.33848E-05	0.000822094	1.27166E-05	7.31291E-06	4.39667E-06
foc9l	2.98601E-05	0.000361069	5.39689E-05	4.51893E-06	4.95539E-06
foc10l	-8.21469E-05	9.62856E-05	-1.92755E-05	6.06724E-06	-1.26578E-05
foc11l	-0.000546459	-6.53448E-05	0.000153523	7.31209E-06	4.69686E-05
foc12l	-5.18371E-05	0.000820771	2.31624E-05	7.31284E-06	1.01859E-05
foc13l	3.97624E-05	0.000361649	5.42509E-05	4.51891E-06	5.91304E-06
foc14l	-0.000117044	9.59327E-05	-1.95133E-05	6.06731E-06	-1.34143E-05
foc15l	-0.000871106	-6.54901E-05	0.000153848	7.31214E-06	5.39199E-05
foc16l	-9.28979E-05	0.000821081	2.35762E-05	7.31289E-06	8.68549E-06
foc17l	0.00096409	-0.000559165	0.000169372	8.66723E-06	1.0577E-06
foc18l	0.000627678	-0.000559716	0.000154981	8.66725E-06	5.036E-06
foc19l	0.000709844	-0.000560883	0.000197838	8.66744E-06	9.63704E-06
foc20l	0.001103114	-0.000560606	0.00019889	8.66752E-06	1.01914E-05
		0.00261294			

QUARTER	11	12	12	13	13
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	12303.00109	14096.41807	14150.75587	12358.14128	12519.80478
p1c1l	12303.00109	14096.41807	14150.75587	12358.14128	12519.80478
p1f1l	12303.00109	14096.41807	14150.75587	12358.14128	12519.80478
p1g1l	12303.00109	14096.41807	14150.75587	12358.14128	12519.80478
p2a2l	17458.79957	17499.63044	17577.08527	18567.90006	18797.44156
p2c2l	17458.79957	17499.63044	17577.08527	18567.90006	18797.44156
p2f2l	17458.79957	17499.63044	17577.08527	18567.90006	18797.44156
p2g2l	17458.79957	17499.63044	17577.08527	18567.90006	18797.44156
p3a3l	21542.57524	22997.4327	23086.86622	21324.91779	21586.83977
p3c3l	21542.57524	22997.4327	23086.86622	21324.91779	21586.83977
p3f3l	21542.57524	22997.4327	23086.86622	21324.91779	21586.83977
p3g3l	21542.57524	22997.4327	23086.86622	21324.91779	21586.83977
p4a4l	16308.92006	15276.99887	15364.53336	17010.62281	17272.89189
p4c4l	16308.92006	15276.99887	15364.53336	17010.62281	17272.89189
p4f4l	16308.92006	15276.99887	15364.53336	17010.62281	17272.89189
p4g4l	16308.92006	15276.99887	15364.53336	17010.62281	17272.89189
p5a5l	23436.33162	32239.02038	28495.0091	37983.44267	32172.49618
p5c5l	23436.33162	32239.02038	28495.0091	37983.44267	32172.49618
p5f5l	23436.33162	32239.02038	28495.0091	37983.44267	32172.49618
p5g5l	23436.33162	32239.02038	28495.0091	37983.44267	32172.49618
lemp_a1	2.34	2.46	2.24	2.51	1.93
lemp_c1	2.34	2.46	2.24	2.51	1.93
lemp_f1	2.34	2.46	2.24	2.51	1.93
lemp_g1	2.34	2.46	2.24	2.51	1.93
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	3.30	3.48	3.17	3.55	2.73
lemp_c2	3.30	3.48	3.17	3.55	2.73
lemp_f2	3.30	3.48	3.17	3.55	2.73
lemp_g2	3.30	3.48	3.17	3.55	2.73
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	3.78	3.98	3.62	4.06	3.12
lemp_c3	3.78	3.98	3.62	4.06	3.12
lemp_f3	3.78	3.98	3.62	4.06	3.12
lemp_g3	3.78	3.98	3.62	4.06	3.12
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	3.78	3.98	3.62	4.06	3.12
lemp_c4	3.78	3.98	3.62	4.06	3.12
lemp_f4	3.78	3.98	3.62	4.06	3.12
lemp_g4	3.78	3.98	3.62	4.06	3.12
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	3.78	3.98	3.62	4.06	3.12
lemp_c5	3.781224451	3.984328948	3.623281712	4.062284357	3.119023568
lemp_f5	3.781224451	3.984328948	3.623281712	4.062284357	3.119023568
lemp_g5	3.781224451	3.984328948	3.623281712	4.062284357	3.119023568

QUARTER	11	12	12	13	13
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	460684.3081	216340.4919	238130.7854	306798.2425	132369.0183
Csub1nl	104711.4165	0	47771.61461	93643.53151	0
Fsub1nl	239246.3443	99186.6851	149783.5018	170216.2036	133458.5899
Gsub1nl	320517.7906	99607.16472	151055.738	167377.023	115848.6376
Asub2nl	133468.3112	305716.2955	328822.6683	189224.5055	264683.7539
Csub2nl	95116.37106	220252.5664	200922.2536	91160.95968	180678.515
Fsub2nl	141710.7505	254959.2791	228876.6318	232373.9957	249490.5692
Gsub2nl	282286.4722	489127.0951	461564.371	496012.3802	479391.4848
Asub3nl	35190.4517	49807.42194	51714.16264	20576.70208	36130.18626
Csub3nl	39627.05256	48175.62904	45859.2516	36459.39451	53834.9661
Fsub3nl	59055.28806	75054.17323	72069.69959	67887.36724	77232.0124
Gsub3nl	49591.81659	59679.18761	56564.77857	55366.89164	60939.71203
asub4nl	178109.7384	48758.91809	0	204136.4597	223677.7792
Csub4nl	58706.59028	0	0	162935.8006	0
fsub4nl	221740.766	123644.2398	124330.9827	180789.6324	40875.58894
gsub4nl	290969.8083	135877.4502	137941.3977	174842.9266	122658.3677
asub5nl	98478.14539	235965.1437	158398.2155	124276.8084	0
Csub5nl	0	147910.0422	45874.69847	43066.72165	62833.58635
fsub5nl	47068.2186	185630.1592	86871.28191	87942.41182	159445.9467
gsub5nl	115772.1307	240267.4295	140950.9687	125485.2343	154707.2804
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	1,125,160	415,134	586,742	738,035	381,676
tseg2nl	652,582	1,270,055	1,220,186	1,008,772	1,174,244
tseg3nl	183,465	232,716	226,208	180,290	228,137
tseg4nl	749,527	308,281	262,272	722,705	387,212
tseg5nl	261,318	809,773	432,095	380,771	376,987
tsumnl	2,972,052	3,035,959	2,727,503	3,030,573	2,548,256
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	(304,009)	239,081	67,473	(72,094)	284,265
lostsales2l	651,615	(35,113)	14,756	282,923	117,451
lostsales3l	61,505	(11,048)	(4,540)	50,684	2,837
lostsales4l	(180,416)	178,868	224,877	(254,787)	80,706
lostsales5l	45,978	(519,311)	(141,633)	(111,266)	(107,482)
lostsuml	274,673	(147,523)	160,933	(104,540)	377,777
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	6,166,718,950	3,092,766,339	5,023,538,773	4,146,484,154	482,046,269
CSlsetseg2	3,211,075,918	13,987,629,685	9,200,833,871	12,793,327,402	10,180,923,906
CSlsetseg3	2,131,885,781	5,116,546,580	4,145,040,709	2,925,045,891	3,500,788,850
CSlsetseg4	4,807,106,025	2,192,336,464	2,217,767,765	7,541,054,622	2,619,130,292
CSlsetseg5	3,447,510,979	3,840,384,537	4,188,212,144	10,838,596,771	2,499,741,593
Cslsetsum	19,764,297,654	28,229,663,604	24,775,393,262	38,244,508,840	19,282,630,911
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	3,540,953,453	1,880,527,012	2,821,932,209	2,308,868,013	300,238,944
PSlsetseg2	1,822,443,827	7,658,921,317	5,073,402,764	7,668,964,617	5,769,646,035
PSlsetseg3	1,090,623,259	2,645,975,397	2,132,224,431	1,591,699,880	1,831,182,712
PSlsetseg4	2,813,155,786	1,353,852,233	1,385,916,910	3,774,618,802	1,510,094,286
PSlsetseg5	2,022,588,224	6,058,209,625	2,336,396,383	9,340,370,686	1,426,154,741
Pslsetsum	11,289,764,549	19,597,485,585	13,749,872,697	24,684,521,998	10,837,316,719

QUARTER	11	12	12	13	13
-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	9,707,672,404	4,973,293,351	7,845,470,982	6,455,352,166	782,285,214
TSlsetseg2	5,033,519,745	21,646,551,002	14,274,236,635	20,462,292,020	15,950,569,941
TSlsetseg3	3,222,509,040	7,762,521,977	6,277,265,139	4,516,745,770	5,331,971,562
TSlsetseg4	7,620,261,811	3,546,188,697	3,603,684,675	11,315,673,424	4,129,224,578
TSlsetseg5	5,470,099,204	9,898,594,162	6,524,608,527	20,178,967,457	3,925,896,334
Tslsetsum	31,054,062,203	47,827,149,189	38,525,265,959	62,929,030,837	30,119,947,629
dwllset	4,565,108,410	(1,468,882,766)	3,506,138,638	(2,775,740,824)	3,991,455,534
surpluslset	284,704,452,828	273,486,211,689	264,184,328,459	291,525,358,962	258,716,275,754
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	153.87	138.58	167.58	133.32	226.14
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	404,513,254	141,639,524	220,138,393	246,977,631	166,351,783
taxrevlsetseg2	331,794,017	612,820,668	647,425,633	477,406,812	723,778,693
taxrevlsetseg3	106,743,766	128,497,449	137,349,895	97,639,345	160,916,107
taxrevlsetseg4	436,091,326	170,221,221	159,247,688	391,393,232	273,119,391
taxrevlsetseg5	152,040,879	447,126,763	262,361,427	206,213,183	265,907,253
taxrevlsetsum	1,431,183,243	1,500,305,624	1,426,523,037	1,419,630,203	1,590,073,227
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	359.52	341.19	375.19	334.64	435.85
taxc1	359.52	341.19	375.19	334.64	435.85
taxf1	359.52	341.19	375.19	334.64	435.85
taxg1	359.52	341.19	375.19	334.64	435.85
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	508.43	482.51	530.60	473.26	616.38
taxc2	508.43	482.51	530.60	473.26	616.38
taxf2	508.43	482.51	530.60	473.26	616.38

QUARTER	11	12	12	13	13
taxg2	508.43	482.51	530.60	473.26	616.38
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	581.82	552.16	607.18	541.57	705.35
taxc3	581.82	552.16	607.18	541.57	705.35
taxf3	581.82	552.16	607.18	541.57	705.35
taxg3	581.82	552.16	607.18	541.57	705.35
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	581.82	552.16	607.18	541.57	705.35
taxc4	581.82	552.16	607.18	541.57	705.35
taxf4	581.82	552.16	607.18	541.57	705.35
taxg4	581.82	552.16	607.18	541.57	705.35
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	581.82	552.16	607.18	541.57	705.35
taxc5	581.822113	552.1632447	607.1843634	541.567208	705.3489505
taxf5	581.822113	552.1632447	607.1843634	541.567208	705.3489505
taxg5	581.822113	552.1632447	607.1843634	541.567208	705.3489505
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	37,199,940,64	(809,423,481)	11,136,119,077	17,820,997,60	(847,609,006)
pollution reduction 2	(18,789,525,232)	12,336,979,903	14,552,044,502	(3,333,879,002)	16,124,637,627
pollution reduction 3	2,307,884,42	4,497,820,228	5,203,299,279	1,894,067,703	6,450,171,366
pollution reduction 4	19,789,203,84	1,314,182,514	509,497,604	18,583,411,948	9,126,353,869
pollution reduction 5	(507,503,655)	22,660,441,231	8,599,039,521	5,035,398,342	9,146,446,139
Total reduction	40.00000001	40.0000003	39.99999998	39.99999659	39.99999999
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.01324	0.00767	0.01036	0.00761	0.00467
	158.8450931	92.00427087	124.2997527	91.29566362	55.98600638
FOC-PMET					
foc1p	0.000207402	-0.000196038	0.000309107	1.87941E-09	-0.000129368
foc2p	-9.82566E-05	-5.60701E-06	4.67028E-05	8.31901E-09	-4.91356E-05
foc3p	-0.000250571	2.77354E-06	0.001051662	3.03362E-09	-0.000776258
foc4p	0.000292414	0.000135346	1.17836E-05	1.64654E-08	-0.000120466
foc5p	0.000208246	-0.000195417	0.000306935	1.88123E-09	-0.000129422
foc6p	-8.105E-05	-1.25253E-06	4.2077E-05	8.28702E-09	-5.16912E-05
foc7p	-0.000145166	4.23849E-06	0.001005971	3.03817E-09	-0.000772911
foc8p	0.000295501	0.000139992	2.51806E-05	1.64661E-08	-0.000115441
foc9p	0.000201009	-0.000198003	0.000320141	1.88123E-09	-0.000128322
foc10p	-7.58908E-05	-3.92273E-06	4.01164E-05	8.27077E-09	-5.88651E-05
foc11p	-4.05636E-05	3.69169E-06	0.001061411	3.04021E-09	-0.000755799
foc12p	0.000319163	0.000133362	2.4751E-05	1.64648E-08	-0.00010516
foc13p	0.000210899	-0.000197425	0.000320448	1.88305E-09	-0.000127366
foc14p	-0.000110709	-4.27524E-06	3.98753E-05	8.25958E-09	-5.96201E-05
foc15p	-0.000364839	3.53706E-06	0.00106175	3.03612E-09	-0.000748866
foc16p	0.000278117	0.000133669	2.51724E-05	1.64683E-08	-0.000106663
foc17p	0.0005168	0.000107749	0.000176414	-1.34861E-06	-4.68827E-05
foc18p	0.000245896	8.39951E-05	0.000153399	-1.35512E-06	-4.36969E-05
foc19p	0.000262608	0.000106029	0.000205052	-1.34838E-06	-3.82959E-05
foc20p	0.000656027	0.00010631	0.000206056	-1.34831E-06	-3.77454E-05

QUARTER	11	12	12	13	13
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	11,952.66	13,696.78	13,735.27	12,049.78	11,977.26
p1c1	11,952.66	13,696.78	13,735.27	12,049.78	11,977.26
p1f1	11,952.66	13,696.78	13,735.27	12,049.78	11,977.26
p1g1	11,952.66	13,696.78	13,735.27	12,049.78	11,977.26
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	16,907.90	17,034.57	17,084.93	18,191.28	18,182.99
p2c2	16,907.90	17,034.57	17,084.93	18,191.28	18,182.99
p2f2	16,907.90	17,034.57	17,084.93	18,191.28	18,182.99
p2g2	16,907.90	17,034.57	17,084.93	18,191.28	18,182.99
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	20,933.98	22,908.34	22,445.50	20,828.98	20,867.14
p3c3	20,933.98	22,908.34	22,445.50	20,828.98	20,867.14
p3f3	20,933.98	22,908.34	22,445.50	20,828.98	20,867.14
p3g3	20,933.98	22,908.34	22,445.50	20,828.98	20,867.14
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	15,698.97	14,806.89	14,743.46	16,392.80	16,519.07
p4c4	15,698.97	14,806.89	14,743.46	16,392.80	16,519.07
p4f4	15,698.97	14,806.89	14,743.46	16,392.80	16,519.07
p4g4	15,698.97	14,806.89	14,743.46	16,392.80	16,519.07
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	23,700.60	27,435.58	27,947.77	30,173.44	31,388.87
p5c5	23700.59533	27435.58253	27947.77048	30173.4421	31388.86609
p5f5	23700.59533	27435.58253	27947.77048	30173.4421	31388.86609
p5g5	23700.59533	27435.58253	27947.77048	30173.4421	31388.86609
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	12,634	9,227	10,905	22,410	16,986
dp/dgas2	8,613	20,321	20,321	31,479	48,977
dp/dgas3	9,910	103,917	13,285	22,790	45,240
dp/dgas4	9,826	28,138	14,968	10,264	38,004
dp/dgas5	7,597	120,467	4,195	148,837	33,215
sum of dpdgas	48,580	282,071	63,674	235,781	182,423
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,727	11,757	11,740	11,844	11,860
VMT2	11,532	11,768	11,730	11,814	11,883
VMT3	11,500	11,883	11,618	11,750	11,861
VMT4	11,498	11,774	11,640	11,628	11,849
VMT5	11,498	11,774	11,640	11,628	11,849

QUARTER	11	12	12	13	13
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.02967	0.02642	0.02825	0.01689	0.01519
tpmc1	0.02967	0.02642	0.02825	0.01689	0.01519
tpmf1	0.02967	0.02642	0.02825	0.01689	0.01519
tpmg1	0.02967	0.02642	0.02825	0.01689	0.01519
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.05081	0.02518	0.02926	0.02015	0.01265
tpmc2	0.05081	0.02518	0.02926	0.02015	0.01265
tpmf2	0.05081	0.02518	0.02926	0.02015	0.01265
tpmg2	0.05081	0.02518	0.02926	0.02015	0.01265
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.05421	0.01274	0.04142	0.02710	0.01506
tpmc3	0.05421	0.01274	0.04142	0.02710	0.01506
tpmf3	0.05421	0.01274	0.04142	0.02710	0.01506
tpmg3	0.05421	0.01274	0.04142	0.02710	0.01506
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.05444	0.02448	0.03902	0.04038	0.01643
tpmc4	0.05444	0.02448	0.03902	0.04038	0.01643
tpmf4	0.05444	0.02448	0.03902	0.04038	0.01643
tpmg4	0.05444	0.02448	0.03902	0.04038	0.01643
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.05444	0.02448	0.03902	0.04038	0.01643
tpmc5	0.054439245	0.024483584	0.039018345	0.040381993	0.016434014
tpmf5	0.054439245	0.024483584	0.039018345	0.040381993	0.016434014
tpmg5	0.054439245	0.024483584	0.039018345	0.040381993	0.016434014
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	5,962,156,618	4,890,708,034	4,823,129,733	5,111,921,380	5,096,952,665
cstravelpmetseg2	9,961,880,065	9,298,404,215	9,406,151,695	9,701,583,696	9,904,765,599
cstravelpmetseg3	1,816,630,091	1,699,164,601	1,645,889,842	1,717,407,652	1,763,307,247
cstravelpmetseg4	3,912,519,259	3,677,801,822	3,540,090,692	3,638,797,328	3,593,336,024
cstravelpmetseg5	2,186,922,955	2,211,173,069	2,072,499,207	1,989,929,684	2,038,769,154
cstravelpmetsum	23,840,108,988	21,777,251,741	21,487,761,169	22,159,639,739	22,397,130,690
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	2.24	3.45	2.73	2.22	3.26
epm_c1	2.24	3.45	2.73	2.22	3.26
epm_f1	2.24	3.45	2.73	2.22	3.26
epm_g1	2.24	3.45	2.73	2.22	3.26
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	3.84	3.28	2.83	2.65	2.71
epm_c2	3.84	3.28	2.83	2.65	2.71
epm_f2	3.84	3.28	2.83	2.65	2.71
epm_g2	3.84	3.28	2.83	2.65	2.71

QUARTER	11	12	12	13	13
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	4.10	1.66	4.00	3.56	3.23
epm_c3	4.10	1.66	4.00	3.56	3.23
epm_f3	4.10	1.66	4.00	3.56	3.23
epm_g3	4.10	1.66	4.00	3.56	3.23
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	4.11	3.19	3.77	5.31	3.52
epm_c4	4.11	3.19	3.77	5.31	3.52
epm_f4	4.11	3.19	3.77	5.31	3.52
epm_g4	4.11	3.19	3.77	5.31	3.52
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	4.11	3.19	3.77	5.31	3.52
epm_c5	4.112629053	3.193362735	3.7668629€	5.307852472	3.522454661
epm_f5	4.112629053	3.193362735	3.7668629€	5.307852472	3.522454661
epm_g5	4.112629053	3.193362735	3.7668629€	5.307852472	3.522454661
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	495807.3601	288774.172	291540.7613	233743.044	192692.2423
Csub1n	161583.4885	69733.17777	159529.410€	25492.61	20715.47674
Fsub1n	274369.3968	171620.3652	203193.4777	97161.00519	193781.8139
Gsub1n	355640.8437	172040.8448	204465.7135	94321.82457	176171.8615
Asub2n	74297.88709	280052.618	221229.127€	345873.5059	282344.179
Csub2n	0	195569.6633	0	237018.3728	188668.5416
Fsub2n	82540.3257	229295.601€	121283.0909	389022.9961	267150.9942
Gsub2n	223116.0463	463463.4177	353970.831	652661.380€	497051.9099
Asub3n	28470.88823	45199.86839	41371.85103	43427.6069€	36681.48017
Csub3n	28914.90443	43673.26071	26290.2317€	58194.75693	53180.97638
Fsub3n	52335.72451	70446.61968	61727.3879€	90738.27211	77783.30632
Gsub3n	42872.25291	55071.63405	46222.46702	78217.79651	61491.00594
asub4n	196051.5258	82047.01085	50467.92237	29293.53304	182802.1902
Csub4n	89701.26638	31826.9535	162555.6852	0	53195.13416
fsub4n	239682.5537	156932.3325	174798.9054	5946.705739	0
gsub4n	308911.5965	169165.5429	188409.3194	0	81782.77879
asub5n	115974.8907	81842.71404	171847.3727	89871.77698	8804.428636
Csub5n	20497.37812	0	0	7777.435272	0
fsub5n	64564.96389	31507.7295€	100320.4389	53537.38039	168250.3753
gsub5n	133268.8761	86144.99984	154400.1262	91080.20284	163511.7089
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	1,287,401	702,169	858,729	450,718	583,361
tseg2n	379,954	1,168,381	696,483	1,624,576	1,235,216
tseg3n	152,594	214,391	175,612	270,578	229,137
tseg4n	834,347	439,972	576,232	35,240	317,780
tseg5n	334,306	199,495	426,568	242,267	340,567
tsumn	2,988,602	2,724,409	2,733,624	2,623,380	2,706,060
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	7,040,171,194	5,285,901,831	7,398,369,068	2,516,468,096	819,763,380
CSPMETseg2	1,891,107,550	12,840,661,854	5,216,148,448	20,393,691,319	10,706,387,371

QUARTER	11	12	12	13	13
CSPMETseg3	1,778,608,712	4,581,278,999	3,225,921,939	4,373,424,823	3,520,516,848
CSPMETseg4	5,382,395,297	3,080,719,875	4,883,268,980	371,296,702	2,170,026,707
CSPMETseg5	4,297,114,987	1,131,045,357	4,216,440,222	7,114,088,043	2,298,732,337
CsPMETsum	20,389,397,740	26,919,607,915	24,940,148,658	34,768,968,982	19,515,426,643
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	3,944,987,130	2,982,540,451	3,889,328,923	1,486,304,328	487,719,918
PSpmetseg2	1,216,807,331	7,083,442,312	3,260,007,026	11,500,030,718	6,050,715,922
PSpmetseg3	924,943,825	2,378,011,991	1,705,842,300	2,317,979,583	1,843,066,434
PSpmetseg4	3,076,024,088	1,800,895,668	2,481,785,525	165,383,644	1,131,231,672
PSpmetseg5	2,709,054,871	786,311,963	2,490,403,774	4,590,367,592	1,419,403,960
Pspmetsum	11,871,817,245	15,031,202,386	13,827,367,548	20,060,065,864	10,932,137,906
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	10,985,158,324	8,268,442,282	11,287,697,992	4,002,772,423	1,307,483,297
TSPMETseg2	3,107,914,881	19,924,104,166	8,476,155,474	31,893,722,037	16,757,103,293
TSPMETseg3	2,703,552,537	6,959,290,990	4,931,764,239	6,691,404,406	5,363,583,283
TSPMETseg4	8,458,419,385	4,881,615,543	7,365,054,506	536,680,345	3,301,258,379
TSPMETseg5	7,006,169,858	1,917,357,320	6,706,843,996	11,704,455,635	3,718,136,296
TSPMETsum	32,261,214,985	41,950,810,301	38,767,516,206	54,829,034,847	30,447,564,549
dwlpmet	3,247,722,707	4,443,161,566	3,149,623,991	5,384,895,317	3,681,318,965
pmetsurplus	287,013,934,821	267,252,818,359	265,569,222,706	282,818,961,468	258,869,089,169
pmetsurplus10	72,452,953,928	71,257,552,694	72,179,372,186	83,382,203,816	57,294,912,960
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	447,864,637	218,088,372	284,767,585	90,150,414	105,091,190
taxrevpmetseg2	317,320,057	308,884,692	293,846,482	336,388,502	160,442,211
taxrevpmetseg3	95,131,703	32,456,295	84,503,309	86,161,036	40,937,572
taxrevpmetseg4	522,266,241	126,834,429	261,718,395	16,547,242	61,877,869
taxrevpmetseg5	252,580,358	66,685,277	267,573,710	110,105,730	76,672,930
taxrevpmetsum	1,635,162,996	752,949,065	1,192,409,481	639,352,923	445,021,772
pmetrev10	16,351,629,955	7,529,490,653	11,924,094,811	6,393,529,231	4,450,217,721
SALES LOST AS RESULT OF PMET-					
lostsales1	(466,250)	(47,954)	(204,514)	215,223	82,580
lostsales2	924,243	66,561	538,459	(332,881)	56,479
lostsales3	92,376	7,277	46,056	(39,604)	1,837
lostsales4	(265,236)	47,177	(89,083)	432,678	150,138
lostsales5	(27,010)	90,967	(136,106)	27,238	(71,062)
lostsum	258,123	164,027	154,812	302,653	219,973
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	374.8098037	243.7776377	308.0278834	378.4406718	258.0085459
taxc1p	374.8098037	243.7776377	308.0278834	378.4406718	258.0085459
taxf1p	374.8098037	243.7776377	308.0278834	378.4406718	258.0085459
taxg1p	374.8098037	243.7776377	308.0278834	378.4406718	258.0085459
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	437.6497142	511.6063836	594.657881	634.3115541	619.5856721
taxc2p	437.6497142	511.6063836	594.657881	634.3115541	619.5856721
taxf2p	437.6497142	511.6063836	594.657881	634.3115541	619.5856721
taxg2p	437.6497142	511.6063836	594.657881	634.3115541	619.5856721
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	11	12	12	13	13
taxa3p	537.2048436	1323.941339	550.2178746	617.6192058	681.430613
taxc3p	537.2048436	1323.941339	550.2178746	617.6192058	681.430613
taxf3p	537.2048436	1323.941339	550.2178746	617.6192058	681.430613
taxg3p	537.2048436	1323.941339	550.2178746	617.6192058	681.430613
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	534.9376205	688.9289388	584.0403603	414.4802463	624.5644619
taxc4p	534.9376205	688.9289388	584.0403603	414.4802463	624.5644619
taxf4p	534.9376205	688.9289388	584.0403603	414.4802463	624.5644619
taxg4p	534.9376205	688.9289388	584.0403603	414.4802463	624.5644619
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	534.9376205	688.9289388	584.0403603	414.4802463	624.5644619
taxc5p	534.9376205	688.9289388	584.0403603	414.4802463	624.5644619
taxf5p	534.9376205	688.9289388	584.0403603	414.4802463	624.5644619
taxg5p	534.9376205	688.9289388	584.0403603	414.4802463	624.5644619
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	4951445068(	8843267528	23887032608	2343932778	360609247(
pollution reduction 2p	-34269603641	11100431485	-9301617858	44226697141	20217475391
pollution reduction 3p	667406423.1	9741959218	2327023714	748358394(	6304403616
pollution reduction 4p	21977801623	11363036324	1490278056(	-1023339776:	4107319774
pollution reduction 5p	2109896415	-104869410(	818474602(	-382081609⁴	576471797(
Total reductionp	39.9999515	40.0000004(	39.9999650:	40	40.0000092:
DIFFERENCE-					
Tsdiff	(2,309)	(6,233)	(1,385)	(8,706)	(153)
	x	x			

QUARTER	14	14	15	15	16
COEFFICIENTS OF DEMAND					
a P1/q1	-0.002290319	-0.00181335	-0.005601254	-0.007486976	-0.003510125
b p2/q1	-1E-08	-0.000599741	-1E-08	-0.005108524	-0.000844701
c p3/q1	-0.001398139	-0.000258491	-0.001827074	-1E-08	-0.003510125
d p4/q1	-0.001545006	-7.08198E-05	-0.004484403	-0.000173156	-1E-08
f P1/q2	-1E-08	-0.000599741	-1E-08	-0.005108524	-0.000844701
g p2/q2	-0.010554131	-0.007875018	-0.013517826	-0.010765265	-0.011066845
h p3/q2	-2.87434E-05	-3.08479E-17	-1E-08	-0.005974816	-0.008980967
i p4/q2	-0.000593595	-0.004535599	-1E-08	-0.008090848	4.71416E-17
k P1/q3	-0.001398139	-0.000258491	-0.001827074	-1E-08	-0.003510125
l p2/q3	-2.87434E-05	1.31535E-18	-1E-08	-0.005974816	-0.008980967
m p3/q3	-0.038316997	-0.043637512	-0.063997324	-0.070585832	-0.060620652
n p4/q3	-0.014076831	-0.009631991	-0.008084199	-0.000781266	-2.909E-17
p P1/q4	-0.001545006	-7.08198E-05	-0.004484403	-0.000173156	-1E-08
q p2/q4	-0.000593595	-0.004535599	-1E-08	-0.008090848	-2.07977E-17
r p3/q4	-0.014076831	-0.009631991	-0.008084199	-0.000781266	1.02416E-16
s p4/q4	-0.014076831	-0.009631991	-0.014840894	-0.008090848	-0.025143495
u P1/q5	-0.000579408	-0.00181335	-0.001678066	-1E-08	-2.19878E-16
v p2/q5	1.89567E-15	-0.006437006	-0.013517826	-0.010216949	1.80141E-16
w p3/q5	-1.00001E-08	-0.006437006	-1E-08	-1E-08	-0.000375358
x p4/q5	-9.99999E-09	-0.000387225	-0.000683811	-0.006646787	-1E-08
y p5/q5	-0.052059314	-0.006437006	-0.121586876	-0.146602836	-0.047826157
e p5/q1	-0.000579408	-0.00181335	-0.001678066	-0.00000001	0
j p5/q2	-0.00000001	-0.006437006	-0.013517826	-0.010216949	-0.00000001
o p5/q3	-0.00000001	-0.006437006	-0.00000001	-0.00000001	-0.000375358
t p5/q4	-0.00000001	-0.000387225	-0.000683811	-0.006646787	-0.00000001
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.002290319	-0.00181335	-0.005601254	-0.007486976	-0.003510125
bb	-1E-08	-0.000599741	-1E-08	-0.005108524	-0.000844701
cc	-0.001398139	-0.000258491	-0.001827074	-1E-08	-0.003510125
dd	-0.001545006	-7.08198E-05	-0.004484403	-0.000173156	-1E-08
ee	-0.000579408	-0.00181335	-0.001678066	-0.00000001	-0.00000001
ff	-1E-08	-0.000599741	-1E-08	-0.005108524	-0.000844701
gg	-0.010554131	-0.007875018	-0.013517826	-0.010765265	-0.011066845
hh	-2.87434E-05	-3.08479E-17	-1E-08	-0.005974816	-0.008980967
ii	-0.000593595	-0.004535599	-1E-08	-0.008090848	-0.00000001
jj	-0.00000001	-0.006437006	-0.013517826	-0.010216949	-0.00000001
kk	-0.001398139	-0.000258491	-0.001827074	-1E-08	-0.003510125
ll	-2.87434E-05	-0.00000001	-1E-08	-0.005974816	-0.008980967
mm	-0.038316997	-0.043637512	-0.063997324	-0.070585832	-0.060620652
nn	-0.014076831	-0.009631991	-0.008084199	-0.000781266	-2.909E-17
oo	-0.00000001	-0.006437006	-0.00000001	-0.00000001	-0.000375358
pp	-0.001545006	-7.08198E-05	-0.004484403	-0.000173156	-1E-08
qq	-0.000593595	-0.004535599	-1E-08	-0.008090848	-2.07977E-17
rr	-0.014076831	-0.009631991	-0.008084199	-0.000781266	-0.00000001
ss	-0.014076831	-0.009631991	-0.014840894	-0.008090848	-0.025143495
tt	-0.00000001	-0.000387225	-0.000683811	-0.006646787	-0.00000001
uu	-0.000579408	-0.00181335	-0.001678066	-1E-08	-2.19878E-16
vv	-0.00000001	-0.006437006	-0.013517826	-0.010216949	-0.00000001
ww	-1.00001E-08	-0.006437006	-1E-08	-1E-08	-0.000375358
xx	-9.99999E-09	-0.000387225	-0.000683811	-0.006646787	-1E-08
yy	-0.052059314	-0.006437006	-0.121586876	-0.146602836	-0.047826157
KNOWN PRICE BEFORE TAXES					
P1	11,755	11,755	12,012	12,012	13,163
P2	17,574	17,574	17,698	17,698	17,899
P3	20,273	20,273	19,303	19,303	22,295
P4	16,632	16,632	14,635	14,635	16,790
P5	30,327	30,327	27,971	27,971	31,129

QUARTER	14	14	15	15	16
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	315833	315833	287444	287444	227465
Csub1	73941	73941	64568	64568	64198
Fsub1	185928	185928	162328	162328	127456
Gsub1	211790	211790	184974	184974	160602
Asub2	350140	350140	359751	359751	358526
Csub2	250924	250924	206715	206715	239858
Fsub2	344845	344845	338773	338773	366082
Gsub2	634612	634612	505608	505608	450583
Asub3	43350	43350	51918	51918	54125
Csub3	67637	67637	65613	65613	81836
Fsub3	89408	89408	82234	82234	87167
Gsub3	90699	90699	91917	91917	96263
asub4	100713	100713	109354	109354	95065
Csub4	61145	61145	52331	52331	54958
fsub4	200431	200431	194841	194841	170914
gsub4	214472	214472	226404	226404	196843
asub5	112278	112278	106100	106100	103589
Csub5	16109	16109	15334	15334	15900
fsub5	61312	61312	51425	51425	65026
gsub5	113432	113432	90594	90594	102991
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	787,492	787,492	699,314	699,314	579,721
tseg2	1,580,521	1,580,521	1,410,847	1,410,847	1,415,049
tseg3	291,094	291,094	291,682	291,682	319,391
tseg4	576,761	576,761	582,930	582,930	517,780
tseg5	303,131	303,131	263,453	263,453	287,506
tsum	3,538,999	3,538,999	3,248,226	3,248,226	3,119,447
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	6.52	8.23	3.07	2.29	6.47
Elasiticity21	0.00	0.94	0.00	1.60	0.67
Elasiticity31	0.41	0.08	0.14	0.00	0.63
Elasiticity41	1.01	0.09	1.13	0.06	0.00
Elasiticity51	0.19	5.98	0.10	0.00	0.00
Elasiticity12	0.00	0.31	0.00	0.54	0.20
Elasiticity22	1.05	1.41	0.93	1.17	1.14
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.04	0.63	0.00	0.96	0.00
Elasiticity52	0.00	2.44	0.16	0.13	0.00
Elasiticity13	0.64	0.13	0.21	0.00	0.68
Elasiticity23	0.00	0.00	0.00	0.48	0.75
Elasiticity33	1.82	1.60	1.03	0.94	1.15
Elasiticity43	1.49	1.31	0.43	0.07	0.00
Elasiticity53	0.00	2.39	0.00	0.00	0.01
Elasiticity14	0.98	0.08	1.11	0.06	0.00
Elasiticity24	0.12	1.82	0.00	2.82	0.00
Elasiticity34	0.92	0.81	0.28	0.05	0.00
Elasiticity44	2.05	2.99	1.69	3.10	1.29
Elasiticity54	0.00	0.33	0.02	0.27	0.00
Elasiticity15	0.19	6.02	0.11	0.00	0.00
Elasiticity25	0.00	7.36	0.55	0.43	0.00
Elasiticity35	0.00	1.53	0.00	0.00	0.01
Elasiticity45	0.00	0.34	0.02	0.31	0.00
Elasiticity55	1.92	15.54	0.87	0.72	2.26
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	14	14	15	15	16
MCasub1	10,755	10,755	9,635	8,000	11,790
MCcsub1	11,394	11,426	11,269	10,462	12,398
MCfsub1	10,868	11,071	9,987	9,028	12,026
MCgsub1	10,755	10,755	9,635	8,000	11,790
MCasub2	13,819	13,449	11,394	10,072	13,171
MCcsub2	14,892	15,177	14,695	14,170	14,387
MCfsub2	13,819	13,449	12,420	10,626	12,853
MCgsub2	10,755	10,755	9,635	8,000	11,790
MCasub3	16,738	16,602	14,562	13,395	14,945
MCcsub3	16,703	16,602	14,562	13,395	14,945
MCfsub3	13,747	13,989	12,161	11,315	13,234
MCgsub3	13,454	13,454	11,239	9,605	11,790
MCasub4	13,908	13,591	11,222	10,035	14,363
MCcsub4	14,556	14,242	13,025	12,372	15,376
MCfsub4	12,058	12,238	10,310	9,878	12,450
MCgsub4	11,632	10,755	9,635	8,000	11,790
MCasub5	24,289	26,449	9,635	8,000	26,129
MCcsub5	29,443	28,013	23,156	23,252	30,314
MCfsub5	27,019	26,714	16,715	15,659	27,955
MCgsub5	24,289	24,450	9,635	8,000	26,129
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.000579408	-0.00181335	-0.001678066	-0.00000001	0
j	0	-0.006437006	-0.013517826	-0.010216949	0
o	-0.00000001	-0.006437006	-0.00000001	-0.00000001	-0.000375358
t	-0.00000001	-0.000387225	-0.000683811	-0.006646787	-0.00000001
y	-0.052059314	-0.006437006	-0.121586876	-0.146602836	-0.047826157
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	1000	1000	2376.910248	4011.513423	1373.525468
XMCcsub1	360.6233421	328.490013	742.8247011	1549.086895	765.4696348
XMCfsub1	887.0559093	683.4528543	2024.210536	2983.574471	1137.320112
XMCgsub1	1000	1000	2376.910248	4011.513423	1373.525468
XMCasub2	3754.757182	4124.700998	6303.822919	7626.186437	4728.57843
XMCcsub2	2681.689493	2396.644968	3003.340431	3528.728578	3511.729499
XMCfsub2	3754.757182	4124.700998	5277.96512	7072.338959	5046.518502
XMCgsub2	6819.247058	6819.247058	8063.684524	9698.287698	6109.492865
XMCasub3	3534.915973	3670.733429	4740.718406	5908.032253	7349.6474
XMCcsub3	3570.394492	3670.733429	4740.718406	5908.032253	7349.6474
XMCfsub3	6526.504521	6284.352597	7142.038458	7988.260982	9060.987807
XMCgsub3	6819.247058	6819.247058	8063.684524	9698.287698	10504.94194
XMCasub4	2723.104227	3040.893379	3412.110496	4599.141568	2426.673607
XMCcsub4	2075.879086	2389.879602	1609.167769	2262.477169	1413.167615
XMCfsub4	4573.267754	4393.965949	4324.322511	4756.775936	4340.056266
XMCgsub4	5000	5876.830408	5000	6634.603175	5000
XMCasub5	6038.187031	3877.739253	18336.13152	19970.73469	5000
XMCcsub5	883.5492646	2314.263388	4814.8567	4718.433626	814.7143573
XMCfsub5	3307.82378	3613.314605	11255.7188	12311.45663	3173.618331
XMCgsub5	6038.187031	5876.830408	18336.13152	19970.73469	5000
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	15,032	14,796	19,517	24,556	17,514
constant2	34,606	35,060	40,331	45,610	36,917
constant3	40,692	40,686	43,960	48,777	56,508
constant4	31,003	32,333	28,960	32,866	29,808
constant5	46,564	45,977	80,647	84,883	44,999

QUARTER	14	14	15	15	16
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	2,009,659,581	1,876,632,568	4,123,948,860	6,865,560,137	1,988,388,022
TSseg2	21,069,505,355	21,614,154,987	24,719,525,424	30,461,800,871	20,593,792,103
TSseg3	4,568,713,631	4,558,794,297	5,481,706,255	6,541,179,982	8,263,985,495
TSseg4	6,534,632,428	7,121,327,669	6,607,186,409	8,364,072,517	5,404,787,068
TSseg5	4,040,902,721	3,732,853,927	11,198,104,732	12,130,428,607	3,246,104,260
Tssum	38,223,413,716	38,903,763,447	52,130,471,679	64,363,042,113	39,497,056,948
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	1,290,443,199	1,197,647,665	2,624,504,921	4,386,109,869	1,261,268,223
CSseg2	13,459,529,166	13,818,597,908	15,965,787,825	19,689,382,213	13,455,884,168
CSseg3	2,971,963,646	2,971,020,320	3,596,016,799	4,298,458,879	5,463,663,734
CSseg4	4,144,466,177	4,527,838,425	4,175,273,797	5,313,824,620	3,370,439,099
CSseg5	2,460,981,140	2,372,028,478	6,938,841,327	7,496,835,799	1,993,882,596
Cssum	24,327,383,328	24,887,132,796	33,300,424,669	41,184,611,380	25,545,137,821
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	719,216,382	678,984,902	1,499,443,939	2,479,450,267	727,119,800
PSseg2	7,609,976,188	7,795,557,080	8,753,737,598	10,772,418,658	7,137,907,934
PSseg3	1,596,749,985	1,587,773,977	1,885,689,456	2,242,721,103	2,800,321,761
PSseg4	2,390,166,252	2,593,489,244	2,431,912,612	3,050,247,897	2,034,347,969
PSseg5	1,579,921,581	1,360,825,449	4,259,263,405	4,633,592,808	1,252,221,664
Pssum	13,896,030,388	14,016,630,651	18,830,047,010	23,178,430,733	13,951,919,127
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	6,152,281,250	6,152,281,250	5,463,390,625	5,463,390,625	4,529,070,313
CStravseg2	12,347,820,313	12,347,820,313	11,022,242,188	11,022,242,188	11,055,070,313
CStravseg3	2,274,171,875	2,274,171,875	2,278,765,625	2,278,765,625	2,495,242,188
CStravseg4	4,505,945,313	4,505,945,313	4,554,140,625	4,554,140,625	4,045,156,250
CStravseg5	2,368,210,938	2,368,210,938	2,058,226,563	2,058,226,563	2,246,140,625
Cstravsum	27,648,429,688	27,648,429,688	25,376,765,625	25,376,765,625	24,370,679,688
FIRST ORDER CONDITIONS					
foc1l	-0.00029394	2.53256E-07	0.000159071	-1.42355E-05	-5.75015E-05
foc2l	-1.56292E-05	8.16365E-07	5.13314E-08	2.21372E-05	-8.13177E-05
foc3l	0.00072786	2.47295E-07	0.000927308	1.02401E-05	-9.30572E-05
foc4l	4.54752E-05	3.28902E-07	-0.000513122	-4.16464E-05	-9.30554E-05
foc5l	-0.000295467	2.57118E-07	0.000159009	-1.44048E-05	-5.75017E-05
foc6l	-1.57675E-05	8.51907E-07	5.12523E-08	2.21193E-05	-8.13176E-05
foc7l	0.000731079	2.81835E-07	0.000926733	1.08463E-05	-9.30573E-05
foc8l	4.601E-05	2.34319E-07	-0.000512842	-4.17073E-05	-9.30555E-05
foc9l	-0.000296592	2.49774E-07	0.00015833	-1.50683E-05	-5.75015E-05
foc10l	-1.59046E-05	7.77775E-07	5.13946E-08	2.2539E-05	-8.13176E-05
foc11l	0.000732947	2.06894E-07	0.000922131	1.36997E-05	-9.30573E-05
foc12l	4.68135E-05	4.43504E-07	-0.000510431	-4.33026E-05	-9.30554E-05
foc13l	-0.00029677	2.46971E-07	0.000157971	-1.5408E-05	-5.75017E-05
foc14l	-1.58711E-05	7.50089E-07	5.13123E-08	2.2735E-05	-8.13177E-05
foc15l	0.000734026	1.79521E-07	0.000919185	1.47315E-05	-9.30573E-05
foc16l	4.63658E-05	5.20079E-07	-0.000508953	-4.39633E-05	-9.30555E-05
foc17l	-0.000142846	-2.91829E-06	7.9031E-06	-4.00567E-06	-9.30575E-05
foc18l	-0.000144032	-2.97304E-06	7.91138E-06	-4.02317E-06	-9.30575E-05
foc19l	-0.000142986	-2.88031E-06	7.94826E-06	-3.91995E-06	-9.30574E-05
foc20l	-0.000142663	-2.84294E-06	7.97552E-06	-3.71708E-06	-9.30575E-05

QUARTER	14	14	15	15	16
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	12326.378	12388.6483	12653.60719	12498.66588	13668.04051
p1c1l	12326.378	12388.6483	12653.60719	12498.66588	13668.04051
p1f1l	12326.378	12388.6483	12653.60719	12498.66588	13668.04051
p1g1l	12326.378	12388.6483	12653.60719	12498.66588	13668.04051
p2a2l	18378.2666	18466.21691	18607.38341	18387.69987	18621.95539
p2c2l	18378.2666	18466.21691	18607.38341	18387.69987	18621.95539
p2f2l	18378.2666	18466.21691	18607.38341	18387.69987	18621.95539
p2g2l	18378.2666	18466.21691	18607.38341	18387.69987	18621.95539
p3a3l	21182.16222	21282.81875	20340.9293	20089.33203	23197.82018
p3c3l	21182.16222	21282.81875	20340.9293	20089.33203	23197.82018
p3f3l	21182.16222	21282.81875	20340.9293	20089.33203	23197.82018
p3g3l	21182.16222	21282.81875	20340.9293	20089.33203	23197.82018
p4a4l	17546.91615	17647.68617	15674.46623	15422.44359	17671.10317
p4c4l	17546.91615	17647.68617	15674.46623	15422.44359	17671.10317
p4f4l	17546.91615	17647.68617	15674.46623	15422.44359	17671.10317
p4g4l	17546.91615	17647.68617	15674.46623	15422.44359	17671.10317
p5a5l	34844.47589	31442.75357	42812.1468	27077.7013	34352.73563
p5c5l	34844.47589	31442.75357	42812.1468	27077.7013	34352.73563
p5f5l	34844.47589	31442.75357	42812.1468	27077.7013	34352.73563
p5g5l	34844.47589	31442.75357	42812.1468	27077.7013	34352.73563
lemp_a1	2.38	2.14	2.08	2.75	2.38
lemp_c1	2.38	2.14	2.08	2.75	2.38
lemp_f1	2.38	2.14	2.08	2.75	2.38
lemp_g1	2.38	2.14	2.08	2.75	2.38
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	3.36	3.03	2.95	3.88	3.37
lemp_c2	3.36	3.03	2.95	3.88	3.37
lemp_f2	3.36	3.03	2.95	3.88	3.37
lemp_g2	3.36	3.03	2.95	3.88	3.37
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	3.85	3.46	3.37	4.44	3.85
lemp_c3	3.85	3.46	3.37	4.44	3.85
lemp_f3	3.85	3.46	3.37	4.44	3.85
lemp_g3	3.85	3.46	3.37	4.44	3.85
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	3.85	3.46	3.37	4.44	3.85
lemp_c4	3.85	3.46	3.37	4.44	3.85
lemp_f4	3.85	3.46	3.37	4.44	3.85
lemp_g4	3.85	3.46	3.37	4.44	3.85
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	3.85	3.46	3.37	4.44	3.85
lemp_c5	3.84502234	3.46380468	3.371783894	4.443583696	3.852631906
lemp_f5	3.84502234	3.46380468	3.371783894	4.443583696	3.852631906
lemp_g5	3.84502234	3.46380468	3.371783894	4.443583696	3.852631906

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SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	243046.9643	243463.6872	223111.8482	370993.7878	197356.4574
Csub1nl	0	0	0	149828.0393	24658.41644
Fsub1nl	110985.5593	112135.7829	98474.55384	245415.828	94745.75942
Gsub1nl	136897.203	138479.1254	121293.8769	267650.9919	132682.1559
Asub2nl	331809.2897	362123.3921	214628.9578	208982.737	343459.7661
Csub2nl	232290.75	261597.5041	61220.87336	52957.38196	223737.1334
Fsub2nl	326058.5205	357880.7537	193367.8551	188953.9732	353276.7934
Gsub2nl	615633.2363	648309.4937	360258.6902	356538.5975	439434.1568
Asub3nl	42438.57638	48297.13416	50075.11163	60463.64794	54074.30266
Csub3nl	66811.13207	72371.42584	63683.65662	74278.12747	82354.23147
Fsub3nl	88592.59827	94835.50817	80403.09127	90698.11451	87029.76457
Gsub3nl	89969.75394	96401.93664	90173.06275	100396.6733	95652.36174
asub4nl	94070.81286	64870.78942	106553.3268	240221.8748	86147.00949
Csub4nl	54592.48549	26174.57458	49248.18121	185335.3399	45838.23852
fsub4nl	194087.002	163876.7019	191674.0398	324411.1649	162245.5812
gsub4nl	207969.537	177241.9281	223179.8679	355333.0046	188492.647
asub5nl	178078.787	95523.83872	234597.8555	97921.94971	147653.8964
Csub5nl	81769.1391	0	143848.3493	7245.82716	59921.56249
fsub5nl	127101.4105	43189.46327	179969.7059	43255.664	109207.3086
gsub5nl	179260.1781	94610.29289	219156.2955	82419.59422	147327.5543
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	490,930	494,079	442,880	1,033,889	449,443
tseg2nl	1,505,792	1,629,911	829,476	807,433	1,359,908
tseg3nl	287,812	311,906	284,335	325,837	319,111
tseg4nl	550,720	432,164	570,655	1,105,301	482,723
tseg5nl	566,210	233,324	777,572	230,843	464,110
tsumnl	3,401,463	3,101,383	2,904,919	3,503,302	3,075,295
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	296,562	293,413	256,434	(334,575)	130,278
lostsales2l	74,729	(49,390)	581,371	603,414	55,141
lostsales3l	3,282	(20,812)	7,347	(34,155)	280
lostsales4l	26,041	144,597	12,275	(522,371)	35,057
lostsales5l	(263,079)	69,807	(514,119)	32,610	(176,604)
lostsuml	137,536	437,616	343,307	(255,076)	44,152
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	664,162,605	594,818,755	1,519,931,359	6,232,737,318	864,377,124
CSlsetseg2	12,217,622,357	13,523,309,838	9,009,696,106	10,989,975,579	12,440,067,483
CSlsetseg3	2,807,629,584	3,025,959,470	3,357,875,608	4,673,676,972	5,314,754,837
CSlsetseg4	3,705,297,312	3,173,126,149	3,790,654,550	9,640,213,518	2,929,495,398
CSlsetseg5	3,317,830,961	1,695,594,755	14,709,609,840	6,671,959,774	2,470,483,698
Cslsetsum	22,712,542,819	22,012,808,968	32,387,767,463	38,208,563,160	24,019,178,540
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	411,880,149	383,957,586	945,210,805	3,397,317,927	489,677,163
PSlsetseg2	6,996,482,479	7,662,676,350	5,270,635,506	6,432,762,984	6,503,050,367
PSlsetseg3	1,512,584,298	1,615,055,494	1,764,750,039	2,427,835,754	2,719,877,543
PSlsetseg4	2,170,829,279	1,911,658,482	2,236,308,305	5,201,116,853	1,794,632,146
PSlsetseg5	4,560,348,566	1,046,464,603	21,563,972,255	3,733,552,902	2,836,593,813
Pslsetsum	15,652,124,770	12,619,812,515	31,780,876,910	21,192,586,420	14,343,831,033

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-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	1,076,042,754	978,776,341	2,465,142,164	9,630,055,244	1,354,054,287
TSlsetseg2	19,214,104,836	21,185,986,188	14,280,331,612	17,422,738,563	18,943,117,850
TSlsetseg3	4,320,213,881	4,641,014,964	5,122,625,647	7,101,512,726	8,034,632,380
TSlsetseg4	5,876,126,591	5,084,784,631	6,026,962,855	14,841,330,372	4,724,127,545
TSlsetseg5	7,878,179,527	2,742,059,358	36,273,582,095	10,405,512,676	5,307,077,511
Tslsetsum	38,364,667,588	34,632,621,482	64,168,644,373	59,401,149,581	38,363,009,573
dwllset	(141,253,872)	4,271,141,965	(12,038,172,695)	4,961,892,532	1,134,047,375
surpluslset	314,848,964,463	311,116,918,357	317,936,300,623	313,168,805,831	282,069,806,448
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	148.81	183.36	193.51	111.42	148.22
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	173,568,714	193,907,063	178,557,293	316,294,314	158,587,110
taxrevlsetseg2	752,890,887	904,641,518	472,944,600	349,332,462	678,606,390
taxrevlsetseg3	164,676,945	198,103,898	185,521,032	161,320,341	182,224,378
taxrevlsetseg4	315,104,448	274,484,526	372,337,598	547,230,166	275,653,546
taxrevlsetseg5	323,967,151	148,193,087	507,345,342	114,289,437	265,024,724
taxrevlsetsum	1,730,208,146	1,719,330,093	1,716,705,866	1,488,466,721	1,560,096,148
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	353.55	392.46	403.17	305.93	352.85
taxc1	353.55	392.46	403.17	305.93	352.85
taxf1	353.55	392.46	403.17	305.93	352.85
taxg1	353.55	392.46	403.17	305.93	352.85
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	500.00	555.03	570.17	432.65	499.01
taxc2	500.00	555.03	570.17	432.65	499.01
taxf2	500.00	555.03	570.17	432.65	499.01

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taxg2	500.00	555.03	570.17	432.65	499.01
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	572.17	635.14	652.47	495.10	571.04
taxc3	572.17	635.14	652.47	495.10	571.04
taxf3	572.17	635.14	652.47	495.10	571.04
taxg3	572.17	635.14	652.47	495.10	571.04
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	572.17	635.14	652.47	495.10	571.04
taxc4	572.17	635.14	652.47	495.10	571.04
taxf4	572.17	635.14	652.47	495.10	571.04
taxg4	572.17	635.14	652.47	495.10	571.04
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	572.17	635.14	652.47	495.10	571.04
taxc5	572.1683271	635.1397388	652.4736073	495.0958845	571.0382029
taxf5	572.1683271	635.1397388	652.4736073	495.0958845	571.0382029
taxg5	572.1683271	635.1397388	652.4736073	495.0958845	571.0382029
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	(997,775,226)	592,467,500	1,093,637,443	31,291,493,858	4,653,595,404
pollution reduction 2	12,218,700,757	24,900,622,717	(10,545,062,539)	(20,824,536,201)	11,415,400,603
pollution reduction 3	5,637,103,824	8,120,706,682	7,085,184,069	4,950,338,214	6,301,584,497
pollution reduction 4	10,312,160,431	7,089,315,482	14,279,146,537	26,548,814,067	8,701,322,467
pollution reduction 5	12,829,809,927	(703,112,380)	28,087,094,469	(1,966,109,806)	8,928,136,558
Total reduction	39.99999971	40	39.99999998	40.00000013	40.00003953
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.01082	0.00400	0.01406	0.00359	0.00877
	129.8657072	48.02687548	168.7771337	43.07388258	105.2255783
FOC-PMET					
foc1p	2.55371E-05	-1.88421E-05	0.000127934	-1.23572E-06	-3.69971E-08
foc2p	5.44482E-06	0.00065967	1.50112E-08	3.9161E-06	-1.62103E-07
foc3p	-0.00021925	-1.58452E-05	0.00116993	-6.97938E-05	-4.95155E-07
foc4p	7.21972E-05	-3.45864E-05	-0.000574795	2.11285E-05	-2.70277E-07
foc5p	2.21604E-05	-1.96937E-05	0.000127925	-2.51779E-06	-3.69807E-08
foc6p	4.4684E-06	0.000654702	1.50549E-08	5.8411E-06	-1.62099E-07
foc7p	-0.000212535	-1.99048E-05	0.001169695	-6.62429E-05	-4.95133E-07
foc8p	7.72934E-05	-2.5014E-05	-0.000574694	1.6109E-05	-2.70275E-07
foc9p	2.28957E-05	-1.88456E-05	0.000127192	-2.06185E-06	-3.6988E-08
foc10p	5.17802E-06	0.000659631	1.50667E-08	4.32301E-06	-1.62092E-07
foc11p	-0.00021418	-1.58856E-05	0.001164756	-6.63621E-05	-4.95143E-07
foc12p	7.35012E-05	-3.44718E-05	-0.000572104	1.94675E-05	-2.70275E-07
foc13p	2.27074E-05	-1.88484E-05	0.000126833	-2.40763E-06	-3.69916E-08
foc14p	5.21189E-06	0.000659603	1.49685E-08	4.51645E-06	-1.62087E-07
foc15p	-0.000213094	-1.59129E-05	0.001161811	-6.53058E-05	-4.95151E-07
foc16p	7.30966E-05	-3.43952E-05	-0.000570625	1.88068E-05	-2.70278E-07
foc17p	-0.001043559	-2.06017E-05	-1.17724E-05	-2.68372E-06	1.32419E-05
foc18p	-0.000915242	0.000330062	-1.1766E-05	-1.81102E-06	1.3296E-05
foc19p	-0.001043723	-2.05637E-05	-1.17271E-05	-2.60018E-06	1.32419E-05
foc20p	-0.001043355	-2.05263E-05	-1.16998E-05	-2.39545E-06	1.32419E-05

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PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	12,053.91	11,918.38	12,167.21	12,169.74	13,182.99
p1c1	12,053.91	11,918.38	12,167.21	12,169.74	13,182.99
p1f1	12,053.91	11,918.38	12,167.21	12,169.74	13,182.99
p1g1	12,053.91	11,918.38	12,167.21	12,169.74	13,182.99
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	17,842.74	17,947.22	17,982.10	17,840.45	18,171.47
p2c2	17,842.74	17,947.22	17,982.10	17,840.45	18,171.47
p2f2	17,842.74	17,947.22	17,982.10	17,840.45	18,171.47
p2g2	17,842.74	17,947.22	17,982.10	17,840.45	18,171.47
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	21,343.83	20,646.34	20,498.94	19,618.16	23,346.98
p3c3	21,343.83	20,646.34	20,498.94	19,618.16	23,346.98
p3f3	21,343.83	20,646.34	20,498.94	19,618.16	23,346.98
p3g3	21,343.83	20,646.34	20,498.94	19,618.16	23,346.98
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	17,098.12	16,908.46	14,931.40	14,993.38	17,337.35
p4c4	17,098.12	16,908.46	14,931.40	14,993.38	17,337.35
p4f4	17,098.12	16,908.46	14,931.40	14,993.38	17,337.35
p4g4	17,098.12	16,908.46	14,931.40	14,993.38	17,337.35
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	29,884.08	30,706.27	26,789.60	28,357.47	31,159.22
p5c5	29884.0778	30706.26584	26789.59634	28357.46823	31159.22205
p5f5	29884.0778	30706.26584	26789.59634	28357.46823	31159.22205
p5g5	29884.0778	30706.26584	26789.59634	28357.46823	31159.22205
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	26,271	20,541	5,920	23,750	2,385
dp/dgas2	10,686	56,265	9,683	9,683	22,826
dp/dgas3	135,363	45,495	129,696	36,241	162,649
dp/dgas4	25,409	24,206	8,128	46,373	48,423
dp/dgas5	161,947	3,721	126,767	4,919	160,742
sum of dpdgas	359,677	150,228	280,193	120,966	397,025
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,829	11,882	11,588	11,896	11,488
VMT2	11,620	11,899	11,545	11,770	11,766
VMT3	11,878	11,872	11,858	11,864	11,900
VMT4	11,718	11,824	11,431	11,880	11,816
VMT5	11,718	11,824	11,431	11,880	11,816

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TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.01860	0.01279	0.04467	0.01127	0.05558
tpmc1	0.01860	0.01279	0.04467	0.01127	0.05558
tpmf1	0.01860	0.01279	0.04467	0.01127	0.05558
tpmg1	0.01860	0.01279	0.04467	0.01127	0.05558
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.04125	0.01093	0.04940	0.02496	0.02540
tpmc2	0.04125	0.01093	0.04940	0.02496	0.02540
tpmf2	0.04125	0.01093	0.04940	0.02496	0.02540
tpmg2	0.04125	0.01093	0.04940	0.02496	0.02540
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.01326	0.01391	0.01545	0.01476	0.01089
tpmc3	0.01326	0.01391	0.01545	0.01476	0.01089
tpmf3	0.01326	0.01391	0.01545	0.01476	0.01089
tpmg3	0.01326	0.01391	0.01545	0.01476	0.01089
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.03061	0.01907	0.06170	0.01305	0.01996
tpmc4	0.03061	0.01907	0.06170	0.01305	0.01996
tpmf4	0.03061	0.01907	0.06170	0.01305	0.01996
tpmg4	0.03061	0.01907	0.06170	0.01305	0.01996
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.03061	0.01907	0.06170	0.01305	0.01996
tpmc5	0.03061062	0.019072313	0.06170195	0.013049507	0.019959837
tpmf5	0.03061062	0.019072313	0.06170195	0.013049507	0.019959837
tpmg5	0.03061062	0.019072313	0.06170195	0.013049507	0.019959837
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	6,042,295,909	6,049,059,381	5,110,905,526	5,301,678,897	4,145,872,029
cstravelpmetseg2	11,611,015,503	12,129,534,148	10,203,253,700	10,853,592,591	10,641,543,012
cstravelpmetseg3	2,239,204,030	2,220,539,798	2,233,689,277	2,218,295,253	2,458,868,011
cstravelpmetseg4	4,290,518,638	4,407,682,299	4,144,700,182	4,356,230,226	3,936,402,873
cstravelpmetseg5	2,288,474,736	2,333,922,028	1,906,687,227	2,013,366,923	2,193,827,843
cstravelpmetsum	26,471,508,816	27,140,737,655	23,599,235,911	24,743,163,890	23,376,513,768
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	1.72	3.20	3.18	3.14	6.34
epm_c1	1.72	3.20	3.18	3.14	6.34
epm_f1	1.72	3.20	3.18	3.14	6.34
epm_g1	1.72	3.20	3.18	3.14	6.34
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	3.81	2.73	3.51	6.95	2.90
epm_c2	3.81	2.73	3.51	6.95	2.90
epm_f2	3.81	2.73	3.51	6.95	2.90
epm_g2	3.81	2.73	3.51	6.95	2.90

QUARTER	14	14	15	15	16
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	1.23	3.48	1.10	4.11	1.24
epm_c3	1.23	3.48	1.10	4.11	1.24
epm_f3	1.23	3.48	1.10	4.11	1.24
epm_g3	1.23	3.48	1.10	4.11	1.24
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	2.83	4.77	4.39	3.64	2.28
epm_c4	2.83	4.77	4.39	3.64	2.28
epm_f4	2.83	4.77	4.39	3.64	2.28
epm_g4	2.83	4.77	4.39	3.64	2.28
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	2.83	4.77	4.39	3.64	2.28
epm_c5	2.828517647	4.765410069	4.386988848	3.635476308	2.276234102
epm_f5	2.828517647	4.765410069	4.386988848	3.635476308	2.276234102
epm_g5	2.828517647	4.765410069	4.386988848	3.635476308	2.276234102
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	244822.1077	293195.135	279660.7168	414299.4289	231756.434
Csub1n	0	32427.00528	56474.30957	187242.1309	59107.15347
Fsub1n	112760.7027	161867.2307	155023.4224	288721.469	129145.736
Gsub1n	138672.3463	188210.5732	177842.7454	310956.6329	167082.1325
Asub2n	333501.1393	382670.8698	359385.5986	147027.0367	345935.6787
Csub2n	233971.0263	241075.3766	205762.1041	0	226257.5942
Fsub2n	327750.3701	378428.2315	338124.4959	126998.2728	355752.706
Gsub2n	617325.0859	668856.9714	505015.331	294582.8971	441910.0694
Asub3n	25699.58357	53806.18739	40152.54358	64995.9935	44185.64553
Csub3n	50061.1143	66927.94784	53761.66491	78167.58156	72406.09353
Fsub3n	71853.60546	100344.5614	70480.52321	95230.46007	77141.10744
Gsub3n	73230.76113	101910.9899	80250.4947	104929.0189	85763.70461
asub4n	104700.7817	57667.65528	105486.7913	284131.5641	79855.60414
Csub4n	65428.79376	48131.6659	48193.93393	218513.3476	39546.82993
fsub4n	204716.9709	156673.5678	190607.5043	368320.8542	155954.1758
gsub4n	218599.5059	170038.794	222113.3324	399242.6939	182201.2417
asub5n	89816.35747	67096.68973	92559.1329	111604.8395	84629.09322
Csub5n	0	2882.940044	2025.036731	23267.71245	4981.106981
fsub5n	38838.98103	14762.31427	37930.98324	56938.55381	46182.50542
gsub5n	90997.74863	66183.1439	77117.57285	96102.48402	84302.7512
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	496,255	675,700	669,001	1,201,220	587,091
tseg2n	1,512,548	1,671,031	1,408,288	568,608	1,369,856
tseg3n	220,845	322,990	244,645	343,323	279,497
tseg4n	593,446	432,512	566,402	1,270,208	457,558
tseg5n	219,653	150,925	209,633	287,914	220,095
tsumn	3,042,747	3,253,158	3,097,968	3,671,273	2,914,097
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	617,717,683	883,567,863	2,370,198,955	7,278,310,793	1,232,585,443
CSPMETseg2	12,344,086,158	13,784,212,294	15,400,172,832	7,826,218,750	12,442,437,195

QUARTER	14	14	15	15	16
CSPMETseg3	1,938,276,661	3,134,063,009	2,624,783,166	4,913,545,248	4,386,596,936
CSPMETseg4	3,895,141,974	3,235,704,584	3,830,814,861	10,966,668,444	2,632,012,707
CSPMETseg5	1,287,445,118	1,147,014,896	4,825,275,341	8,127,974,914	1,169,943,334
CsPMETsum	20,082,667,594	22,184,562,646	29,051,245,155	39,112,718,150	21,863,575,619
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	389,458,961	535,677,788	1,370,429,421	3,929,471,270	673,761,990
PSpmetseg2	7,059,732,591	7,874,022,597	8,466,446,615	4,819,816,448	6,504,175,759
PSpmetseg3	1,077,924,583	1,684,884,742	1,398,203,015	2,548,713,387	2,255,870,990
PSpmetseg4	2,265,438,573	1,898,171,788	2,256,364,131	5,889,035,543	1,645,890,851
PSpmetseg5	952,162,811	696,731,807	3,195,172,650	4,895,967,149	789,289,220
Pspmetsum	11,744,717,519	12,689,488,723	16,686,615,833	22,083,003,796	11,868,988,811
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	1,007,176,644	1,419,245,651	3,740,628,377	11,207,782,063	1,906,347,433
TSPMETseg2	19,403,818,749	21,658,234,892	23,866,619,447	12,646,035,199	18,946,612,957
TSPMETseg3	3,016,201,244	4,818,947,751	4,022,986,181	7,462,258,635	6,642,467,927
TSPMETseg4	6,160,580,547	5,133,876,372	6,087,178,992	16,855,703,987	4,277,903,558
TSPMETseg5	2,239,607,929	1,843,746,703	8,020,447,991	13,023,942,063	1,959,232,554
TSPMETsum	31,827,385,113	34,874,051,369	45,737,860,988	61,195,721,947	33,732,564,430
dwlpmet	6,501,038,557	4,049,344,302	6,481,057,036	3,085,955,379	5,820,129,194
pmetsurplus	307,261,582,459	311,162,026,004	298,621,053,784	315,777,026,064	276,882,994,542
pmetsurplus10	69,018,003,115	66,895,387,107	86,227,930,583	93,088,551,058	66,494,370,630
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	109,194,040	102,712,283	346,332,847	161,009,017	374,841,686
taxrevpmetseg2	612,807,120	190,225,230	718,012,892	222,016,573	359,491,815
taxrevpmetseg3	34,788,852	53,344,030	44,807,394	60,125,650	36,221,420
taxrevpmetseg4	212,864,328	97,538,048	399,503,914	196,913,673	107,913,391
taxrevpmetseg5	102,256,579	44,240,218	180,426,320	74,901,609	60,060,933
taxrevpmetsum	1,071,910,919	488,059,808	1,689,083,368	714,966,522	938,529,243
pmetrev10	10,719,109,187	4,880,598,082	16,890,833,684	7,149,665,222	9,385,292,432
SALES LOST AS RESULT OF PMET-					
lostsales1	291,237	111,792	30,313	(501,906)	(7,370)
lostsales2	67,973	(90,510)	2,559	842,239	45,193
lostsales3	70,249	(31,896)	47,037	(51,641)	39,894
lostsales4	(16,685)	144,249	16,528	(687,278)	60,222
lostsales5	83,478	152,206	53,820	(24,461)	67,411
lostsum	496,252	285,841	150,258	(423,047)	205,350
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	488.6868033	262.7889122	264.4626025	267.6030754	132.529855
taxc1p	488.6868033	262.7889122	264.4626025	267.6030754	132.529855
taxf1p	488.6868033	262.7889122	264.4626025	267.6030754	132.529855
taxg1p	488.6868033	262.7889122	264.4626025	267.6030754	132.529855
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	440.7847203	615.07082	478.3204772	241.6401964	579.8877225
taxc2p	440.7847203	615.07082	478.3204772	241.6401964	579.8877225
taxf2p	440.7847203	615.07082	478.3204772	241.6401964	579.8877225
taxg2p	440.7847203	615.07082	478.3204772	241.6401964	579.8877225
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	14	14	15	15	16
taxa3p	1795.223861	632.9141308	2003.27575	534.9685828	1771.361698
taxc3p	1795.223861	632.9141308	2003.27575	534.9685828	1771.361698
taxf3p	1795.223861	632.9141308	2003.27575	534.9685828	1771.361698
taxg3p	1795.223861	632.9141308	2003.27575	534.9685828	1771.361698
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	777.7925664	461.6601652	501.4829252	605.1476653	966.5086724
taxc4p	777.7925664	461.6601652	501.4829252	605.1476653	966.5086724
taxf4p	777.7925664	461.6601652	501.4829252	605.1476653	966.5086724
taxg4p	777.7925664	461.6601652	501.4829252	605.1476653	966.5086724
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	777.7925664	461.6601652	501.4829252	605.1476653	966.5086724
taxc5p	777.7925664	461.6601652	501.4829252	605.1476653	966.5086724
taxf5p	777.7925664	461.6601652	501.4829252	605.1476653	966.5086724
taxg5p	777.7925664	461.6601652	501.4829252	605.1476653	966.5086724
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	3388407963	3964610272	7893118857	35561257137	-1286593374(
pollution reduction 2p	6553293134	33493111173	1377246201(	-5122446829(	20556733200
pollution reduction 3p	9675200368	8754271085	11831911027	7148236404	13358589072
pollution reduction 4p	19898547019	712920778.3	8581220559	45470046037	16446966615
pollution reduction 5p	484549939.6	-6924951289	-2078712452	3044928827	2503644918
Total reductionp	39.99999842	39.99996202	40	40.00000011	40.0000000(
DIFFERENCE-					
Tsdiff	(7,587)	(45)	(19,315)	(2,608)	(5,187)

QUARTER	16	17	17	18	18
COEFFICIENTS OF DEMAND					
a P1/q1	-0.011224195	-0.003116301	-0.010812179	-0.005555016	-0.009616929
b p2/q1	-0.001322058	-1E-08	-1E-08	-0.001009331	-1.42286E-16
c p3/q1	-0.011012026	-0.002004453	-0.006199026	-1E-08	5.2152E-16
d p4/q1	-0.001627367	-0.000920484	-0.002702626	-1E-08	-0.002922668
f P1/q2	-0.001322058	-1E-08	-1E-08	-0.001009331	0
g p2/q2	-0.020678666	-0.012134195	-0.011303365	-0.009246263	-0.005482024
h p3/q2	-1E-08	-0.002858897	-1.08742E-16	-1E-08	-5.91573E-05
i p4/q2	-1E-08	-1E-08	-0.011303365	-0.00295935	-0.005482024
k P1/q3	-0.011012026	-0.002004453	-0.006199026	-1E-08	7.93409E-18
l p2/q3	-1E-08	-0.002858897	1.29233E-16	-1E-08	-5.91573E-05
m p3/q3	-0.095785096	-0.050716961	-0.079322585	-0.077582002	-0.032462655
n p4/q3	-0.014223555	-1E-08	-1E-08	-0.008238061	-0.000108607
p P1/q4	-0.001627367	-0.000920484	-0.002702626	-1E-08	-0.002922668
q p2/q4	-1E-08	-1E-08	-0.011303365	-0.00295935	-0.005482024
r p3/q4	-0.014223555	-1E-08	-1E-08	-0.008238061	-0.000108607
s p4/q4	-0.014223555	-0.024406132	-0.011684678	-0.008238061	-0.006481929
u P1/q5	-0.011224195	-0.001218851	-4.27886E-17	-1E-08	-1E-08
v p2/q5	-0.001067114	-0.001961526	-0.006773617	-0.000421804	-1E-08
w p3/q5	-0.00321951	-1E-08	-0.001370482	-0.004620409	-0.013422758
x p4/q5	-0.005032474	-0.014179899	-0.000754827	-1E-08	-0.000549102
y p5/q5	-0.013394153	-0.123724301	-0.090166037	-0.042491693	-0.101982322
e p5/q1	-0.011224195	-0.001218851	0	-0.00000001	-0.00000001
j p5/q2	-0.001067114	-0.001961526	-0.006773617	-0.000421804	-0.00000001
o p5/q3	-0.00321951	-0.00000001	-0.001370482	-0.004620409	-0.013422758
t p5/q4	-0.005032474	-0.014179899	-0.000754827	-1E-08	-0.000549102
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.011224195	-0.003116301	-0.010812179	-0.005555016	-0.009616929
bb	-0.001322058	-1E-08	-1E-08	-0.001009331	-1.42286E-16
cc	-0.011012026	-0.002004453	-0.006199026	-1E-08	-0.00000001
dd	-0.001627367	-0.000920484	-0.002702626	-1E-08	-0.002922668
ee	-0.011224195	-0.001218851	-0.00000001	-0.00000001	-0.00000001
ff	-0.001322058	-1E-08	-1E-08	-0.001009331	-0.00000001
gg	-0.020678666	-0.012134195	-0.011303365	-0.009246263	-0.005482024
hh	-1E-08	-0.002858897	-1.08742E-16	-1E-08	-5.91573E-05
ii	-1E-08	-1E-08	-0.011303365	-0.00295935	-0.005482024
jj	-0.001067114	-0.001961526	-0.006773617	-0.000421804	-0.00000001
kk	-0.011012026	-0.002004453	-0.006199026	-1E-08	-0.00000001
ll	-1E-08	-0.002858897	-0.00000001	-1E-08	-5.91573E-05
mm	-0.095785096	-0.050716961	-0.079322585	-0.077582002	-0.032462655
nn	-0.014223555	-1E-08	-1E-08	-0.008238061	-0.000108607
oo	-0.00321951	-0.00000001	-0.001370482	-0.004620409	-0.013422758
pp	-0.001627367	-0.000920484	-0.002702626	-1E-08	-0.002922668
qq	-1E-08	-1E-08	-0.011303365	-0.00295935	-0.005482024
rr	-0.014223555	-1E-08	-1E-08	-0.008238061	-0.000108607
ss	-0.014223555	-0.024406132	-0.011684678	-0.008238061	-0.006481929
tt	-0.005032474	-0.014179899	-0.000754827	-1E-08	-0.000549102
uu	-0.011224195	-0.001218851	-4.27886E-17	-1E-08	-1E-08
vv	-0.001067114	-0.001961526	-0.006773617	-0.000421804	-1E-08
ww	-0.00321951	-1E-08	-0.001370482	-0.004620409	-0.013422758
xx	-0.005032474	-0.014179899	-0.000754827	-1E-08	-0.000549102
yy	-0.013394153	-0.123724301	-0.090166037	-0.042491693	-0.101982322
KNOWN PRICE BEFORE TAXES					
P1	13,163	12,771	12,771	13,267	13,267
P2	17,899	17,905	17,905	18,399	18,399
P3	22,295	24,901	24,901	22,509	22,509
P4	16,790	17,985	17,985	16,280	16,280
P5	31,129	25,238	25,238	25,226	25,226

QUARTER	16	17	17	18	18
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	227465	230312	230312	288801	288801
Csub1	64198	67774	67774	79786	79786
Fsub1	127456	161025	161025	169883	169883
Gsub1	160602	180436	180436	239908	239908
Asub2	358526	284385	284385	390476	390476
Csub2	239858	251870	251870	331142	331142
Fsub2	366082	331907	331907	430382	430382
Gsub2	450583	471662	471662	661678	661678
Asub3	54125	49929	49929	51583	51583
Csub3	81836	80651	80651	110826	110826
Fsub3	87167	72630	72630	88916	88916
Gsub3	96263	87929	87929	111686	111686
asub4	95065	89762	89762	96893	96893
Csub4	54958	59443	59443	59962	59962
fsub4	170914	180626	180626	238232	238232
gsub4	196843	204307	204307	258467	258467
asub5	103589	91795	91795	108859	108859
Csub5	15900	14634	14634	19514	19514
fsub5	65026	63104	63104	71496	71496
gsub5	102991	76200	76200	100291	100291
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	579,721	639,547	639,547	778,378	778,378
tseg2	1,415,049	1,339,824	1,339,824	1,813,678	1,813,678
tseg3	319,391	291,139	291,139	363,011	363,011
tseg4	517,780	534,138	534,138	653,554	653,554
tseg5	287,506	245,733	245,733	300,160	300,160
tsum	3,119,447	3,050,381	3,050,381	3,908,781	3,908,781
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	2.02	6.41	1.85	3.07	1.77
Elasiticity21	0.18	0.00	0.00	0.46	0.00
Elasiticity31	0.39	0.49	0.28	0.00	0.00
Elasiticity41	0.30	0.34	0.60	0.00	0.98
Elasiticity51	4.01	0.12	0.00	0.00	0.00
Elasiticity12	0.05	0.00	0.00	0.14	0.00
Elasiticity22	0.61	1.10	1.18	1.10	1.85
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.00	1.15	0.35	1.38
Elasiticity52	0.08	0.02	0.13	0.01	0.00
Elasiticity13	0.42	0.56	0.32	0.00	0.00
Elasiticity23	0.00	0.29	0.00	0.00	0.02
Elasiticity33	0.73	1.69	1.08	0.80	1.91
Elasiticity43	0.55	0.00	0.00	0.58	0.02
Elasiticity53	0.24	0.00	0.02	0.10	0.28
Elasiticity14	0.26	0.29	0.51	0.00	0.95
Elasiticity24	0.00	0.00	2.87	1.09	4.34
Elasiticity34	0.45	0.00	0.00	0.44	0.02
Elasiticity44	2.28	1.38	2.88	3.02	3.84
Elasiticity54	1.59	0.22	0.03	0.00	0.03
Elasiticity15	3.42	0.16	0.00	0.00	0.00
Elasiticity25	0.24	0.10	0.48	0.07	0.00
Elasiticity35	0.19	0.00	0.02	0.11	0.30
Elasiticity45	1.54	0.34	0.05	0.00	0.05
Elasiticity55	8.08	0.83	1.14	1.98	0.82
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	16	17	17	18	18
MCasub1	8,163	11,771	9,739	11,280	10,217
MCcsub1	10,920	12,336	11,386	12,496	12,330
MCfsub1	9,227	11,895	10,104	11,899	10,946
MCgsub1	8,163	11,771	9,739	11,280	10,217
MCasub2	10,009	14,127	13,050	14,198	15,759
MCcsub2	12,783	14,580	14,279	15,099	16,278
MCfsub2	10,009	13,539	11,678	13,549	14,767
MCgsub2	8,163	11,771	9,739	11,280	13,399
MCasub3	12,916	21,114	19,405	17,225	19,365
MCcsub3	12,916	19,972	18,079	13,338	18,639
MCfsub3	9,892	19,972	18,079	13,338	18,639
MCgsub3	8,163	18,767	16,735	11,280	17,509
MCasub4	13,740	14,289	13,038	13,904	12,605
MCcsub4	14,628	16,275	14,260	13,904	13,831
MCfsub4	12,541	12,547	11,653	12,317	11,837
MCgsub4	11,790	11,771	9,739	11,280	10,217
MCasub5	26,129	11,771	14,900	20,226	13,399
MCcsub5	29,377	22,007	22,056	23,768	21,732
MCfsub5	27,266	14,024	17,065	21,635	16,639
MCgsub5	26,129	11,771	14,900	20,226	13,399
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.011224195	-0.001218851	0	-0.00000001	-0.00000001
j	-0.001067114	-0.001961526	-0.006773617	-0.000421804	-0.00000001
o	-0.00321951	-0.00000001	-0.001370482	-0.004620409	-0.013422758
t	-0.005032474	-0.014179899	-0.000754827	-1E-08	-0.000549102
y	-0.013394153	-0.123724301	-0.090166037	-0.042491693	-0.101982322
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	5000	1000	3031.729581	1987.128674	3050.349738
XMCcsub1	2243.14348	435.2366445	1384.789204	771.696661	937.2287641
XMCfsub1	3935.936083	875.4346969	2666.621155	1368.719732	2321.496747
XMCgsub1	5000	1000	3031.729581	1987.128674	3050.349738
XMCasub2	7890.087823	3777.97925	4855.039641	4201.282036	2639.718346
XMCcsub2	5115.779587	3325.17561	3626.667736	3299.564809	2121.232711
XMCfsub2	7890.087823	4366.575543	6227.811566	4849.56544	3632.311786
XMCgsub2	9735.967397	6134.67	8166.399581	7118.790755	5000
XMCasub3	9378.927425	3786.99303	5495.810672	5284.054684	3143.870668
XMCcsub3	9378.927425	4929.123693	6822.350187	9170.713387	3869.646561
XMCfsub3	12402.66534	4929.123693	6822.350187	9170.713387	3869.646561
XMCgsub3	14131.41647	6134.67	8166.399581	11228.59804	5000
XMCasub4	3050.036904	3695.631698	4946.718581	2376.223768	3675.459165
XMCcsub4	2161.767181	1709.720366	3725.248745	2376.223768	2449.065935
XMCfsub4	4248.756274	5438.016505	6332.361135	3962.797147	4442.780456
XMCgsub4	5000	6214.084635	8245.814217	5000	6063.221064
XMCasub5	5000	13467.27765	10338.3905	5000	11826.68981
XMCcsub5	1751.841433	3230.812849	3181.693277	1457.751024	3493.413051
XMCfsub5	3862.501531	11214.33923	8173.124438	3591.21101	8586.270292
XMCgsub5	5000	13467.27765	10338.3905	5000	11826.68981
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	29,128	16,139	22,934	19,422	22,663
constant2	48,234	35,478	40,752	38,015	31,946
constant3	67,562	44,779	52,296	57,443	38,500
constant4	31,088	35,094	41,285	30,022	32,938
constant5	46,630	66,623	57,272	40,422	61,068

QUARTER	16	17	17	18	18
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	7,213,465,757	1,658,141,298	5,018,464,532	3,739,976,077	5,738,622,803
TSseg2	32,793,587,027	18,026,424,463	23,518,185,209	27,319,275,563	18,889,707,476
TSseg3	10,945,558,599	4,377,675,560	6,026,112,335	9,699,138,948	4,396,085,254
TSseg4	5,820,714,629	7,254,582,199	9,716,560,441	7,099,640,976	8,572,016,619
TSseg5	3,540,349,824	8,102,187,924	6,235,071,176	3,611,658,932	8,534,851,493
Tssum	60,313,675,837	39,419,011,445	50,514,393,693	51,469,690,496	46,131,283,644
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	4,627,466,762	1,076,928,698	3,249,942,295	2,395,270,459	3,656,714,877
CSseg2	21,462,444,212	11,771,724,143	15,305,201,345	17,788,638,366	12,284,859,961
CSseg3	7,228,954,574	2,893,638,378	3,987,911,996	6,340,717,721	2,902,554,030
CSseg4	3,701,569,541	4,569,395,841	6,222,626,499	4,490,518,307	5,443,484,430
CSseg5	2,228,432,521	5,084,803,238	3,935,955,521	2,280,705,156	5,379,244,875
Cssum	39,248,867,611	25,396,490,297	32,701,637,656	33,295,850,009	29,666,858,174
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	2,585,998,995	581,212,600	1,768,522,237	1,344,705,618	2,081,907,926
PSseg2	11,331,142,815	6,254,700,320	8,212,983,864	9,530,637,196	6,604,847,514
PSseg3	3,716,604,025	1,484,037,182	2,038,200,339	3,358,421,227	1,493,531,224
PSseg4	2,119,145,089	2,685,186,359	3,493,933,942	2,609,122,669	3,128,532,189
PSseg5	1,311,917,303	3,017,384,686	2,299,115,655	1,330,953,776	3,155,606,618
Pssum	21,064,808,226	14,022,521,148	17,812,756,037	18,173,840,486	16,464,425,471
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	4,529,070,313	4,996,460,938	4,996,460,938	6,081,078,125	6,081,078,125
CStravseg2	11,055,070,313	10,467,375,000	10,467,375,000	14,169,359,375	14,169,359,375
CStravseg3	2,495,242,188	2,274,523,438	2,274,523,438	2,836,023,438	2,836,023,438
CStravseg4	4,045,156,250	4,172,953,125	4,172,953,125	5,105,890,625	5,105,890,625
CStravseg5	2,246,140,625	1,919,789,063	1,919,789,063	2,345,000,000	2,345,000,000
Cstravsum	24,370,679,688	23,831,101,563	23,831,101,563	30,537,351,563	30,537,351,563
FIRST ORDER CONDITIONS					
foc1l	-0.000138473	-4.31033E-06	-3.10199E-05	-7.35646E-09	4.83034E-08
foc2l	-0.000115613	-1.44978E-05	-3.14804E-05	0.000224821	4.16393E-07
foc3l	-0.000196142	8.97659E-06	3.77499E-05	-0.000796233	-1.78233E-06
foc4l	0.000172204	2.82223E-05	-2.12599E-05	-1.57851E-08	-6.63706E-07
foc5l	-0.000124163	-4.44053E-06	-3.07033E-05	-7.34946E-09	5.16277E-08
foc6l	-8.84859E-05	2.09785E-05	-3.1484E-05	0.000224859	3.95958E-07
foc7l	-0.000162163	9.37322E-06	3.77696E-05	-0.000796378	-1.2099E-06
foc8l	0.000135146	-4.26018E-05	-2.11256E-05	-1.5869E-08	-5.46718E-07
foc9l	-0.00013424	-4.43657E-06	-3.09777E-05	-7.37718E-09	4.7645E-08
foc10l	-0.000101794	1.88789E-05	-3.14889E-05	0.000224777	4.15584E-07
foc11l	-0.000184165	9.34219E-06	3.76304E-05	-0.000796071	-1.74531E-06
foc12l	0.000155265	-3.84049E-05	-2.12041E-05	-1.5924E-08	-6.55988E-07
foc13l	-0.000143382	-4.56968E-06	-3.10066E-05	-7.37065E-09	4.54922E-08
foc14l	-0.000105791	5.35558E-05	-3.15054E-05	0.000224762	4.32323E-07
foc15l	-0.000192031	9.71537E-06	3.74649E-05	-0.000796017	-2.15506E-06
foc16l	0.000161256	-0.000107624	-2.1166E-05	-1.59157E-08	-7.4494E-07
foc17l	0.000513467	2.009E-05	-7.34434E-05	-0.000545376	6.09716E-07
foc18l	0.000411559	-9.71165E-06	-7.40303E-05	-0.000545467	6.89176E-07
foc19l	0.000467609	-7.94432E-06	-7.39539E-05	-0.000545268	6.1525E-07
foc20l	0.00049522	-3.7069E-05	-7.45615E-05	-0.00054523	5.67009E-07

QUARTER	16	17	17	18	18
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	13770.98425	13424.65066	13473.73797	13793.38521	14026.13094
p1c1l	13770.98425	13424.65066	13473.73797	13793.38521	14026.13094
p1f1l	13770.98425	13424.65066	13473.73797	13793.38521	14026.13094
p1g1l	13770.98425	13424.65066	13473.73797	13793.38521	14026.13094
p2a2l	18759.94078	18807.52671	18880.01748	19161.02703	19492.5298
p2c2l	18759.94078	18807.52671	18880.01748	19161.02703	19492.5298
p2f2l	18759.94078	18807.52671	18880.01748	19161.02703	19492.5298
p2g2l	18759.94078	18807.52671	18880.01748	19161.02703	19492.5298
p3a3l	23342.73238	25960.50413	26040.80514	23363.18958	23746.68668
p3c3l	23342.73238	25960.50413	26040.80514	23363.18958	23746.68668
p3f3l	23342.73238	25960.50413	26040.80514	23363.18958	23746.68668
p3g3l	23342.73238	25960.50413	26040.80514	23363.18958	23746.68668
p4a4l	17810.2123	19034.94569	19116.72588	17123.92274	17501.92664
p4c4l	17810.2123	19034.94569	19116.72588	17123.92274	17501.92664
p4f4l	17810.2123	19034.94569	19116.72588	17123.92274	17501.92664
p4g4l	17810.2123	19034.94569	19116.72588	17123.92274	17501.92664
p5a5l	32170.0134	36477.63099	24317.22783	28572.26057	24864.2695
p5c5l	32170.0134	36477.63099	24317.22783	28572.26057	24864.2695
p5f5l	32170.0134	36477.63099	24317.22783	28572.26057	24864.2695
p5g5l	32170.0134	36477.63099	24317.22783	28572.26057	24864.2695
lemp_a1	2.07	2.09	1.94	2.59	1.79
lemp_c1	2.07	2.09	1.94	2.59	1.79
lemp_f1	2.07	2.09	1.94	2.59	1.79
lemp_g1	2.07	2.09	1.94	2.59	1.79
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	2.92	2.96	2.74	3.67	2.53
lemp_c2	2.92	2.96	2.74	3.67	2.53
lemp_f2	2.92	2.96	2.74	3.67	2.53
lemp_g2	2.92	2.96	2.74	3.67	2.53
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	3.34	3.39	3.14	4.20	2.89
lemp_c3	3.34	3.39	3.14	4.20	2.89
lemp_f3	3.34	3.39	3.14	4.20	2.89
lemp_g3	3.34	3.39	3.14	4.20	2.89
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	3.34	3.39	3.14	4.20	2.89
lemp_c4	3.34	3.39	3.14	4.20	2.89
lemp_f4	3.34	3.39	3.14	4.20	2.89
lemp_g4	3.34	3.39	3.14	4.20	2.89
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	3.34	3.39	3.14	4.20	2.89
lemp_c5	3.342529076	3.38571597	3.137464859	4.198805843	2.894398275
lemp_f5	3.342529076	3.38571597	3.137464859	4.198805843	2.894398275
lemp_g5	3.342529076	3.38571597	3.137464859	4.198805843	2.894398275

QUARTER	16	17	17	18	18
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	69044.0163	161825.274	164902.0148	267714.6728	165255.9874
Csub1nl	2541.931923	0	0	59525.77064	0
Fsub1nl	10731.01629	91745.75054	93036.03234	149186.6473	48851.68943
Gsub1nl	10731.01628	109896.6361	109631.1835	218735.8169	84625.88789
Asub2nl	350799.1729	251349.988	76455.08129	374931.9958	0
Csub2nl	230088.1909	219265.5486	34248.63401	316538.2347	84021.7058
Fsub2nl	358523.319	299168.7219	114662.2764	414576.7852	47016.21901
Gsub2nl	444212.2236	439188.0312	244576.0815	644492.8471	164593.2597
Asub3nl	75306.34622	49367.09902	51701.91809	47233.47599	50060.09664
Csub3nl	89886.14562	80091.12083	82633.9949	106737.4523	109485.8481
Fsub3nl	102670.6808	71960.96707	74526.51107	84600.64032	87349.60161
Gsub3nl	116195.9183	87120.83755	89936.28807	107238.7202	109897.0219
asub4nl	25814.2211	30445.68069	282925.8015	81728.99921	438122.6057
Csub4nl	19470.92591	0	262301.9454	43202.11648	258880.556
fsub4nl	116796.6063	121137.8932	382987.3168	222711.1099	571767.3711
gsub4nl	131570.2545	144629.6469	416344.424	243384.1608	703432.9584
asub5nl	239159.3234	180120.3161	79995.03073	162907.2519	88569.38212
Csub5nl	60877.71557	102976.4333	3495.812683	73653.37146	0
fsub5nl	161723.2423	151449.1003	51925.96093	125296.0628	51167.49353
gsub5nl	231019.6004	164567.4034	65667.07811	153706.5915	79265.22176
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	93,048	363,468	367,569	695,163	298,734
tseg2nl	1,383,623	1,208,972	469,942	1,750,540	295,631
tseg3nl	384,059	288,540	298,799	345,810	356,793
tseg4nl	293,652	296,213	1,344,559	591,026	1,972,203
tseg5nl	692,780	599,113	201,084	515,563	219,002
tsumnl	2,847,162	2,756,306	2,681,953	3,898,103	3,142,363
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	486,673	276,079	271,978	83,215	479,644
lostsales2l	31,426	130,852	869,882	63,138	1,518,047
lostsales3l	(64,668)	2,599	(7,660)	17,201	6,218
lostsales4l	224,128	237,925	(810,421)	62,528	(1,318,649)
lostsales5l	(405,274)	(353,380)	44,649	(215,403)	81,158
lostsuml	272,285	294,075	368,428	10,678	766,418
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	714,453,229	493,214,887	1,738,663,307	1,956,372,729	1,290,080,519
CSlsetseg2	20,390,292,985	10,076,780,696	5,139,296,627	16,502,449,907	1,840,811,631
CSlsetseg3	8,491,351,539	2,714,983,215	3,922,577,579	5,892,555,994	2,632,010,506
CSlsetseg4	1,949,452,099	2,378,498,144	14,903,003,512	3,811,585,292	15,221,904,646
CSlsetseg5	5,008,952,763	9,030,204,513	3,313,386,109	3,054,734,491	3,964,375,638
Cslsetsum	36,554,502,614	24,693,681,455	29,016,927,134	31,217,698,414	24,949,182,939
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	427,682,606	297,816,274	1,020,255,211	1,132,283,033	821,682,813
PSlsetseg2	10,697,921,848	5,396,890,263	3,088,861,081	8,948,981,792	1,102,512,731
PSlsetseg3	4,361,712,094	1,401,561,649	2,012,274,994	3,141,484,458	1,367,807,752
PSlsetseg4	1,188,050,471	1,596,095,024	7,871,208,828	2,275,618,812	8,460,880,386
PSlsetseg5	2,891,685,942	12,628,272,302	1,474,261,233	3,325,472,534	2,012,178,616
Pslsetsum	19,567,052,961	21,320,635,511	15,466,861,348	18,823,840,629	13,765,062,299

QUARTER	16	17	17	18	18
-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	1,142,135,835	791,031,161	2,758,918,518	3,088,655,762	2,111,763,331
TSlsetseg2	31,088,214,833	15,473,670,958	8,228,157,708	25,451,431,699	2,943,324,362
TSlsetseg3	12,853,063,633	4,116,544,864	5,934,852,573	9,034,040,452	3,999,818,258
TSlsetseg4	3,137,502,570	3,974,593,168	22,774,212,341	6,087,204,104	23,682,785,033
TSlsetseg5	7,900,638,705	21,658,476,814	4,787,647,342	6,380,207,025	5,976,554,254
Tslsetsum	56,121,555,575	46,014,316,965	44,483,788,482	50,041,539,043	38,714,245,238
dwllset	4,192,120,262	(6,595,305,521)	6,030,605,211	1,428,151,453	7,417,038,406
surpluslset	299,828,352,450	284,325,332,590	282,794,804,107	355,415,054,668	344,087,760,863
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	196.91	191.92	223.49	124.79	262.61
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	37,842,755	145,937,277	159,261,669	225,066,979	140,306,152
taxrevlsetseg2	795,808,422	686,486,192	287,959,519	801,515,995	196,362,220
taxrevlsetseg3	252,781,646	187,490,049	209,518,575	181,190,239	271,194,071
taxrevlsetseg4	193,277,127	192,476,006	942,809,244	309,673,297	1,499,049,981
taxrevlsetseg5	455,976,808	389,297,026	141,000,636	270,133,760	166,461,063
taxrevlsetsum	1,735,686,757	1,601,686,549	1,740,549,644	1,787,580,270	2,273,373,487
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	406.70	401.51	433.28	323.76	469.67
taxc1	406.70	401.51	433.28	323.76	469.67
taxf1	406.70	401.51	433.28	323.76	469.67
taxg1	406.70	401.51	433.28	323.76	469.67
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	575.16	567.83	612.76	457.87	664.21
taxc2	575.16	567.83	612.76	457.87	664.21
taxf2	575.16	567.83	612.76	457.87	664.21

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taxg2	575.16	567.83	612.76	457.87	664.21
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	658.18	649.79	701.20	523.96	760.09
taxc3	658.18	649.79	701.20	523.96	760.09
taxf3	658.18	649.79	701.20	523.96	760.09
taxg3	658.18	649.79	701.20	523.96	760.09
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	658.18	649.79	701.20	523.96	760.09
taxc4	658.18	649.79	701.20	523.96	760.09
taxf4	658.18	649.79	701.20	523.96	760.09
taxg4	658.18	649.79	701.20	523.96	760.09
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	658.18	649.79	701.20	523.96	760.09
taxc5	658.184252	649.7887064	701.2030728	523.9584974	760.088899€
taxf5	658.184252	649.7887064	701.2030728	523.9584974	760.088899€
taxg5	658.184252	649.7887064	701.2030728	523.9584974	760.088899€
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	(16,888,805,332)	(1,738,824,103)	(796,040,370)	10,097,669,971	(10,349,133,034)
pollution reduction 2	19,992,829,778	12,827,342,561	(26,223,605,695)	8,650,375,168	(54,187,747,422)
pollution reduction 3	11,495,190,042	7,258,291,378	8,654,902,581	4,986,778,860	11,006,669,609
pollution reduction 4	2,223,476,209	1,805,151,887	57,568,944,177	7,727,818,242	93,312,909,601
pollution reduction 5	23,177,308,975	19,848,038,280	795,799,242	8,537,357,763	217,301,251
Total reduction	39.99999967	40	39.99999993	40	40
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.00366	0.01827	0.00582	0.00504	0.00281
	43.93223082	219.2636115	69.89163913	60.51534508	33.7529269€
FOC-PMET					
foc1p	-0.000146812	4.98548E-07	-3.93429E-06	-2.76292E-08	4.26109E-08
foc2p	-8.84457E-05	-0.000315887	-6.52466E-06	-1.48294E-05	3.34528E-09
foc3p	-0.000204646	-1.03433E-05	-1.9729E-05	5.2874E-05	-2.45234E-06
foc4p	0.000131466	0.000633015	3.26301E-06	-5.57651E-07	-4.19109E-07
foc5p	-0.000100849	3.66883E-07	-4.52944E-06	-2.76436E-08	4.65695E-08
foc6p	-6.15885E-05	-0.000280387	-4.5202E-06	-1.37846E-05	-1.75217E-08
foc7p	-0.000165174	-9.94367E-06	-2.17866E-05	4.86108E-05	-1.87641E-06
foc8p	9.53655E-05	0.000562142	3.39711E-06	-5.57716E-07	-2.99052E-07
foc9p	-0.000142583	3.72238E-07	-3.89241E-06	-2.76263E-08	4.28383E-08
foc10p	-7.46159E-05	-0.000282511	-6.53291E-06	-1.48732E-05	2.97058E-09
foc11p	-0.000192659	-9.97771E-06	-1.985E-05	5.30365E-05	-2.39856E-06
foc12p	0.000114508	0.000566389	3.31906E-06	-5.57644E-07	-4.10813E-07
foc13p	-0.000151722	2.39154E-07	-3.92014E-06	-2.76289E-08	3.97233E-08
foc14p	-7.86148E-05	-0.000247834	-6.5497E-06	-1.48881E-05	1.95043E-08
foc15p	-0.000200539	-9.60477E-06	-2.00139E-05	5.30902E-05	-2.8365E-06
foc16p	0.000120518	0.000497169	3.35734E-06	-5.57636E-07	-4.99971E-07
foc17p	0.000525041	0.00026801	-0.000112345	4.2426E-05	-4.63602E-07
foc18p	0.000368774	0.00023818	-9.04366E-05	4.05433E-05	-4.00153E-07
foc19p	0.000479162	0.000239976	-0.000112861	4.25342E-05	-4.51265E-07
foc20p	0.000506786	0.000210851	-0.000113471	4.25721E-05	-5.10667E-07

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PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	13,221.72	13,174.28	12,941.76	13,506.09	13,446.97
p1c1	13,221.72	13,174.28	12,941.76	13,506.09	13,446.97
p1f1	13,221.72	13,174.28	12,941.76	13,506.09	13,446.97
p1g1	13,221.72	13,174.28	12,941.76	13,506.09	13,446.97
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	18,201.43	18,222.75	18,082.39	18,741.79	18,735.84
p2c2	18,201.43	18,222.75	18,082.39	18,741.79	18,735.84
p2f2	18,201.43	18,222.75	18,082.39	18,741.79	18,735.84
p2g2	18,201.43	18,222.75	18,082.39	18,741.79	18,735.84
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	22,720.34	26,427.56	25,291.16	22,853.14	22,940.93
p3c3	22,720.34	26,427.56	25,291.16	22,853.14	22,940.93
p3f3	22,720.34	26,427.56	25,291.16	22,853.14	22,940.93
p3g3	22,720.34	26,427.56	25,291.16	22,853.14	22,940.93
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	17,131.82	18,324.90	18,489.03	16,574.08	16,643.27
p4c4	17,131.82	18,324.90	18,489.03	16,574.08	16,643.27
p4f4	17,131.82	18,324.90	18,489.03	16,574.08	16,643.27
p4g4	17,131.82	18,324.90	18,489.03	16,574.08	16,643.27
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	31,585.68	23,890.46	25,769.82	24,939.18	25,686.23
p5c5	31585.68272	23890.46391	25769.82043	24939.18112	25686.22523
p5f5	31585.68272	23890.46391	25769.82043	24939.18112	25686.22523
p5g5	31585.68272	23890.46391	25769.82043	24939.18112	25686.22523
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	9,298	27,817	14,767	34,908	34,908
dp/dgas2	59,101	9,484	9,484	32,194	55,063
dp/dgas3	63,976	156,874	30,044	26,983	75,602
dp/dgas4	48,423	7,508	52,952	20,838	57,368
dp/dgas5	6,103	122,051	7,707	153,642	10,072
sum of dpdgas	186,901	323,735	114,954	268,566	233,013
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,832	11,784	11,832	11,898	11,924
VMT2	11,906	11,476	11,704	11,850	11,915
VMT3	11,897	11,852	11,810	11,813	11,917
VMT4	11,881	11,326	11,857	11,787	11,904
VMT5	11,881	11,326	11,857	11,787	11,904

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TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.01819	0.02349	0.01820	0.01102	0.00823
tpmc1	0.01819	0.02349	0.01820	0.01102	0.00823
tpmf1	0.01819	0.02349	0.01820	0.01102	0.00823
tpmg1	0.01819	0.02349	0.01820	0.01102	0.00823
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.01020	0.05689	0.03212	0.01622	0.00926
tpmc2	0.01020	0.05689	0.03212	0.01622	0.00926
tpmf2	0.01020	0.05689	0.03212	0.01622	0.00926
tpmg2	0.01020	0.05689	0.03212	0.01622	0.00926
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.01122	0.01601	0.02065	0.02028	0.00905
tpmc3	0.01122	0.01601	0.02065	0.02028	0.00905
tpmf3	0.01122	0.01601	0.02065	0.02028	0.00905
tpmg3	0.01122	0.01601	0.02065	0.02028	0.00905
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.01290	0.07317	0.01556	0.02307	0.01039
tpmc4	0.01290	0.07317	0.01556	0.02307	0.01039
tpmf4	0.01290	0.07317	0.01556	0.02307	0.01039
tpmg4	0.01290	0.07317	0.01556	0.02307	0.01039
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.01290	0.07317	0.01556	0.02307	0.01039
tpmc5	0.012896978	0.073172796	0.015555801	0.023074278	0.010385871
tpmf5	0.012896978	0.073172796	0.015555801	0.023074278	0.010385871
tpmg5	0.012896978	0.073172796	0.015555801	0.023074278	0.010385871
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	4,499,304,736	4,894,916,347	4,924,476,589	5,992,077,737	6,018,108,709
cstravelpmetseg2	10,886,937,848	9,603,066,707	10,386,986,701	13,829,092,629	14,018,327,932
cstravelpmetseg3	2,444,694,888	2,231,567,341	2,200,457,971	2,748,126,018	2,800,365,351
cstravelpmetseg4	3,998,831,822	3,710,188,494	3,879,953,505	4,947,226,759	4,988,007,366
cstravelpmetseg5	2,140,074,160	1,760,243,957	1,861,451,853	2,283,553,259	2,308,079,843
cstravelpmetsum	23,969,843,454	22,199,982,846	23,253,326,619	29,800,076,403	30,132,889,201
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	4.97	1.29	3.13	2.18	2.92
epm_c1	4.97	1.29	3.13	2.18	2.92
epm_f1	4.97	1.29	3.13	2.18	2.92
epm_g1	4.97	1.29	3.13	2.18	2.92
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	2.79	3.11	5.51	3.22	3.29
epm_c2	2.79	3.11	5.51	3.22	3.29
epm_f2	2.79	3.11	5.51	3.22	3.29
epm_g2	2.79	3.11	5.51	3.22	3.29

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OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	3.06	0.88	3.55	4.02	3.22
epm_c3	3.06	0.88	3.55	4.02	3.22
epm_f3	3.06	0.88	3.55	4.02	3.22
epm_g3	3.06	0.88	3.55	4.02	3.22
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	3.52	4.00	2.67	4.58	3.69
epm_c4	3.52	4.00	2.67	4.58	3.69
epm_f4	3.52	4.00	2.67	4.58	3.69
epm_g4	3.52	4.00	2.67	4.58	3.69
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	3.52	4.00	2.67	4.58	3.69
epm_c5	3.522783534	4.004647837	2.670843202	4.575555766	3.692434037
epm_f5	3.522783534	4.004647837	2.670843202	4.575555766	3.692434037
epm_g5	3.522783534	4.004647837	2.670843202	4.575555766	3.692434037
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	58312.99998	161845.2066	152793.4722	262961.5866	250208.2067
Csub1n	79038.59958	0	644.687382	54758.63759	86265.96192
Fsub1n	0	91765.68314	80927.48975	144433.5611	133803.9088
Gsub1n	0	109916.5687	97522.64092	213982.7307	169578.1072
Asub2n	349970.5189	272684.0008	0	377003.7525	265875.6822
Csub2n	227802.2955	240585.4233	4838.228343	318687.3105	354224.2114
Fsub2n	357694.665	320502.7347	38207.19509	416648.5419	312891.9012
Gsub2n	443383.5696	460522.044	168121.0002	646564.6038	430468.9419
Asub3n	76504.64445	33483.03411	52577.359	51781.28367	43352.93301
Csub3n	79273.37687	64208.64066	82467.07235	111354.0911	102407.9068
Fsub3n	103868.979	56076.90216	75401.95199	89148.448	80642.43798
Gsub3n	117394.2166	71236.77264	90811.72898	111786.5279	103189.8583
asub4n	20085.66903	91969.36124	353705.5637	78531.84394	183564.8736
Csub4n	43817.85968	61474.95998	284451.5797	39908.35599	0
fsub4n	111068.0543	182661.5738	453767.079	219513.9546	317209.639
gsub4n	125841.7024	206153.3274	487124.1862	240187.0055	448875.2263
asub5n	258110.4136	77058.73217	107661.1023	90237.39005	107946.504
Csub5n	0	0	33807.56353	0	20289.7473
fsub5n	180674.3325	48387.51636	79592.03248	52626.20098	70544.61542
gsub5n	249970.6906	61505.81946	93333.14966	81036.7297	98642.34365
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	137,352	363,527	331,888	676,137	639,856
tseg2n	1,378,851	1,294,294	211,166	1,758,904	1,363,461
tseg3n	377,041	225,005	301,258	364,070	329,593
tseg4n	300,813	542,259	1,579,048	578,141	949,650
tseg5n	688,755	186,952	314,394	223,900	297,423
tsumn	2,882,813	2,612,038	2,737,755	3,601,153	3,579,983
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	1,080,739,274	420,036,712	1,613,561,456	1,869,949,477	2,856,626,832
CSPMETseg2	20,289,361,385	10,817,196,965	2,361,372,670	16,490,698,917	8,657,994,865

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CSPMETseg3	8,318,198,799	1,782,101,143	3,974,324,000	6,196,951,351	2,451,432,186
CSPMETseg4	2,005,097,954	4,397,735,302	17,347,306,953	3,748,441,250	7,454,411,332
CSPMETseg5	5,153,981,173	3,159,637,119	4,933,277,277	1,336,459,040	5,246,163,735
CsPMETsum	36,847,378,585	20,576,707,240	30,229,842,357	29,642,500,035	26,666,628,950
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	453,673,923	261,235,010	943,115,516	1,089,082,040	1,603,113,278
PSpmetseg2	10,651,160,687	5,767,113,220	1,601,466,982	8,942,984,662	4,505,794,977
PSpmetseg3	4,298,097,107	935,120,583	2,038,152,751	3,293,713,900	1,277,556,094
PSpmetseg4	1,172,162,492	2,605,838,385	9,194,865,613	2,244,148,475	4,584,519,559
PSpmetseg5	3,122,917,089	2,054,076,775	2,744,243,493	873,544,691	3,079,605,247
Pspmetsum	19,698,011,297	11,623,383,972	16,521,844,354	16,443,473,769	15,050,589,156
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	1,534,413,197	681,271,721	2,556,676,972	2,959,031,517	4,459,740,110
TSPMETseg2	30,940,522,072	16,584,310,185	3,962,839,652	25,433,683,579	13,163,789,842
TSPMETseg3	12,616,295,905	2,717,221,725	6,012,476,751	9,490,665,252	3,728,988,280
TSPMETseg4	3,177,260,446	7,003,573,687	26,542,172,566	5,992,589,725	12,038,930,891
TSPMETseg5	8,276,898,262	5,213,713,894	7,677,520,770	2,210,003,731	8,325,768,982
TSPMETsum	56,545,389,882	32,200,091,212	46,751,686,711	46,085,973,804	41,717,218,106
dwlpmet	3,781,487,856	7,363,529,980	3,722,268,735	5,428,768,697	4,447,632,948
pmetsurplus	300,120,167,744	269,065,009,365	285,467,084,807	351,008,969,370	346,755,059,640
pmetsurplus10	84,391,576,654	69,265,163,756	76,187,145,238	82,808,281,747	75,559,056,827
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	29,556,246	100,620,325	71,477,677	88,622,310	62,769,855
taxrevpmetseg2	149,402,840	687,933,837	77,807,908	287,395,866	120,916,312
taxrevpmetseg3	50,328,570	42,690,415	73,473,417	87,207,646	35,533,775
taxrevpmetseg4	46,093,867	449,385,783	291,238,890	157,245,453	117,411,237
taxrevpmetseg5	112,252,809	205,878,609	104,215,298	71,751,880	34,263,773
taxrevpmetsum	387,634,332	1,486,508,970	618,213,191	692,223,154	370,894,952
pmetrev10	3,876,343,318	14,865,089,698	6,182,131,908	6,922,231,540	3,708,949,520
SALES LOST AS RESULT OF PMET-					
lostsales1	442,369	276,020	307,659	102,241	138,522
lostsales2	36,198	45,530	1,128,658	54,774	450,217
lostsales3	(57,650)	66,134	(10,119)	(1,059)	33,418
lostsales4	216,967	(8,121)	(1,044,910)	75,413	(296,096)
lostsales5	(401,249)	58,781	(68,661)	76,260	2,737
lostsum	236,634	438,343	312,626	307,628	328,798
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	169.097984	653.4181367	268.7894573	384.5442258	287.1899627
taxc1p	169.097984	653.4181367	268.7894573	384.5442258	287.1899627
taxf1p	169.097984	653.4181367	268.7894573	384.5442258	287.1899627
taxg1p	169.097984	653.4181367	268.7894573	384.5442258	287.1899627
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	602.9116867	539.5693322	304.6327486	522.256258	510.0917603
taxc2p	602.9116867	539.5693322	304.6327486	522.256258	510.0917603
taxf2p	602.9116867	539.5693322	304.6327486	522.256258	510.0917603
taxg2p	602.9116867	539.5693322	304.6327486	522.256258	510.0917603
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	16	17	17	18	18
taxa3p	717.8299474	2511.189279	620.4590399	547.145168	683.9791098
taxc3p	717.8299474	2511.189279	620.4590399	547.145168	683.9791098
taxf3p	717.8299474	2511.189279	620.4590399	547.145168	683.9791098
taxg3p	717.8299474	2511.189279	620.4590399	547.145168	683.9791098
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	624.5061551	549.3616642	823.7099049	480.815908	595.8129457
taxc4p	624.5061551	549.3616642	823.7099049	480.815908	595.8129457
taxf4p	624.5061551	549.3616642	823.7099049	480.815908	595.8129457
taxg4p	624.5061551	549.3616642	823.7099049	480.815908	595.8129457
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	624.5061551	549.3616642	823.7099049	480.815908	595.8129457
taxc5p	624.5061551	549.3616642	823.7099049	480.815908	595.8129457
taxf5p	624.5061551	549.3616642	823.7099049	480.815908	595.8129457
taxg5p	624.5061551	549.3616642	823.7099049	480.815908	595.8129457
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	-18668536427	1884596167	-7728428854	12454996075	444705255
pollution reduction 2p	22316221796	17183491826	-47681905428	19428870241	-261390102
pollution reduction 3p	12521178471	10926756978	7510923060	6761069487	831798262
pollution reduction 4p	205602904(	11389743735	79290970943	5166136406	28040582922
pollution reduction 5p	21775106787	-1384588701	860844026	-3811072162	180828292
Total reductionp	39.99999967	40.00000001	39.9999999	40.0000000	40.00000001
DIFFERENCE-					
Tsdiff	(292)	(15,260)	(2,672)	(4,406)	(2,667)

QUARTER	19	19	20	20	21
COEFFICIENTS OF DEMAND					
a P1/q1	-0.013495296	-0.005333317	-0.003224195	-0.004391685	-0.002611644
b p2/q1	-0.000679598	-0.001698029	-0.00042401	-2.95769E-17	-0.000712316
c p3/q1	-0.006385633	8.79719E-17	-1E-08	-0.001209178	-3.8241E-17
d p4/q1	-0.008094061	-0.005157941	-1E-08	1.10913E-17	-3.8241E-17
f P1/q2	-0.000679598	-0.001698029	-0.00042401	0	-0.000712316
g p2/q2	-0.016270366	-0.013817002	-0.004448823	-0.011512969	-0.008918113
h p3/q2	-1E-08	-1.88291E-17	-0.004191011	-0.000335669	-0.000730812
i p4/q2	0	-1E-08	-0.000954143	-0.001148781	-0.003827083
k P1/q3	-0.006385633	8.12127E-18	-1E-08	-0.001209178	6.59169E-18
l p2/q3	-1E-08	-3.20679E-18	-0.004191011	-0.000335669	-0.000730812
m p3/q3	-0.120869361	-0.107278415	-0.025538135	-0.057573536	-0.054942324
n p4/q3	-1.43545E-17	-0.001026491	-1E-08	-1.01699E-17	2.07167E-17
p P1/q4	-0.008094061	-0.005157941	-1E-08	-8.80758E-19	6.66757E-16
q p2/q4	-6.81714E-18	-1E-08	-0.000954143	-0.001148781	-0.003827083
r p3/q4	9.78223E-18	-0.001026491	-1E-08	1.83098E-17	1.93584E-16
s p4/q4	-0.024773885	-0.01793837	-0.019316703	-0.023195107	-0.009617314
u P1/q5	1.75977E-16	-0.005333317	-0.001560005	-1E-08	-0.000854558
v p2/q5	-0.016270366	-0.005178062	-0.004448823	-5.19519E-17	-1E-08
w p3/q5	-1.93562E-16	-0.006012027	-1E-08	-0.025671602	-1E-08
x p4/q5	-1E-08	-1E-08	-1E-08	-1E-08	-0.005140882
y p5/q5	-0.093360299	-0.008445585	-0.077223218	-0.173181021	-0.069998048
e p5/q1	-0.00000001	-0.005333317	-0.001560005	-0.00000001	-0.000854558
j p5/q2	-0.016270366	-0.005178062	-0.004448823	-0.00000001	-0.00000001
o p5/q3	-0.00000001	-0.006012027	-1E-08	-0.025671602	-0.00000001
t p5/q4	-0.00000001	-0.00000001	-0.00000001	-0.00000001	-0.005140882
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.013495296	-0.005333317	-0.003224195	-0.004391685	-0.002611644
bb	-0.000679598	-0.001698029	-0.00042401	-2.95769E-17	-0.000712316
cc	-0.006385633	-0.00000001	-1E-08	-0.001209178	-3.8241E-17
dd	-0.008094061	-0.005157941	-1E-08	-0.00000001	-3.8241E-17
ee	-0.00000001	-0.005333317	-0.001560005	-0.00000001	-0.000854558
ff	-0.000679598	-0.001698029	-0.00042401	-0.00000001	-0.000712316
gg	-0.016270366	-0.013817002	-0.004448823	-0.011512969	-0.008918113
hh	-1E-08	-1.88291E-17	-0.004191011	-0.000335669	-0.000730812
ii	-0.00000001	-1E-08	-0.000954143	-0.001148781	-0.003827083
jj	-0.016270366	-0.005178062	-0.004448823	-0.00000001	-0.00000001
kk	-0.006385633	-0.00000001	-1E-08	-0.001209178	-0.00000001
ll	-1E-08	-3.20679E-18	-0.004191011	-0.000335669	-0.000730812
mm	-0.120869361	-0.107278415	-0.025538135	-0.057573536	-0.054942324
nn	-1.43545E-17	-0.001026491	-1E-08	-1.01699E-17	-0.00000001
oo	-0.00000001	-0.006012027	-1E-08	-0.025671602	-0.00000001
pp	-0.008094061	-0.005157941	-1E-08	-8.80758E-19	-0.00000001
qq	-6.81714E-18	-1E-08	-0.000954143	-0.001148781	-0.003827083
rr	-0.00000001	-0.001026491	-1E-08	-0.00000001	-0.00000001
ss	-0.024773885	-0.01793837	-0.019316703	-0.023195107	-0.009617314
tt	-0.00000001	-0.00000001	-0.00000001	-0.00000001	-0.005140882
uu	-0.00000001	-0.005333317	-0.001560005	-1E-08	-0.000854558
vv	-0.016270366	-0.005178062	-0.004448823	-5.19519E-17	-1E-08
ww	-1.93562E-16	-0.006012027	-1E-08	-0.025671602	-1E-08
xx	-1E-08	-1E-08	-1E-08	-1E-08	-0.005140882
yy	-0.093360299	-0.008445585	-0.077223218	-0.173181021	-0.069998048
KNOWN PRICE BEFORE TAXES					
P1	13,400	13,400	13,709	13,709	14,208
P2	17,717	17,717	18,921	18,921	19,454
P3	21,639	21,639	22,002	22,002	21,780
P4	14,945	14,945	18,715	18,715	18,245
P5	32,555	32,555	32,168	32,168	20,887

QUARTER	19	19	20	20	21
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	276963	276963	211881	211881	246956
Csub1	76333	76333	72957	72957	87889
Fsub1	172467	172467	147965	147965	147206
Gsub1	197066	197066	199104	199104	205024
Asub2	426028	426028	378350	378350	386310
Csub2	237056	237056	229607	229607	274744
Fsub2	379204	379204	358708	358708	401648
Gsub2	507298	507298	510710	510710	568131
Asub3	56442	56442	61568	61568	69923
Csub3	108844	108844	109880	109880	109733
Fsub3	87086	87086	88205	88205	82874
Gsub3	102505	102505	110920	110920	105965
asub4	125033	125033	93279	93279	96467
Csub4	41595	41595	55499	55499	76810
fsub4	223688	223688	241272	241272	221504
gsub4	215518	215518	233654	233654	251502
asub5	113928	113928	103475	103475	99673
Csub5	18032	18032	22417	22417	16039
fsub5	59365	59365	65368	65368	67272
gsub5	81191	81191	96188	96188	88876
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	722,829	722,829	631,907	631,907	687,075
tseg2	1,549,586	1,549,586	1,477,375	1,477,375	1,630,833
tseg3	354,877	354,877	370,573	370,573	368,495
tseg4	605,834	605,834	623,704	623,704	646,283
tseg5	272,516	272,516	287,448	287,448	271,860
tsum	3,505,642	3,505,642	3,391,007	3,391,007	3,604,546
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	1.37	3.48	6.73	4.94	7.92
Elasiticity21	0.08	0.56	0.89	0.00	0.87
Elasiticity31	0.12	0.00	0.00	0.17	0.00
Elasiticity41	0.50	1.11	0.00	0.00	0.00
Elasiticity51	0.00	5.33	0.32	0.00	0.14
Elasiticity12	0.03	0.20	0.27	0.00	0.27
Elasiticity22	0.70	0.83	2.88	1.11	1.34
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.00	0.14	0.05	0.50
Elasiticity52	0.23	0.93	0.28	0.00	0.00
Elasiticity13	0.15	0.00	0.00	0.18	0.00
Elasiticity23	0.00	0.00	1.88	0.03	0.08
Elasiticity33	0.50	0.57	2.32	1.03	1.08
Elasiticity43	0.00	0.02	0.00	0.00	0.00
Elasiticity53	0.00	0.61	0.00	0.22	0.00
Elasiticity14	0.54	1.19	0.00	0.00	0.00
Elasiticity24	0.00	0.00	0.34	0.13	1.34
Elasiticity34	0.00	0.02	0.00	0.00	0.00
Elasiticity44	1.00	1.38	1.55	1.29	2.94
Elasiticity54	0.00	0.00	0.00	0.00	0.25
Elasiticity15	0.00	5.82	0.30	0.00	0.24
Elasiticity25	0.70	2.88	0.85	0.00	0.00
Elasiticity35	0.00	0.53	0.00	0.20	0.00
Elasiticity45	0.00	0.00	0.00	0.00	0.51
Elasiticity55	1.28	14.14	1.45	0.65	1.10
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	19	19	20	20	21
MCasub1	8,000	9,945	12,709	12,709	13,208
MCcsub1	11,180	12,283	13,348	13,262	13,777
MCfsub1	8,451	10,368	12,982	12,957	13,493
MCgsub1	8,000	9,945	12,709	12,709	13,208
MCasub2	8,740	10,767	16,315	14,413	15,418
MCcsub2	13,504	14,208	17,246	16,168	16,569
MCfsub2	10,456	11,870	16,349	14,463	14,864
MCgsub2	8,000	9,945	15,421	12,709	13,208
MCasub3	13,055	14,779	18,815	15,390	17,640
MCcsub3	8,000	9,817	18,228	14,929	15,535
MCfsub3	10,020	11,721	18,228	14,929	16,932
MCgsub3	8,000	9,945	17,002	12,709	15,535
MCasub4	9,595	11,203	16,549	16,113	15,339
MCcsub4	13,292	13,689	17,427	17,167	16,390
MCfsub4	8,000	9,945	13,715	12,709	14,240
MCgsub4	8,000	9,945	13,715	12,709	13,208
MCasub5	14,979	27,555	22,233	12,709	13,208
MCcsub5	27,003	30,097	29,337	25,488	19,297
MCfsub5	20,832	28,630	25,346	18,616	14,921
MCgsub5	16,708	27,555	22,233	12,709	13,208
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.00000001	-0.005333317	-0.001560005	-0.00000001	-0.00085458
j	-0.016270366	-0.005178062	-0.004448823	0	-0.00000001
o	-0.00000001	-0.006012027	-1E-08	-0.025671602	-0.00000001
t	-0.00000001	-0.00000001	-0.00000001	-0.00000001	-0.005140882
y	-0.093360299	-0.008445585	-0.077223218	-0.173181021	-0.069998048
	0	0			
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	5400.310204	3455.694819	1000	1000	1000
XMCcsub1	2219.845406	1117.802	361.3804042	447.109954	431.6719248
XMCfsub1	4949.22155	3032.574587	726.7923754	752.1438169	715.5971104
XMCgsub1	5400.310204	3455.694819	1000	1000	1000
XMCasub2	8976.94468	6949.747249	2605.757305	4508.015769	4035.739458
XMCcsub2	4212.381704	3508.403945	1675.052498	2753.206602	2884.53863
XMCfsub2	7260.49299	5847.223149	2571.606345	4457.911961	4590.215943
XMCgsub2	9716.796137	7772.180753	3500	6212.153546	6245.332223
XMCasub3	8584.28237	6860.062043	3187.897035	6612.399682	4140.276522
XMCcsub3	13638.97368	11821.97847	3773.933516	7073.387142	6245.332223
XMCfsub3	11618.72878	9918.166788	3773.933516	7073.387142	4847.776709
XMCgsub3	13638.97368	11694.3583	5000	9293.517877	6245.332223
XMCasub4	5349.232643	3741.291113	2166.250415	2601.862977	2905.287566
XMCcsub4	1652.569348	1255.986882	1287.784219	1548.050442	1855.026319
XMCfsub4	6944.615385	5000	5000	6006.110945	4004.355934
XMCgsub4	6944.615385	5000	5000	6006.110945	5036.127793
XMCasub5	17576.33561	5000	9934.416094	19458.67747	7678.363884
XMCcsub5	5552.197497	2457.621524	2830.762721	6679.688171	1589.669828
XMCfsub5	11722.99929	3924.872697	6821.098609	13551.7701	5966.316255
XMCgsub5	15847.08217	5000	9934.416094	19458.67747	7678.363884
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	31,378	24,465	16,821	16,932	17,397
constant2	47,854	41,766	29,189	36,771	37,230
constant3	69,148	61,970	37,658	51,977	43,218
constant4	35,804	29,905	32,173	34,879	32,099
constant5	83,209	48,869	61,924	91,461	43,826

QUARTER	19	19	20	20	21
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	10,080,315,071	6,245,346,607	1,528,214,366	1,573,286,018	1,690,590,862
TSseg2	35,855,845,997	28,585,673,812	11,664,905,788	20,294,930,820	22,238,258,798
TSseg3	12,808,939,259	10,892,664,921	4,399,176,341	8,392,941,313	5,988,223,174
TSseg4	10,106,379,098	7,247,780,630	6,844,928,726	8,221,868,282	7,053,270,577
TSseg5	10,987,214,033	3,475,826,843	6,769,529,451	13,442,704,003	4,992,751,592
Tssum	79,838,693,459	56,447,292,813	31,206,754,671	51,925,730,436	41,963,095,002
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	6,497,386,573	3,998,902,826	983,324,302	1,018,390,257	1,095,331,460
CSseg2	23,350,326,622	18,633,096,527	7,584,472,964	13,185,469,924	14,494,884,712
CSseg3	8,430,013,130	7,156,254,205	2,900,744,276	5,553,860,194	3,949,862,302
CSseg4	6,318,693,126	4,531,723,004	4,196,762,317	5,040,795,608	4,476,944,561
CSseg5	6,902,083,743	2,222,915,944	4,276,655,348	8,521,935,406	3,118,141,018
Cssum	51,498,503,194	36,542,892,505	19,941,959,207	33,320,451,389	27,135,164,053
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	3,582,928,498	2,246,443,781	544,890,064	554,895,761	595,259,402
PSseg2	12,505,519,376	9,952,577,285	4,080,432,824	7,109,460,896	7,743,374,086
PSseg3	4,378,926,129	3,736,410,716	1,498,432,065	2,839,081,119	2,038,360,872
PSseg4	3,787,685,972	2,716,057,626	2,648,166,409	3,181,072,675	2,576,326,016
PSseg5	4,085,130,290	1,252,910,899	2,492,874,102	4,920,768,597	1,874,610,573
Pssum	28,340,190,264	19,904,400,308	11,264,795,464	18,605,279,047	14,827,930,950
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	5,647,101,563	5,647,101,563	4,936,773,438	4,936,773,438	5,367,773,438
CStravseg2	12,106,140,625	12,106,140,625	11,541,992,188	11,541,992,188	12,740,882,813
CStravseg3	2,772,476,563	2,772,476,563	2,895,101,563	2,895,101,563	2,878,867,188
CStravseg4	4,733,078,125	4,733,078,125	4,872,687,500	4,872,687,500	5,049,085,938
CStravseg5	2,129,031,250	2,129,031,250	2,245,687,500	2,245,687,500	2,123,906,250
Cstravsum	27,387,828,125	27,387,828,125	26,492,242,188	26,492,242,188	28,160,515,625
FIRST ORDER CONDITIONS					
foc1l	2.37406E-11	-1.77506E-06	-5.18121E-05	-5.37592E-09	3.19511E-09
foc2l	5.91172E-11	1.83131E-06	0.000396404	-4.60113E-09	-0.000267859
foc3l	2.9359E-12	-1.26167E-05	-7.70372E-06	-8.00355E-10	-5.37063E-10
foc4l	1.20308E-11	4.97255E-06	-7.70368E-06	-5.01326E-09	0.000605025
foc5l	3.92272E-11	-1.61539E-06	-5.18671E-05	-5.37737E-09	2.04373E-09
foc6l	4.18368E-11	1.81658E-06	0.000398624	-4.60295E-09	-0.000268537
foc7l	3.29744E-11	-1.18664E-05	-7.70385E-06	-9.32744E-10	-2.41985E-10
foc8l	-5.22438E-12	4.44816E-06	-7.70367E-06	-5.01471E-09	0.000606559
foc9l	-1.37366E-11	-1.5504E-06	-5.18405E-05	-5.3829E-09	2.45669E-09
foc10l	6.36646E-11	1.80993E-06	0.000396655	-4.60659E-09	-0.000267647
foc11l	5.47652E-12	-1.15526E-05	-7.70378E-06	-1.02136E-09	3.28067E-10
foc12l	3.27614E-11	4.23156E-06	-7.70369E-06	-5.01478E-09	0.000604548
foc13l	-8.78911E-12	-1.3201E-06	-5.18004E-05	-5.38246E-09	3.04661E-09
foc14l	5.27507E-11	1.79635E-06	0.000395783	-4.60295E-09	-0.000267972
foc15l	8.60497E-12	-1.04698E-05	-7.7036E-06	-9.66338E-10	8.52668E-12
foc16l	4.96699E-12	3.45951E-06	-7.70366E-06	-5.01253E-09	0.000605281
foc17l	1.4876E-05	-4.15634E-06	0.000174464	-7.29415E-09	-6.04996E-09
foc18l	1.48702E-05	-4.00709E-06	0.000170737	-7.33735E-09	-3.1896E-09
foc19l	1.48728E-05	-3.94376E-06	0.000172687	-7.49969E-09	-6.14818E-09
foc20l	1.48759E-05	-3.7367E-06	0.000175026	-7.41056E-09	-4.84943E-09

QUARTER	19	19	20	20	21
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	13952.27845	13986.43331	14392.94113	14302.63743	14805.0754€
p1c1l	13952.27845	13986.43331	14392.94113	14302.63743	14805.0754€
p1f1l	13952.27845	13986.43331	14392.94113	14302.63743	14805.0754€
p1g1l	13952.27845	13986.43331	14392.94113	14302.63743	14805.0754€
p2a2l	18489.32001	18539.21575	19864.64178	19737.65827	20289.9385€
p2c2l	18489.32001	18539.21575	19864.64178	19737.65827	20289.9385€
p2f2l	18489.32001	18539.21575	19864.64178	19737.65827	20289.9385€
p2g2l	18489.32001	18539.21575	19864.64178	19737.65827	20289.9385€
p3a3l	22535.37667	22593.87744	23085.58002	22939.88129	22724.26883
p3c3l	22535.37667	22593.87744	23085.58002	22939.88129	22724.26883
p3f3l	22535.37667	22593.87744	23085.58002	22939.88129	22724.26883
p3g3l	22535.37667	22593.87744	23085.58002	22939.88129	22724.26883
p4a4l	15829.00231	15884.8528	19814.93717	19668.50921	19207.52443
p4c4l	15829.00231	15884.8528	19814.93717	19668.50921	19207.52443
p4f4l	15829.00231	15884.8528	19814.93717	19668.50921	19207.52443
p4g4l	15829.00231	15884.8528	19814.93717	19668.50921	19207.52443
p5a5l	50799.63065	33566.50508	38872.54018	31981.05332	27437.11199
p5c5l	50799.63065	33566.50508	38872.54018	31981.05332	27437.11199
p5f5l	50799.63065	33566.50508	38872.54018	31981.05332	27437.11199
p5g5l	50799.63065	33566.50508	38872.54018	31981.05332	27437.11199
lemp_a1	2.44	2.30	1.98	2.28	2.28
lemp_c1	2.44	2.30	1.98	2.28	2.28
lemp_f1	2.44	2.30	1.98	2.28	2.28
lemp_g1	2.44	2.30	1.98	2.28	2.28
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	3.45	3.25	2.80	3.23	3.23
lemp_c2	3.45	3.25	2.80	3.23	3.23
lemp_f2	3.45	3.25	2.80	3.23	3.23
lemp_g2	3.45	3.25	2.80	3.23	3.23
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	3.95	3.71	3.20	3.69	3.70
lemp_c3	3.95	3.71	3.20	3.69	3.70
lemp_f3	3.95	3.71	3.20	3.69	3.70
lemp_g3	3.95	3.71	3.20	3.69	3.70
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	3.95	3.71	3.20	3.69	3.70
lemp_c4	3.95	3.71	3.20	3.69	3.70
lemp_f4	3.95	3.71	3.20	3.69	3.70
lemp_g4	3.95	3.71	3.20	3.69	3.70
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	3.95	3.71	3.20	3.69	3.70
lemp_c5	3.951965028	3.714502095	3.202262873	3.69316863	3.696759123
lemp_f5	3.951965028	3.714502095	3.202262873	3.69316863	3.696759123
lemp_g5	3.951965028	3.714502095	3.202262873	3.69316863	3.696759123

QUARTER	19	19	20	20	21
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	287371.7116	265902.5523	139103.9686	178158.3627	160068.7861
Csub1nl	86521.22736	0	0	39083.93912	0
Fsub1nl	182647.4357	71458.56194	75337.07468	114447.7977	57554.19883
Gsub1nl	207121.1632	0	125132.6206	164572.8053	113959.3163
Asub2nl	188506.7263	413088.1182	246941.3803	361866.4413	402719.4642
Csub2nl	0	214050.8587	94302.76733	211842.5064	291945.5879
Fsub2nl	141971.6905	351895.1953	226802.8252	342001.6644	418210.1542
Gsub2nl	270067.3789	464088.9884	380431.6792	494457.5407	584749.5059
Asub3nl	54043.96485	54447.4307	72914.14141	62144.04929	65518.41394
Csub3nl	106474.5533	103915.9279	120910.9579	110012.8358	105305.7999
Fsub3nl	84681.82234	80970.13943	99166.52527	88559.4806	78189.51488
Gsub3nl	100103.1263	91967.03133	121964.0203	111486.3082	101411.0723
asub4nl	112789.81	115371.5512	85756.11828	83994.64501	20476.04921
Csub4nl	29195.08007	50450.86945	47818.72329	45992.35712	0
fsub4nl	211402.8458	239932.1802	233450.3425	231744.2796	145921.8936
gsub4nl	203406.8424	259849.75	225861.8338	224193.6071	175383.0699
asub5nl	338908.4414	111602.5366	180641.8595	95191.85729	182809.9092
Csub5nl	242967.6103	65304.50452	100256.8601	14306.22735	99284.19696
fsub5nl	284322.1154	125729.253	142774.3667	57167.86011	150389.8156
gsub5nl	306172.0819	221540.0575	173233.7088	87877.56786	171995.9412
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	763,662	337,361	339,574	496,263	331,582
tseg2nl	600,546	1,443,123	948,479	1,410,168	1,697,625
tseg3nl	345,303	331,301	414,956	372,203	350,425
tseg4nl	556,795	665,604	592,887	585,925	341,781
tseg5nl	1,172,370	524,176	596,907	254,544	604,480
tsumnl	3,438,676	3,301,566	2,892,802	3,119,102	3,325,893
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	(40,833)	385,468	292,333	135,644	355,493
lostsales2l	949,040	106,463	528,896	67,207	(66,792)
lostsales3l	9,574	23,576	(44,383)	(1,630)	18,070
lostsales4l	49,039	(59,770)	30,817	37,779	304,502
lostsales5l	(899,854)	(251,660)	(309,459)	32,904	(332,620)
lostsuml	66,966	204,076	498,205	271,905	278,653
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	6,653,664,830	1,767,513,430	412,277,078	652,459,750	429,696,941
CSlsetseg2	8,817,507,477	16,759,500,872	4,421,765,728	12,009,879,506	14,378,818,687
CSlsetseg3	8,047,830,747	6,522,644,019	3,023,427,687	5,403,821,561	3,590,768,518
CSlsetseg4	5,561,013,622	4,665,900,525	3,663,336,303	4,456,124,879	2,203,039,363
CSlsetseg5	18,998,155,273	4,010,590,542	6,879,669,154	7,570,159,570	4,953,424,942
Cslsetsum	48,078,171,949	33,726,149,387	18,400,475,950	30,092,445,266	25,555,748,451
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	3,662,583,935	1,086,385,761	262,963,986	375,599,322	269,167,514
PSlsetseg2	5,226,833,791	8,979,459,212	2,472,311,665	6,494,212,263	7,692,755,537
PSlsetseg3	4,190,411,795	3,404,494,656	1,552,123,475	2,757,087,875	1,855,040,620
PSlsetseg4	3,404,782,937	2,831,300,735	2,381,397,834	2,888,767,683	1,449,370,807
PSlsetseg5	35,575,075,723	2,229,010,034	7,955,298,614	4,081,836,538	7,019,463,403
Pslsetsum	52,059,688,180	18,530,650,397	14,624,095,574	16,597,503,681	18,285,797,881

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-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	10,316,248,765	2,853,899,191	675,241,064	1,028,059,073	698,864,455
TSlsetseg2	14,044,341,267	25,738,960,083	6,894,077,394	18,504,091,769	22,071,574,224
TSlsetseg3	12,238,242,542	9,927,138,675	4,575,551,162	8,160,909,435	5,445,809,138
TSlsetseg4	8,965,796,559	7,497,201,259	6,044,734,137	7,344,892,562	3,652,410,170
TSlsetseg5	54,573,230,996	6,239,600,576	14,834,967,768	11,651,996,108	11,972,888,345
Tslsetsum	100,137,860,129	52,256,799,785	33,024,571,525	46,689,948,948	43,841,546,332
dwllset	(20,299,166,671)	4,190,493,028	(1,817,816,853)	5,235,781,488	(1,878,451,330)
surpluslset	374,016,141,379	326,135,081,035	297,946,993,400	311,612,370,823	325,446,702,582
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	140.86	159.45	214.54	161.30	160.98
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	262,687,138	123,465,437	144,154,434	182,668,498	121,932,975
taxrevlsetseg2	292,145,378	746,910,854	569,425,041	734,070,456	882,849,177
taxrevlsetseg3	192,225,291	196,220,421	285,080,412	221,719,061	208,543,358
taxrevlsetseg4	309,959,239	394,219,611	407,321,788	349,032,196	203,399,303
taxrevlsetseg5	652,641,035	310,455,599	410,083,432	151,630,154	359,735,556
taxrevlsetsum	1,709,658,081	1,771,271,922	1,816,065,106	1,639,120,366	1,776,460,369
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	343.98	365.97	424.52	368.09	367.73
taxc1	343.98	365.97	424.52	368.09	367.73
taxf1	343.98	365.97	424.52	368.09	367.73
taxg1	343.98	365.97	424.52	368.09	367.73
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	486.47	517.57	600.36	520.56	520.05
taxc2	486.47	517.57	600.36	520.56	520.05
taxf2	486.47	517.57	600.36	520.56	520.05

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taxg2	486.47	517.57	600.36	520.56	520.05
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	556.69	592.27	687.01	595.69	595.12
taxc3	556.69	592.27	687.01	595.69	595.12
taxf3	556.69	592.27	687.01	595.69	595.12
taxg3	556.69	592.27	687.01	595.69	595.12
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	556.69	592.27	687.01	595.69	595.12
taxc4	556.69	592.27	687.01	595.69	595.12
taxf4	556.69	592.27	687.01	595.69	595.12
taxg4	556.69	592.27	687.01	595.69	595.12
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	556.69	592.27	687.01	595.69	595.12
taxc5	556.6850881	592.273188	687.0141794	595.694434	595.1158641
taxf5	556.6850881	592.273188	687.0141794	595.694434	595.1158641
taxg5	556.6850881	592.273188	687.0141794	595.694434	595.1158641
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	17,727,392,024	(7,553,442,054)	(2,524,959,291)	6,050,111,586	(6,454,887,198)
pollution reduction 2	(32,202,127,091)	12,305,541,859	(4,990,945,683)	13,798,265,719	22,395,919,556
pollution reduction 3	6,184,737,313	6,532,601,519	12,506,691,368	8,109,201,779	7,149,119,129
pollution reduction 4	9,166,303,630	15,695,710,506	15,607,974,581	11,797,310,971	87,714,224
pollution reduction 5	39,123,694,124	13,019,588,169	19,401,241,140	245,109,947	16,822,134,289
Total reduction	40	40	40.00000212	40	40
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.00746	0.00266	0.00850	0.00257	0.01205
	89.51474017	31.93767815	101.9474833	30.78078244	144.5443211
FOC-PMET					
foc1p	0.000246887	-1.9061E-06	6.70684E-06	-8.20721E-05	-2.75334E-08
foc2p	5.11696E-05	1.8472E-06	-1.50565E-05	-0.000347313	-1.6002E-05
foc3p	0.000175996	-1.25756E-05	-1.81232E-08	-0.000318061	2.28647E-09
foc4p	8.46682E-05	5.06856E-06	-6.76654E-09	-0.000383103	3.61304E-05
foc5p	0.000246887	-1.26656E-06	6.37209E-06	-8.20722E-05	-2.76451E-08
foc6p	5.11697E-05	1.33426E-06	-1.14375E-05	-0.000347314	-1.7027E-05
foc7p	0.000175996	-8.57199E-06	-1.81222E-08	-0.000318064	2.56159E-09
foc8p	8.46682E-05	3.29702E-06	-6.77286E-09	-0.000383103	3.84462E-05
foc9p	0.000246887	-1.68102E-06	6.67852E-06	-8.20721E-05	-2.69303E-08
foc10p	5.11696E-05	1.82527E-06	-1.48064E-05	-0.000347313	-1.57911E-05
foc11p	0.000175996	-1.1508E-05	-1.81284E-08	-0.000318063	3.06065E-09
foc12p	8.46682E-05	4.32587E-06	-6.7645E-09	-0.000383103	3.56536E-05
foc13p	0.000246887	-1.45103E-06	6.71859E-06	-8.20721E-05	-2.7522E-08
foc14p	5.11696E-05	1.81217E-06	-1.56769E-05	-0.000347314	-1.61148E-05
foc15p	0.000175996	-1.0428E-05	-1.81284E-08	-0.000318062	2.83934E-09
foc16p	8.46682E-05	3.5552E-06	-6.76816E-09	-0.000383103	3.6387E-05
foc17p	0.000250312	-4.40521E-06	0.000368874	-0.000186686	1.2834E-07
foc18p	0.000231622	-3.10284E-06	0.000346591	-0.000168784	1.31964E-07
foc19p	0.000250309	-4.19136E-06	0.000367098	-0.000186686	1.27964E-07
foc20p	0.000250312	-3.98526E-06	0.000369437	-0.000186686	1.2952E-07

QUARTER	19	19	20	20	21
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	13,523.34	13,560.86	14,004.26	13,873.34	14,573.64
p1c1	13,523.34	13,560.86	14,004.26	13,873.34	14,573.64
p1f1	13,523.34	13,560.86	14,004.26	13,873.34	14,573.64
p1g1	13,523.34	13,560.86	14,004.26	13,873.34	14,573.64
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	17,965.06	18,044.84	19,168.45	19,211.61	19,760.16
p2c2	17,965.06	18,044.84	19,168.45	19,211.61	19,760.16
p2f2	17,965.06	18,044.84	19,168.45	19,211.61	19,760.16
p2g2	17,965.06	18,044.84	19,168.45	19,211.61	19,760.16
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	22,518.59	22,004.69	23,112.22	22,605.41	23,109.15
p3c3	22,518.59	22,004.69	23,112.22	22,605.41	23,109.15
p3f3	22,518.59	22,004.69	23,112.22	22,605.41	23,109.15
p3g3	22,518.59	22,004.69	23,112.22	22,605.41	23,109.15
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	15,358.73	15,268.12	19,136.73	19,039.69	18,588.88
p4c4	15,358.73	15,268.12	19,136.73	19,039.69	18,588.88
p4f4	15,358.73	15,268.12	19,136.73	19,039.69	18,588.88
p4g4	15,358.73	15,268.12	19,136.73	19,039.69	18,588.88
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	32,425.89	32,975.75	31,854.58	32,603.34	20,141.29
p5c5	32425.89146	32975.75197	31854.57669	32603.33573	20141.28845
p5f5	32425.89146	32975.75197	31854.57669	32603.33573	20141.28845
p5g5	32425.89146	32975.75197	31854.57669	32603.33573	20141.28845
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	6,537	31,801	32,858	32,858	34,976
dp/dgas2	14,310	69,191	13,603	60,689	12,545
dp/dgas3	129,268	60,954	188,386	188,386	187,396
dp/dgas4	29,918	51,947	26,344	51,766	11,661
dp/dgas5	133,499	3,595	163,164	9,482	124,310
sum of dpdgas	313,532	217,489	424,355	343,181	370,889
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,715	11,923	11,864	11,925	11,843
VMT2	11,727	11,926	11,701	11,922	11,630
VMT3	11,896	11,910	11,908	11,950	11,890
VMT4	11,784	11,902	11,755	11,904	11,561
VMT5	11,784	11,902	11,755	11,904	11,561

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TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.03096	0.00838	0.01474	0.00810	0.01701
tpmc1	0.03096	0.00838	0.01474	0.00810	0.01701
tpmf1	0.03096	0.00838	0.01474	0.00810	0.01701
tpmg1	0.03096	0.00838	0.01474	0.00810	0.01701
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.02959	0.00804	0.03239	0.00843	0.04016
tpmc2	0.02959	0.00804	0.03239	0.00843	0.04016
tpmf2	0.02959	0.00804	0.03239	0.00843	0.04016
tpmg2	0.02959	0.00804	0.03239	0.00843	0.04016
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.01127	0.00980	0.00996	0.00547	0.01189
tpmc3	0.01127	0.00980	0.00996	0.00547	0.01189
tpmf3	0.01127	0.00980	0.00996	0.00547	0.01189
tpmg3	0.01127	0.00980	0.00996	0.00547	0.01189
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.02342	0.01062	0.02664	0.01044	0.04767
tpmc4	0.02342	0.01062	0.02664	0.01044	0.04767
tpmf4	0.02342	0.01062	0.02664	0.01044	0.04767
tpmg4	0.02342	0.01062	0.02664	0.01044	0.04767
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.02342	0.01062	0.02664	0.01044	0.04767
tpmc5	0.023420913	0.010616745	0.026636131	0.010440921	0.047670424
tpmf5	0.023420913	0.010616745	0.026636131	0.010440921	0.047670424
tpmg5	0.023420913	0.010616745	0.026636131	0.010440921	0.047670424
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	5,375,805,159	5,603,229,898	4,864,981,366	4,884,349,678	5,296,287,225
cstravelpmetseg2	11,566,289,091	11,967,315,810	10,956,610,026	11,399,685,801	11,986,480,039
cstravelpmetseg3	2,727,419,046	2,733,337,079	2,865,830,856	2,872,549,008	2,835,642,868
cstravelpmetseg4	4,578,346,919	4,651,835,199	4,694,512,623	4,799,106,062	4,709,464,100
cstravelpmetseg5	2,061,492,797	2,068,354,392	2,170,709,973	2,209,712,971	2,008,791,624
cstravelpmetsum	26,309,353,012	27,024,072,379	25,552,644,844	26,165,403,520	26,836,665,856
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	4.15	3.15	1.73	3.16	1.41
epm_c1	4.15	3.15	1.73	3.16	1.41
epm_f1	4.15	3.15	1.73	3.16	1.41
epm_g1	4.15	3.15	1.73	3.16	1.41
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	3.97	3.02	3.81	3.29	3.33
epm_c2	3.97	3.02	3.81	3.29	3.33
epm_f2	3.97	3.02	3.81	3.29	3.33
epm_g2	3.97	3.02	3.81	3.29	3.33

QUARTER	19	19	20	20	21
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	1.51	3.68	1.17	2.13	0.99
epm_c3	1.51	3.68	1.17	2.13	0.99
epm_f3	1.51	3.68	1.17	2.13	0.99
epm_g3	1.51	3.68	1.17	2.13	0.99
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	3.14	3.99	3.14	4.07	3.96
epm_c4	3.14	3.99	3.14	4.07	3.96
epm_f4	3.14	3.99	3.14	4.07	3.96
epm_g4	3.14	3.99	3.14	4.07	3.96
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	3.14	3.99	3.14	4.07	3.96
epm_c5	3.139717033	3.989048437	3.135276721	4.070431092	3.957575651
epm_f5	3.139717033	3.989048437	3.135276721	4.070431092	3.957575651
epm_g5	3.139717033	3.989048437	3.135276721	4.070431092	3.957575651
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	281155.567	267699.9244	156578.7264	189378.086	165392.502
Csub1n	80538.30238	94692.8522	16265.93018	50325.88308	4998.692431
Fsub1n	176431.2911	73255.93404	92811.83242	125667.5209	62877.91465
Gsub1n	200905.0186	1797.3721	142607.3784	175792.5286	119283.0321
Asub2n	423685.2887	409331.8502	392124.9905	362295.992	375696.3044
Csub2n	231570.5912	225768.3613	235253.4569	212274.4217	265171.4238
Fsub2n	377150.2529	348138.9274	371986.4355	342431.215	391186.9945
Gsub2n	505245.9413	460332.7205	525615.2895	494887.0913	557726.3461
Asub3n	51394.52035	54062.93979	30458.65686	55140.07911	53986.65333
Csub3n	103812.7876	107810.4822	79150.12825	102928.1595	93770.72713
Fsub3n	82032.37783	80585.64852	56711.04072	81555.51043	66657.75427
Gsub3n	97453.68178	91582.54042	79508.53572	104482.338	89879.31167
asub4n	112495.5554	115785.7023	78280.92355	84925.48744	86352.62725
Csub4n	28824.62717	23909.32605	40552.6109	46923.08236	65357.47797
fsub4n	211108.5913	240346.3313	225975.1477	232675.122	211798.4717
gsub4n	203112.5879	260263.9012	218386.639	225124.4496	241259.6479
asub5n	105538.2305	118050.7684	89752.30156	103581.8713	82739.96759
Csub5n	13195.62939	0	13016.19257	22876.16284	0
fsub5n	50951.90456	132177.4848	51884.80879	65557.8741	50319.87396
gsub5n	72801.87108	227988.2893	82344.15088	96267.58184	71925.99957
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	739,030	437,446	408,264	541,164	352,552
tseg2n	1,537,652	1,443,572	1,524,980	1,411,889	1,589,781
tseg3n	334,693	334,042	245,828	344,106	304,294
tseg4n	555,541	640,305	563,195	589,648	604,768
tseg5n	242,488	478,217	236,997	288,283	204,986
tsumn	3,409,405	3,333,581	2,979,265	3,175,090	3,056,382
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	6,522,766,715	2,326,645,141	476,169,308	755,657,207	392,803,718
CSPMETseg2	22,654,052,410	16,720,079,343	7,304,253,282	12,034,878,468	13,486,000,579

QUARTER	19	19	20	20	21
CSPMETseg3	7,559,613,18(	6,575,237,176	1,557,226,675	4,876,051,127	2,720,464,965
CSPMETseg4	5,484,492,009	4,509,434,092	3,473,263,56(	4,510,485,478	3,917,167,909
CSPMETseg5	5,778,102,523	3,791,069,991	3,048,139,788	8,469,624,083	1,820,167,034
CsPMETsum	47,999,026,837	33,922,465,743	15,859,052,613	30,646,696,364	22,336,604,205
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	3,596,605,05(	1,212,893,349	295,406,542	427,190,169	250,836,333
PSpmetseg2	12,157,118,255	8,920,894,044	3,917,419,919	6,506,707,164	7,245,959,869
PSpmetseg3	3,946,281,277	3,438,272,448	818,911,823	2,493,238,042	1,419,885,943
PSpmetseg4	3,366,794,221	2,820,277,030	2,285,927,47(	2,915,948,049	2,307,262,95(
PSpmetseg5	3,478,044,865	2,186,477,429	1,859,954,854	4,899,845,999	1,221,026,301
Pspmetsum	26,544,843,668	18,578,814,300	9,177,620,607	17,242,929,423	12,444,971,396
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	10,119,371,765	3,539,538,489	771,575,85(	1,182,847,377	643,640,051
TSPMETseg2	34,811,170,664	25,640,973,388	11,221,673,201	18,541,585,632	20,731,960,448
TSPMETseg3	11,505,894,457	10,013,509,624	2,376,138,498	7,369,289,169	4,140,350,908
TSPMETseg4	8,851,286,23(	7,329,711,123	5,759,191,029	7,426,433,527	6,224,430,858
TSPMETseg5	9,256,147,389	5,977,547,42(	4,908,094,642	13,369,470,083	3,041,193,335
TSPMETsum	74,543,870,505	52,501,280,043	25,036,673,22(	47,889,625,787	34,781,575,601
dwlpmet	5,354,607,991	3,956,858,104	6,254,972,128	4,050,499,995	7,287,992,191
pmetsurplus	347,824,301,38(	326,271,107,952	289,110,188,324	312,668,094,194	315,322,003,955
pmetsurplus10	111,040,124,272	83,054,456,541	59,136,384,725	77,179,462,512	73,792,011,249
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	268,032,30(	43,729,956	71,383,478	52,260,235	71,016,250
taxrevpmetseg2	481,230,014	125,828,767	495,007,020	125,574,370	621,058,964
taxrevpmetseg3	44,861,721	38,991,622	29,158,320	22,505,056	43,026,036
taxrevpmetseg4	153,326,981	80,910,357	176,333,623	73,285,240	333,288,983
taxrevpmetseg5	71,239,060	63,449,710	82,824,225	38,818,420	148,986,746
taxrevpmetsum	1,018,690,075	352,910,412	854,706,666	312,443,320	1,217,376,979
pmetrev10	10,186,900,755	3,529,104,118	8,547,066,66(	3,124,433,205	12,173,769,792
SALES LOST AS RESULT OF PMET-					
lostsales1	(16,201)	285,383	223,643	90,743	334,523
lostsales2	11,934	106,014	(47,605)	65,486	41,052
lostsales3	20,184	20,835	124,745	26,467	64,201
lostsales4	50,293	(34,471)	60,509	34,056	41,515
lostsales5	30,028	(205,701)	50,451	(835)	66,874
lostsum	96,237	172,061	411,742	215,917	548,164
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	202.3941456	266.6382884	484.2342948	266.0768664	594.8885509
taxc1p	202.3941456	266.6382884	484.2342948	266.0768664	594.8885509
taxf1p	202.3941456	266.6382884	484.2342948	266.0768664	594.8885509
taxg1p	202.3941456	266.6382884	484.2342948	266.0768664	594.8885509
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	423.47133	556.2131254	440.6306904	511.3961396	503.841676
taxc2p	423.47133	556.2131254	440.6306904	511.3961396	503.841676
taxf2p	423.47133	556.2131254	440.6306904	511.3961396	503.841676
taxg2p	423.47133	556.2131254	440.6306904	511.3961396	503.841676
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	19	19	20	20	21
taxa3p	1456.511667	597.4119584	1876.435625	1031.063096	2228.444803
taxc3p	1456.511667	597.4119584	1876.435625	1031.063096	2228.444803
taxf3p	1456.511667	597.4119584	1876.435625	1031.063096	2228.444803
taxg3p	1456.511667	597.4119584	1876.435625	1031.063096	2228.444803
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	700.7000877	551.509974	701.6924487	540.4832929	555.8958803
taxc4p	700.7000877	551.509974	701.6924487	540.4832929	555.8958803
taxf4p	700.7000877	551.509974	701.6924487	540.4832929	555.8958803
taxg4p	700.7000877	551.509974	701.6924487	540.4832929	555.8958803
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	700.7000877	551.509974	701.6924487	540.4832929	555.8958803
taxc5p	700.7000877	551.509974	701.6924487	540.4832929	555.8958803
taxf5p	700.7000877	551.509974	701.6924487	540.4832929	555.8958803
taxg5p	700.7000877	551.509974	701.6924487	540.4832929	555.8958803
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	1957313766	-5684614262	3317848513	3307401855	-1374212236
pollution reduction 2p	5486539484	16558483434	10708042112	13267372762	16850223997
pollution reduction 3p	15591366245	6896306234	9798642790	13302117786	1497061940
pollution reduction 4p	14904284229	12686866882	14962864247	9528919414	11248857174
pollution reduction 5p	2060476493	9542957712	1212602342	594228684.7	-1695488341
Total reductionp	39.99998022	40	40	40.0000405	40
DIFFERENCE-					
Tsdiff	(26,192)	(136)	(8,837)	(1,056)	(10,125)

QUARTER	21	22	22	23	23
COEFFICIENTS OF DEMAND					
a P1/q1	-0.002956633	-0.014915332	-0.003374905	-0.010882371	-0.010727101
b p2/q1	-0.000410066	-1E-08	0	-0.002717642	-1E-08
c p3/q1	-0.001669914	-0.012906414	-1E-08	-1E-08	-1E-08
d p4/q1	-1E-08	-0.002496901	-0.000890129	-0.006426485	-0.009444652
f P1/q2	-0.000410066	-1E-08	0	-0.002717642	-1E-08
g p2/q2	-0.010212518	-0.013009079	-0.008176886	-0.018003243	-0.012813984
h p3/q2	-0.000332222	1.01028E-16	-0.002609491	-1E-08	-0.001969218
i p4/q2	-1E-08	-0.007759199	-0.005849757	-0.00130544	-0.00067183
k P1/q3	-0.001669914	-0.012906414	-1E-08	-1E-08	-1E-08
l p2/q3	-0.000332222	-8.13007E-17	-0.002609491	-1E-08	-0.001969218
m p3/q3	-0.075822419	-0.11426499	-0.055653	-0.094719451	-0.053894826
n p4/q3	-1E-08	-1E-08	-1E-08	-1E-08	-0.002340942
p P1/q4	-1E-08	-0.002496901	-0.000890129	-0.006426485	-0.009444652
q p2/q4	-1E-08	-0.007759199	-0.005849757	-0.00130544	-0.00067183
r p3/q4	-1E-08	-1E-08	-1.00001E-08	-1E-08	-0.002340942
s p4/q4	-0.019934536	-0.01818423	-0.005849757	-0.010581534	-0.011172716
u P1/q5	-1E-08	-0.004118146	1.09273E-12	-1E-08	-0.007231153
v p2/q5	-0.003728503	-0.013009079	-9.25957E-06	-0.004803653	-3.62906E-17
w p3/q5	-1E-08	-0.001163886	-1.00013E-08	-0.009737215	3.62957E-17
x p4/q5	-1E-08	-1E-08	-0.005084861	-0.005499413	1.81453E-17
y p5/q5	-0.062276777	-0.138595635	-0.167722247	-0.091721078	-0.12521113
e p5/q1	-1E-08	-0.004118146	0	-0.00000001	-0.007231153
j p5/q2	-0.003728503	-0.013009079	-9.25957E-06	-0.004803653	-0.00000001
o p5/q3	-1E-08	-0.001163886	-0.00000001	-0.009737215	0
t p5/q4	-0.00000001	-0.00000001	-0.005084861	-0.005499413	0
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.002956633	-0.014915332	-0.003374905	-0.010882371	-0.010727101
bb	-0.000410066	-1E-08	-0.00000001	-0.002717642	-1E-08
cc	-0.001669914	-0.012906414	-1E-08	-1E-08	-1E-08
dd	-1E-08	-0.002496901	-0.000890129	-0.006426485	-0.009444652
ee	-1E-08	-0.004118146	-0.00000001	-0.00000001	-0.007231153
ff	-0.000410066	-1E-08	-0.00000001	-0.002717642	-1E-08
gg	-0.010212518	-0.013009079	-0.008176886	-0.018003243	-0.012813984
hh	-0.000332222	-0.00000001	-0.002609491	-1E-08	-0.001969218
ii	-1E-08	-0.007759199	-0.005849757	-0.00130544	-0.00067183
jj	-0.003728503	-0.013009079	-9.25957E-06	-0.004803653	-0.00000001
kk	-0.001669914	-0.012906414	-1E-08	-1E-08	-1E-08
ll	-0.000332222	-8.13007E-17	-0.002609491	-1E-08	-0.001969218
mm	-0.075822419	-0.11426499	-0.055653	-0.094719451	-0.053894826
nn	-1E-08	-1E-08	-1E-08	-1E-08	-0.002340942
oo	-1E-08	-0.001163886	-0.00000001	-0.009737215	-0.00000001
pp	-1E-08	-0.002496901	-0.000890129	-0.006426485	-0.009444652
qq	-1E-08	-0.007759199	-0.005849757	-0.00130544	-0.00067183
rr	-1E-08	-1E-08	-1.00001E-08	-1E-08	-0.002340942
ss	-0.019934536	-0.01818423	-0.005849757	-0.010581534	-0.011172716
tt	-0.00000001	-0.00000001	-0.005084861	-0.005499413	-0.00000001
uu	-1E-08	-0.004118146	-0.00000001	-1E-08	-0.007231153
vv	-0.003728503	-0.013009079	-9.25957E-06	-0.004803653	-3.62906E-17
ww	-1E-08	-0.001163886	-1.00013E-08	-0.009737215	-0.00000001
xx	-1E-08	-1E-08	-0.005084861	-0.005499413	-0.00000001
yy	-0.062276777	-0.138595635	-0.167722247	-0.091721078	-0.12521113
KNOWN PRICE BEFORE TAXES					
P1	14,208	13,796	13,796	13,519	13,519
P2	19,454	20,001	20,001	19,636	19,636
P3	21,780	22,470	22,470	22,022	22,022
P4	18,245	18,957	18,957	17,309	17,309
P5	20,887	31,800	31,800	27,224	27,224

QUARTER	21	22	22	23	23
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	246956	274556	274556	271005	271005
Csub1	87889	95720	95720	70794	70794
Fsub1	147206	154806	154806	145143	145143
Gsub1	205024	222444	222444	183024	183024
Asub2	386310	466762	466762	453447	453447
Csub2	274744	305865	305865	221174	221174
Fsub2	401648	482367	482367	428571	428571
Gsub2	568131	640646	640646	544633	544633
Asub3	69923	73338	73338	85478	85478
Csub3	109733	115807	115807	95302	95302
Fsub3	82874	90042	90042	81709	81709
Gsub3	105965	100864	100864	106577	106577
asub4	96467	109988	109988	128757	128757
Csub4	76810	92442	92442	87674	87674
fsub4	221504	252288	252288	238199	238199
gsub4	251502	301743	301743	238826	238826
asub5	99673	119414	119414	122458	122458
Csub5	16039	20903	20903	24872	24872
fsub5	67272	74663	74663	65024	65024
gsub5	88876	104480	104480	108874	108874
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	687,075	747,526	747,526	669,966	669,966
tseg2	1,630,833	1,895,640	1,895,640	1,647,825	1,647,825
tseg3	368,495	380,051	380,051	369,066	369,066
tseg4	646,283	756,461	756,461	693,456	693,456
tseg5	271,860	319,460	319,460	321,228	321,228
tsum	3,604,546	4,099,138	4,099,138	3,701,541	3,701,541
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	6.99	1.24	5.47	1.85	1.88
Elasiticity21	0.38	0.00	0.00	0.41	0.00
Elasiticity31	0.24	0.23	0.00	0.00	0.00
Elasiticity41	0.00	0.23	1.14	1.44	2.04
Elasiticity51	0.00	0.08	0.00	0.00	0.22
Elasiticity12	0.12	0.00	0.00	0.11	0.00
Elasiticity22	1.17	0.81	1.29	0.66	0.93
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.33	1.22	0.07	0.05
Elasiticity52	0.08	0.12	0.00	0.05	0.00
Elasiticity13	0.29	0.27	0.00	0.00	0.00
Elasiticity23	0.02	0.00	0.30	0.00	0.15
Elasiticity33	0.78	0.52	1.06	0.63	1.11
Elasiticity43	0.00	0.00	0.00	0.00	0.18
Elasiticity53	0.00	0.01	0.00	0.08	0.00
Elasiticity14	0.00	0.17	0.82	1.09	1.54
Elasiticity24	0.00	0.87	3.23	0.19	0.13
Elasiticity34	0.00	0.00	0.00	0.00	0.12
Elasiticity44	1.42	1.38	4.28	2.36	2.23
Elasiticity54	0.00	0.00	0.22	0.22	0.00
Elasiticity15	0.00	0.09	0.00	0.00	0.23
Elasiticity25	0.42	0.45	0.00	0.18	0.00
Elasiticity35	0.00	0.01	0.00	0.08	0.00
Elasiticity45	0.00	0.00	0.31	0.31	0.00
Elasiticity55	1.23	0.72	0.59	0.92	0.68
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	21	22	22	23	23
MCasub1	13,208	8,000	12,796	8,519	8,519
MCcsub1	13,660	10,555	13,394	11,589	11,756
MCfsub1	13,483	9,392	13,062	9,249	9,247
MCgsub1	13,208	8,000	12,796	8,519	8,519
MCasub2	15,018	11,553	15,398	10,004	13,599
MCcsub2	16,518	15,046	16,683	15,235	16,563
MCfsub2	15,018	10,821	14,392	10,918	13,840
MCgsub2	13,208	8,000	12,796	8,519	12,309
MCasub3	15,925	10,466	17,271	12,766	16,262
MCcsub3	13,208	8,000	15,265	12,766	16,262
MCfsub3	15,117	10,130	16,255	13,685	16,262
MCgsub3	13,208	8,000	15,265	10,905	14,695
MCasub4	16,335	12,686	14,781	12,950	12,816
MCcsub4	16,731	14,681	16,460	15,511	15,299
MCfsub4	13,838	10,284	14,206	12,950	12,809
MCgsub4	13,245	8,000	12,796	12,309	12,309
MCasub5	13,245	8,000	11,254	12,309	9,968
MCcsub5	18,867	24,418	27,849	22,487	23,616
MCfsub5	15,207	14,470	18,034	17,129	18,068
MCgsub5	13,245	8,000	12,796	12,309	12,309
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-1E-08	-0.004118146	0	-0.00000001	-0.007231153
j	-0.003728503	-0.013009079	-9.25957E-06	-0.004803653	0
o	-1E-08	-0.001163886	-0.00000001	-0.009737215	0
t	-0.00000001	-0.00000001	-0.005084861	-0.005499413	0
y	-0.062276777	-0.138595635	-0.167722247	-0.091721078	-0.12521113
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	1000	5796.097087	1000	5000	5000
XMCcsub1	548.4846229	3240.654808	402.3705194	1930.869269	1763.422668
XMCfsub1	725.8782085	4404.38925	734.4996293	4270.290699	4272.58333
XMCgsub1	1000	5796.097087	1000	5000	5000
XMCasub2	4435.653394	8448.53757	4603.74061	9632.063863	6037.448222
XMCcsub2	2935.686921	4955.613098	3318.849256	4400.535466	3072.677659
XMCfsub2	4435.653394	9180.545308	5609.779016	8718.053094	5796.176881
XMCgsub2	6245.332223	12001.48283	7205.385745	11116.55313	7326.654424
XMCasub3	5855.361756	12004.73773	5199.556528	9256.035821	5759.809468
XMCcsub3	8571.783355	14470.48276	7205.385745	9256.035821	5759.809468
XMCfsub3	6663.060869	12340.8683	6215.263803	8336.416048	5759.809468
XMCgsub3	8571.783355	14470.48276	7205.385745	11116.55313	7326.654424
XMCasub4	1909.941021	6270.750194	4175.526418	4359.018475	4492.997731
XMCcsub4	1513.820324	4275.96568	2496.307811	1798.709042	2010.723263
XMCfsub4	4406.905481	8672.710287	4750.764394	4359.018475	4500.65968
XMCgsub4	5000	10956.58824	6160.491148	5000	5000
XMCasub5	7642.236091	23800	20546.1536	14914.7013	17255.69088
XMCcsub5	2020.251442	7381.937491	3950.722702	4736.931619	3608.438119
XMCfsub5	5679.880878	17330.10088	13765.64232	10095.20659	9156.082983
XMCgsub5	7642.236091	23800	19003.90291	14914.7013	14914.7013
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	17,524	33,055	16,992	29,745	29,579
constant2	37,527	54,687	40,922	53,571	41,944
constant3	51,410	75,917	48,568	60,107	46,781
constant4	31,128	49,287	36,761	32,870	33,356
constant5	43,898	104,257	89,245	72,010	72,290

QUARTER	21	22	22	23	23
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	1,746,052,356	11,071,022,325	1,843,834,125	8,461,911,317	8,394,650,094
TSseg2	22,586,629,291	50,452,335,376	30,314,668,852	43,091,344,266	28,271,399,513
TSseg3	8,269,668,439	15,283,079,884	7,461,377,578	10,567,289,913	6,861,595,856
TSseg4	6,697,335,161	18,051,119,773	10,481,466,115	8,346,853,453	8,584,712,898
TSseg5	4,983,340,966	18,350,464,781	14,725,019,007	11,417,792,578	11,660,256,884
Tssum	44,283,026,212	113,208,022,139	64,826,365,677	81,885,191,527	63,772,615,243
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	1,139,012,964	7,198,340,712	1,194,614,269	5,435,269,555	5,379,529,787
CSseg2	14,736,791,505	32,876,036,413	19,828,624,019	27,959,683,362	18,379,729,219
CSseg3	5,459,132,946	10,156,145,995	4,959,219,583	7,028,054,656	4,568,856,380
CSseg4	4,163,155,149	11,472,039,145	6,733,998,701	5,395,455,452	5,563,737,202
CSseg5	3,127,905,234	11,573,565,619	9,175,626,735	7,193,297,221	7,238,222,088
Cssum	28,625,997,797	73,276,127,884	41,892,083,308	53,011,760,247	41,130,074,676
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	607,039,393	3,872,681,613	649,219,856	3,026,641,762	3,015,120,307
PSseg2	7,849,837,786	17,576,298,963	10,486,044,833	15,131,660,904	9,891,670,294
PSseg3	2,810,535,493	5,126,933,889	2,502,157,995	3,539,235,257	2,292,739,476
PSseg4	2,534,180,011	6,579,080,628	3,747,467,414	2,951,398,000	3,020,975,695
PSseg5	1,855,435,732	6,776,899,162	5,549,392,271	4,224,495,357	4,422,034,796
Pssum	15,657,028,415	39,931,894,255	22,934,282,369	28,873,431,281	22,642,540,568
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	5,367,773,438	5,840,046,875	5,840,046,875	5,234,109,375	5,234,109,375
CStravseg2	12,740,882,813	14,809,687,500	14,809,687,500	12,873,632,813	12,873,632,813
CStravseg3	2,878,867,188	2,969,148,438	2,969,148,438	2,883,328,125	2,883,328,125
CStravseg4	5,049,085,938	5,909,851,563	5,909,851,563	5,417,625,000	5,417,625,000
CStravseg5	2,123,906,250	2,495,781,250	2,495,781,250	2,509,593,750	2,509,593,750
Cstravsum	28,160,515,625	32,024,515,625	32,024,515,625	28,918,289,063	28,918,289,063
FIRST ORDER CONDITIONS					
foc1l	1.17238E-09	-5.27584E-05	-5.67543E-07	-0.000228684	2.76348E-08
foc2l	6.90989E-10	-7.88442E-05	2.4662E-07	0.000185493	5.27122E-08
foc3l	9.37273E-10	-5.49875E-05	-1.10821E-07	-3.78236E-08	9.40645E-10
foc4l	8.79066E-10	0.000209464	-3.72267E-07	-0.000291903	-3.46861E-07
foc5l	1.18397E-09	-5.27584E-05	-5.73859E-07	-0.000229395	3.61141E-08
foc6l	6.9722E-10	-7.88449E-05	2.12204E-07	0.00018624	3.21266E-08
foc7l	9.45224E-10	-5.49884E-05	-1.10819E-07	-3.69662E-08	9.35188E-10
foc8l	8.74283E-10	0.000209465	-4.05037E-07	-0.000293143	-1.96231E-07
foc9l	1.18031E-09	-5.27362E-05	-5.67543E-07	-0.000228754	-7.4798E-09
foc10l	6.87351E-10	-7.87379E-05	2.47166E-07	0.000185975	3.74508E-08
foc11l	9.37933E-10	-5.49289E-05	-1.10829E-07	-3.74407E-08	9.3155E-10
foc12l	8.68811E-10	0.000209196	-3.73164E-07	-0.000292857	-2.46309E-07
foc13l	1.17659E-09	-5.27277E-05	-5.67542E-07	-0.000228629	-6.34293E-09
foc14l	6.87294E-10	-7.87146E-05	2.47259E-07	0.000185909	3.89715E-08
foc15l	9.37849E-10	-5.49264E-05	-1.10826E-07	-3.80924E-08	9.37007E-10
foc16l	8.72366E-10	0.000209139	-3.7392E-07	-0.00029277	-2.56976E-07
foc17l	9.39508E-10	7.83329E-06	6.1802E-07	7.76078E-05	9.25829E-07
foc18l	9.43828E-10	7.8368E-06	5.9723E-07	7.7777E-05	6.83991E-07
foc19l	9.26775E-10	7.85496E-06	6.03781E-07	7.73865E-05	8.40546E-07
foc20l	9.34051E-10	7.85489E-06	5.9893E-07	7.73267E-05	8.54419E-07

QUARTER	21	22	22	23	23
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	14810.79929	14378.95351	14378.32661	14033.61476	14043.57247
p1c1l	14810.79929	14378.95351	14378.32661	14033.61476	14043.57247
p1f1l	14810.79929	14378.95351	14378.32661	14033.61476	14043.57247
p1g1l	14810.79929	14378.95351	14378.32661	14033.61476	14043.57247
p2a2l	20298.05038	20839.53563	20844.60155	20369.8867	20385.69101
p2c2l	20298.05038	20839.53563	20844.60155	20369.8867	20385.69101
p2f2l	20298.05038	20839.53563	20844.60155	20369.8867	20385.69101
p2g2l	20298.05038	20839.53563	20844.60155	20369.8867	20385.69101
p3a3l	22735.16664	23438.60043	23447.94736	22870.06577	22893.05318
p3c3l	22735.16664	23438.60043	23447.94736	22870.06577	22893.05318
p3f3l	22735.16664	23438.60043	23447.94736	22870.06577	22893.05318
p3g3l	22735.16664	23438.60043	23447.94736	22870.06577	22893.05318
p4a4l	19216.58261	19923.73507	19923.81357	18142.4588	18158.51723
p4c4l	19216.58261	19923.73507	19923.81357	18142.4588	18158.51723
p4f4l	19216.58261	19923.73507	19923.81357	18142.4588	18158.51723
p4g4l	19216.58261	19923.73507	19923.81357	18142.4588	18158.51723
p5a5l	21341.61629	58045.32022	29701.29798	35089.46745	25770.86074
p5c5l	21341.61629	58045.32022	29701.29798	35089.46745	25770.86074
p5f5l	21341.61629	58045.32022	29701.29798	35089.46745	25770.86074
p5g5l	21341.61629	58045.32022	29701.29798	35089.46745	25770.86074
lemp_a1	2.26	2.32	2.36	2.64	2.59
lemp_c1	2.26	2.32	2.36	2.64	2.59
lemp_f1	2.26	2.32	2.36	2.64	2.59
lemp_g1	2.26	2.32	2.36	2.64	2.59
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	3.20	3.29	3.33	3.73	3.66
lemp_c2	3.20	3.29	3.33	3.73	3.66
lemp_f2	3.20	3.29	3.33	3.73	3.66
lemp_g2	3.20	3.29	3.33	3.73	3.66
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	3.66	3.76	3.81	4.27	4.19
lemp_c3	3.66	3.76	3.81	4.27	4.19
lemp_f3	3.66	3.76	3.81	4.27	4.19
lemp_g3	3.66	3.76	3.81	4.27	4.19
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	3.66	3.76	3.81	4.27	4.19
lemp_c4	3.66	3.76	3.81	4.27	4.19
lemp_f4	3.66	3.76	3.81	4.27	4.19
lemp_g4	3.66	3.76	3.81	4.27	4.19
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	3.66	3.76	3.81	4.27	4.19
lemp_c5	3.661214288	3.759934022	3.813434892	4.270303434	4.186418961
lemp_f5	3.661214288	3.759934022	3.813434892	4.270303434	4.186418961
lemp_g5	3.661214288	3.759934022	3.813434892	4.270303434	4.186418961

QUARTER	21	22	22	23	23
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	200877.933	178238.9904	217624.6419	318827.16	350817.4265
Csub1nl	41094.71522	0	44393.25417	119083.1623	152711.64
Fsub1nl	98761.69561	59089.10953	105349.1294	193551.5724	227331.6163
Gsub1nl	155306.7059	126733.7258	171831.8223	231358.9643	264951.4114
Asub2nl	371591.7771	159820.5041	411720.2851	420015.8005	442601.3602
Csub2nl	260363.6415	0	251231.7848	188580.2721	211903.3081
Fsub2nl	387117.9555	176715.4788	438221.8907	395572.1762	418729.1393
Gsub2nl	553425.8264	334611.176	596967.7543	511361.0633	534314.5262
Asub3nl	67916.24725	79780.85108	70954.31375	74755.11791	85499.25668
Csub3nl	107748.7843	122495.9403	114521.1553	84770.04692	95795.99178
Fsub3nl	80749.72579	96637.71309	87962.41474	70946.13147	81710.84619
Gsub3nl	103949.2698	107331.5012	98310.00672	95793.75103	106527.6194
asub4nl	84281.83193	241007.4657	151446.7171	41466.30871	42992.98333
Csub4nl	64410.91291	223978.4435	136852.8567	0	0
fsub4nl	209540.1038	382249.3251	278864.9054	150393.0015	150294.472
gsub4nl	239292.0802	431183.5645	325068.8547	150953.467	151036.1076
asub5nl	88471.73674	331677.8121	98494.61153	204710.1609	97552.98529
Csub5nl	4856.798656	233156.3387	0	107289.7088	0
fsub5nl	56031.95604	286808.9282	54203.16644	147318.568	39996.89489
gsub5nl	77585.33121	316570.3584	84025.38736	191128.0824	83815.5541
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	496,041	364,062	539,199	862,821	995,812
tseg2nl	1,572,499	671,147	1,698,142	1,515,529	1,607,548
tseg3nl	360,364	406,246	371,748	326,265	369,534
tseg4nl	597,525	1,278,419	892,233	342,813	344,324
tseg5nl	226,946	1,168,213	236,723	650,447	221,365
tsumnl	3,253,375	3,888,087	3,738,045	3,697,875	3,538,583
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	191,034	383,464	208,327	(192,855)	(325,846)
lostsales2l	58,334	1,224,493	197,498	132,296	40,277
lostsales3l	8,131	(26,195)	8,303	42,801	(468)
lostsales4l	48,758	(521,958)	(135,772)	350,643	349,132
lostsales5l	44,914	(848,753)	82,737	(329,219)	99,863
lostsuml	351,171	211,051	361,093	3,666	162,958
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	672,935,451	3,399,654,504	704,719,863	6,778,016,032	7,734,940,736
CSlsetseg2	13,545,886,257	11,358,459,770	17,046,900,501	25,158,790,280	17,327,866,047
CSlsetseg3	5,166,619,254	10,659,511,136	4,669,188,546	6,074,600,180	4,413,640,304
CSlsetseg4	3,558,681,825	18,769,532,390	7,511,145,603	2,524,456,252	2,616,374,343
CSlsetseg5	2,559,537,770	26,992,585,591	7,047,640,040	12,007,494,155	5,148,858,919
Cslsetsum	25,503,660,557	71,179,743,391	36,979,594,553	52,543,356,899	37,241,680,349
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	380,826,552	1,976,844,125	414,208,636	3,701,719,248	4,194,690,820
PSlsetseg2	7,262,173,789	6,864,550,199	9,208,503,432	13,756,374,590	9,393,854,103
PSlsetseg3	2,661,375,536	5,393,946,847	2,383,613,151	3,073,537,062	2,228,981,906
PSlsetseg4	2,241,043,802	10,248,830,617	4,134,919,988	1,523,478,942	1,555,288,012
PSlsetseg5	1,427,581,734	51,412,933,114	3,596,690,898	12,345,108,770	2,745,309,230
Pslsetsum	13,973,001,413	75,897,104,902	19,737,936,105	34,400,218,611	20,118,124,072

QUARTER	21	22	22	23	23
-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	1,053,762,003	5,376,498,629	1,118,928,499	10,479,735,280	11,929,631,556
TSlsetseg2	20,808,060,046	18,223,009,969	26,255,403,933	38,915,164,871	26,721,720,151
TSlsetseg3	7,827,994,789	16,053,457,983	7,052,801,697	9,148,137,241	6,642,622,210
TSlsetseg4	5,799,725,627	29,018,363,008	11,646,065,591	4,047,935,194	4,171,662,355
TSlsetseg5	3,987,119,505	78,405,518,705	10,644,330,938	24,352,602,925	7,894,168,150
Tslsetsum	39,476,661,970	147,076,848,294	56,717,530,658	86,943,575,511	57,359,804,421
dwllset	4,806,364,242	(33,868,826,155)	8,108,835,019	(5,058,383,984)	6,412,810,822
surpluslset	321,081,818,220	467,322,004,544	376,962,686,908	376,126,466,136	346,542,695,046
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	164.12	155.62	151.28	120.64	125.53
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	184,180,417	131,627,278	192,213,374	274,671,047	323,359,550
taxrevlsetseg2	825,717,076	343,165,416	856,098,184	682,294,053	738,222,593
taxrevlsetseg3	216,540,414	237,701,302	214,464,225	168,087,143	194,193,218
taxrevlsetseg4	359,048,867	748,024,125	514,736,292	176,612,300	180,945,062
taxrevlsetseg5	136,370,278	683,541,133	136,567,420	335,100,858	116,329,484
taxrevlsetsum	1,721,857,053	2,144,059,255	1,914,079,495	1,636,765,401	1,553,049,906
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	371.30	361.55	356.48	318.34	324.72
taxc1	371.30	361.55	356.48	318.34	324.72
taxf1	371.30	361.55	356.48	318.34	324.72
taxg1	371.30	361.55	356.48	318.34	324.72
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	525.10	511.31	504.14	450.20	459.22
taxc2	525.10	511.31	504.14	450.20	459.22
taxf2	525.10	511.31	504.14	450.20	459.22

QUARTER	21	22	22	23	23
taxg2	525.10	511.31	504.14	450.20	459.22
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	600.89	585.12	576.91	515.19	525.51
taxc3	600.89	585.12	576.91	515.19	525.51
taxf3	600.89	585.12	576.91	515.19	525.51
taxg3	600.89	585.12	576.91	515.19	525.51
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	600.89	585.12	576.91	515.19	525.51
taxc4	600.89	585.12	576.91	515.19	525.51
taxf4	600.89	585.12	576.91	515.19	525.51
taxg4	600.89	585.12	576.91	515.19	525.51
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	600.89	585.12	576.91	515.19	525.51
taxc5	600.8935361	585.1166502	576.9077124	515.1858723	525.508799
taxf5	600.8935361	585.1166502	576.9077124	515.1858723	525.508799
taxg5	600.8935361	585.1166502	576.9077124	515.1858723	525.508799
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	3,969,099,528	(6,986,438,957)	3,679,202,335	23,802,706,287	32,180,254,862
pollution reduction 2	16,571,306,651	(41,126,091,263)	9,858,368,376	3,278,491,606	8,853,667,012
pollution reduction 3	7,756,443,338	9,111,418,376	7,324,449,625	3,787,261,234	5,836,174,901
pollution reduction 4	12,014,449,908	39,221,383,856	21,316,251,325	(3,356,769,009)	(2,951,615,645)
pollution reduction 5	(311,299,425)	39,779,727,988	(2,178,271,661)	12,488,309,908	(3,918,481,130)
Total reduction	40	40	40	40.00000003	40
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.00237	0.01087	0.00314	0.00626	0.00355
	28.47192441	130.4658866	37.71191173	75.14609354	42.57772666
FOC-PMET					
foc1p	2.43737E-05	3.60648E-06	8.49175E-06	5.92653E-05	-0.000101746
foc2p	5.04122E-05	5.16981E-06	5.50717E-05	-1.17824E-05	-5.89442E-05
foc3p	0.000507798	-5.5692E-06	2.96737E-05	9.93032E-09	-0.000110811
foc4p	4.90912E-05	-1.14287E-05	6.4823E-05	3.63438E-06	-0.000604223
foc5p	2.43737E-05	3.61996E-06	8.49191E-06	6.00992E-05	-0.000105952
foc6p	5.04123E-05	5.20498E-06	5.50709E-05	-1.20234E-05	-5.83918E-05
foc7p	0.000507798	-5.5769E-06	2.96737E-05	9.93393E-09	-0.00011081
foc8p	4.90909E-05	-1.15138E-05	6.48229E-05	4.01382E-06	-0.00060956
foc9p	2.43737E-05	3.6286E-06	8.49175E-06	5.91948E-05	-0.000101781
foc10p	5.04127E-05	5.2761E-06	5.50723E-05	-1.12957E-05	-5.89597E-05
foc11p	0.000507797	-5.51082E-06	2.96737E-05	1.08662E-08	-0.000110811
foc12p	4.90912E-05	-1.16974E-05	6.48221E-05	2.68303E-06	-0.000604119
foc13p	2.43737E-05	3.63704E-06	8.49175E-06	5.93198E-05	-0.00010178
foc14p	5.04123E-05	5.29923E-06	5.50724E-05	-1.13639E-05	-5.8958E-05
foc15p	0.000507798	-5.50804E-06	2.96737E-05	1.06064E-08	-0.00011081
foc16p	4.90912E-05	-1.17541E-05	6.48213E-05	2.77041E-06	-0.000604132
foc17p	2.92688E-05	-9.75973E-07	3.25677E-05	-4.8569E-05	0.000282656
foc18p	2.99273E-05	-9.66912E-07	2.73546E-05	-4.95952E-05	0.000445966
foc19p	2.92688E-05	-9.54458E-07	3.25535E-05	-4.87911E-05	0.000282563
foc20p	2.92689E-05	-9.54582E-07	3.25486E-05	-4.88476E-05	0.000282581

QUARTER	21	22	22	23	23
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	14,375.13	13,918.62	13,924.89	13,656.52	13,698.38
p1c1	14,375.13	13,918.62	13,924.89	13,656.52	13,698.38
p1f1	14,375.13	13,918.62	13,924.89	13,656.52	13,698.38
p1g1	14,375.13	13,918.62	13,924.89	13,656.52	13,698.38
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	19,785.31	20,314.13	20,330.54	20,060.38	19,960.17
p2c2	19,785.31	20,314.13	20,330.54	20,060.38	19,960.17
p2f2	19,785.31	20,314.13	20,330.54	20,060.38	19,960.17
p2g2	19,785.31	20,314.13	20,330.54	20,060.38	19,960.17
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	22,147.94	23,790.65	22,909.59	23,030.03	22,443.31
p3c3	22,147.94	23,790.65	22,909.59	23,030.03	22,443.31
p3f3	22,147.94	23,790.65	22,909.59	23,030.03	22,443.31
p3g3	22,147.94	23,790.65	22,909.59	23,030.03	22,443.31
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	18,595.53	19,244.09	19,412.16	17,531.76	17,595.91
p4c4	18,595.53	19,244.09	19,412.16	17,531.76	17,595.91
p4f4	18,595.53	19,244.09	19,412.16	17,531.76	17,595.91
p4g4	18,595.53	19,244.09	19,412.16	17,531.76	17,595.91
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	21,322.42	30,236.09	32,329.26	26,346.38	27,611.83
p5c5	21322.41849	30236.0861	32329.25639	26346.38085	27611.82673
p5f5	21322.41849	30236.0861	32329.25639	26346.38085	27611.82673
p5g5	21322.41849	30236.0861	32329.25639	26346.38085	27611.82673
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	34,976	4,246	14,387	9,236	28,335
dp/dgas2	74,707	13,028	45,033	44,561	44,561
dp/dgas3	74,516	192,730	59,457	195,333	54,422
dp/dgas4	61,652	7,643	67,999	9,199	27,542
dp/dgas5	10,459	174,028	7,587	161,899	5,839
sum of dpdgas	256,310	391,676	194,464	420,227	160,700
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,930	11,573	11,875	11,780	11,905
VMT2	11,933	11,655	11,900	11,858	11,893
VMT3	11,923	11,897	11,901	11,923	11,890
VMT4	11,915	11,484	11,907	11,643	11,845
VMT5	11,915	11,484	11,907	11,643	11,845

QUARTER	21	22	22	23	23
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.00755	0.04638	0.01355	0.02387	0.01026
tpmc1	0.00755	0.04638	0.01355	0.02387	0.01026
tpmf1	0.00755	0.04638	0.01355	0.02387	0.01026
tpmg1	0.00755	0.04638	0.01355	0.02387	0.01026
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.00730	0.03744	0.01083	0.01537	0.01157
tpmc2	0.00730	0.03744	0.01083	0.01537	0.01157
tpmf2	0.00730	0.03744	0.01083	0.01537	0.01157
tpmg2	0.00730	0.03744	0.01083	0.01537	0.01157
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.00837	0.01114	0.01078	0.00840	0.01198
tpmc3	0.00837	0.01114	0.01078	0.00840	0.01198
tpmf3	0.00837	0.01114	0.01078	0.00840	0.01198
tpmg3	0.00837	0.01114	0.01078	0.00840	0.01198
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.00920	0.05594	0.01008	0.03870	0.01684
tpmc4	0.00920	0.05594	0.01008	0.03870	0.01684
tpmf4	0.00920	0.05594	0.01008	0.03870	0.01684
tpmg4	0.00920	0.05594	0.01008	0.03870	0.01684
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.00920	0.05594	0.01008	0.03870	0.01684
tpmc5	0.009201436	0.055940088	0.010083408	0.038699843	0.016835017
tpmf5	0.009201436	0.055940088	0.010083408	0.038699843	0.016835017
tpmg5	0.009201436	0.055940088	0.010083408	0.038699843	0.016835017
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	5,317,378,418	5,412,160,259	5,717,754,590	5,048,015,932	5,144,911,454
cstravelpmetseg2	12,605,238,910	13,953,523,707	14,539,424,352	12,579,718,183	12,653,928,028
cstravelpmetseg3	2,842,965,972	2,923,043,231	2,923,840,915	2,848,513,376	2,832,397,166
cstravelpmetseg4	4,983,045,229	5,452,527,598	5,866,501,365	5,106,283,059	5,300,455,173
cstravelpmetseg5	2,094,413,480	2,327,491,346	2,456,262,583	2,386,998,285	2,446,566,405
cstravelpmetsum	27,843,042,010	30,068,746,141	31,503,783,804	27,969,528,835	28,378,258,226
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	3.18	4.27	4.31	3.81	2.89
epm_c1	3.18	4.27	4.31	3.81	2.89
epm_f1	3.18	4.27	4.31	3.81	2.89
epm_g1	3.18	4.27	4.31	3.81	2.89
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	3.08	3.44	3.45	2.45	3.26
epm_c2	3.08	3.44	3.45	2.45	3.26
epm_f2	3.08	3.44	3.45	2.45	3.26
epm_g2	3.08	3.44	3.45	2.45	3.26

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OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	3.53	1.02	3.43	1.34	3.38
epm_c3	3.53	1.02	3.43	1.34	3.38
epm_f3	3.53	1.02	3.43	1.34	3.38
epm_g3	3.53	1.02	3.43	1.34	3.38
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	3.88	5.15	3.21	6.18	4.74
epm_c4	3.88	5.15	3.21	6.18	4.74
epm_f4	3.88	5.15	3.21	6.18	4.74
epm_g4	3.88	5.15	3.21	6.18	4.74
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	3.88	5.15	3.21	6.18	4.74
epm_c5	3.878109233	5.145261161	3.208559207	6.179936924	4.744739069
epm_f5	3.878109233	5.145261161	3.208559207	6.179936924	4.744739069
epm_g5	3.878109233	5.145261161	3.208559207	6.179936924	4.744739069
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	216350.8269	282871.9106	271568.0475	267616.6009	283437.4153
Csub1n	56585.55826	104844.0667	99640.82387	65705.87397	86669.33135
Fsub1n	114234.5895	163722.0298	159292.535	142341.0133	159951.6051
Gsub1n	170779.5998	231366.646	225775.228	180148.4053	197571.4002
Asub2n	366458.5955	475181.1381	508465.8324	441726.6205	438215.6797
Csub2n	255100.3233	316063.5625	351566.9905	211421.1042	207570.264
Fsub2n	381984.7738	492076.1129	534967.438	417282.9963	414343.4588
Gsub2n	548292.6448	649971.8101	693713.3016	533071.8834	529928.8457
Asub3n	67477.801	64815.72524	65956.29756	79733.22222	82109.87748
Csub3n	107310.5129	107512.1268	109354.8255	90146.6586	92454.37808
Fsub3n	80311.27954	81672.58725	82964.39856	75924.23578	78321.46698
Gsub3n	103510.8235	92366.37536	93311.99053	100771.8553	103138.2402
asub4n	84956.16425	95541.52432	19538.56735	125098.7049	103139.2037
Csub4n	65085.24511	78183.57046	0	86823.5991	59002.24522
fsub4n	210214.4361	236783.3837	146956.7557	234025.3977	210440.6924
gsub4n	239966.4125	285717.6231	193160.705	234585.8632	211182.328
asub5n	98659.18468	103801.916	120948.083	110060.1818	120838.0324
Csub5n	15398.70617	4773.703631	23784.05472	8763.218575	22794.77683
fsub5n	66219.40399	58933.03209	76656.63793	52668.58889	63281.94198
gsub5n	87772.77915	88694.46233	106478.8588	96478.10322	107100.6012
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	557,951	782,805	756,277	655,812	727,630
tseg2n	1,551,836	1,933,293	2,088,714	1,603,503	1,590,058
tseg3n	358,610	346,367	351,588	346,576	356,024
tseg4n	600,222	696,226	359,656	680,534	583,764
tseg5n	268,050	256,203	327,868	267,970	314,015
tsumn	3,336,670	4,014,893	3,884,101	3,554,394	3,571,492
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	804,806,752	7,413,024,660	1,086,204,488	5,203,204,805	5,671,700,323
CSPMETseg2	13,342,318,577	32,755,281,190	20,995,302,429	26,318,403,133	17,067,897,641

QUARTER	21	22	22	23	23
CSPMETseg3	5,134,942,828	8,655,533,564	4,397,901,769	6,140,771,284	4,216,318,131
CSPMETseg4	3,590,883,539	10,309,622,074	2,996,423,139	5,098,085,399	4,464,667,051
CSPMETseg5	3,012,793,854	8,235,115,118	9,317,808,240	5,278,796,733	6,999,373,810
CsPMETsum	25,885,745,550	67,368,576,606	38,793,640,065	48,039,261,353	38,419,956,957
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	446,757,368	3,983,198,009	604,452,964	2,918,906,082	3,160,066,623
PSpmetseg2	7,160,595,304	17,560,366,511	11,176,007,682	14,331,585,787	9,263,738,975
PSpmetseg3	2,645,537,707	4,391,936,612	2,247,843,709	3,106,528,875	2,130,302,070
PSpmetseg4	2,257,144,689	6,019,950,144	1,886,951,076	2,803,654,392	2,481,710,949
PSpmetseg5	1,796,678,609	5,127,741,975	5,606,442,198	3,323,097,339	4,320,369,060
Pspmetsum	14,306,713,677	37,083,193,252	21,521,697,628	26,483,772,474	21,356,187,677
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	1,251,564,120	11,396,222,670	1,690,657,452	8,122,110,886	8,831,766,946
TSPMETseg2	20,502,913,881	50,315,647,700	32,171,310,111	40,649,988,920	26,331,636,616
TSPMETseg3	7,780,480,535	13,047,470,177	6,645,745,478	9,247,300,158	6,346,620,201
TSPMETseg4	5,848,028,228	16,329,572,218	4,883,374,215	7,901,739,791	6,946,378,000
TSPMETseg5	4,809,472,462	13,362,857,093	14,924,250,437	8,601,894,072	11,319,742,870
TSPMETsum	40,192,459,226	104,451,769,857	60,315,337,693	74,523,033,828	59,776,144,634
dwlpmet	4,103,405,157	8,835,444,952	4,548,623,106	7,363,658,652	4,008,621,992
pmetsurplus	321,669,233,766	423,904,999,403	380,184,542,720	363,690,914,929	348,837,521,433
pmetsurplus10	71,081,855,680	153,286,284,134	96,650,488,486	111,965,155,412	93,433,197,395
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	50,248,515	420,128,403	121,652,849	184,372,250	88,845,245
taxrevpmetseg2	117,959,262	751,499,694	236,673,577	265,619,758	202,093,811
taxrevpmetseg3	35,785,460	45,907,128	45,119,131	34,702,111	50,695,650
taxrevpmetseg4	65,806,536	447,284,535	43,181,692	306,645,375	116,407,436
taxrevpmetseg5	34,835,672	211,757,055	36,509,449	155,919,781	69,837,311
taxrevpmetsum	304,635,444	1,876,576,814	483,136,699	947,259,275	527,879,453
pmetrev10	3,046,354,444	18,765,768,136	4,831,366,988	9,472,592,749	5,278,794,534
SALES LOST AS RESULT OF PMET-					
lostsales1	129,124	(35,279)	(8,751)	14,154	(57,664)
lostsales2	78,997	(37,653)	(193,074)	44,322	57,767
lostsales3	9,885	33,684	28,463	22,490	13,042
lostsales4	46,061	60,235	396,805	12,922	109,692
lostsales5	3,810	63,257	(8,408)	53,258	7,213
lostsum	267,876	84,245	215,037	147,147	130,049
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	264.0240598	196.9232937	194.8832683	220.4121595	290.6054239
taxc1p	264.0240598	196.9232937	194.8832683	220.4121595	290.6054239
taxf1p	264.0240598	196.9232937	194.8832683	220.4121595	290.6054239
taxg1p	264.0240598	196.9232937	194.8832683	220.4121595	290.6054239
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	545.6973689	487.8174945	487.6075218	684.6902041	515.3854395
taxc2p	545.6973689	487.8174945	487.6075218	684.6902041	515.3854395
taxf2p	545.6973689	487.8174945	487.6075218	684.6902041	515.3854395
taxg2p	545.6973689	487.8174945	487.6075218	684.6902041	515.3854395
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	21	22	22	23	23
taxa3p	623.6705311	2147.059728	641.1538775	1640.444158	651.7794134
taxc3p	623.6705311	2147.059728	641.1538775	1640.444158	651.7794134
taxf3p	623.6705311	2147.059728	641.1538775	1640.444158	651.7794134
taxg3p	623.6705311	2147.059728	641.1538775	1640.444158	651.7794134
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	567.2867544	427.5779073	685.6660133	355.9906884	463.6714407
taxc4p	567.2867544	427.5779073	685.6660133	355.9906884	463.6714407
taxf4p	567.2867544	427.5779073	685.6660133	355.9906884	463.6714407
taxg4p	567.2867544	427.5779073	685.6660133	355.9906884	463.6714407
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	567.2867544	427.5779073	685.6660133	355.9906884	463.6714407
taxc5p	567.2867544	427.5779073	685.6660133	355.9906884	463.6714407
taxf5p	567.2867544	427.5779073	685.6660133	355.9906884	463.6714407
taxg5p	567.2867544	427.5779073	685.6660133	355.9906884	463.6714407
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	1829249506	2207790993	-247293866.7	3050207631	13916102519
pollution reduction 2p	18075551498	21329462622	2727770305	32405020959	16206561768
pollution reduction 3p	8348637778	17829340468	8164661131	16792710164	8896637347
pollution reduction 4p	10773873752	3364918467	473484238.5	-436279793	3087877453
pollution reduction 5p	972673437.4	-473151255	4331437875	-788514081	-2107134526
Total reductionp	39.99998597	40	39.99999244	40	40.00004456
DIFFERENCE-					
Tsdiff	(587)	(43,417)	(3,222)	(12,436)	(2,295)

QUARTER	24	24	25	25	26
COEFFICIENTS OF DEMAND					
a P1/q1	-0.017162537	-0.013401102	-0.014472004	-0.009322337	-0.020508174
b p2/q1	-0.004812817	-1E-08	-0.002624459	-0.00341987	-0.00234561
c p3/q1	-0.00278263	2.9379E-17	-0.008823929	-1E-08	-0.012644833
d p4/q1	-0.002701661	-0.007077142	-0.002448955	-1E-08	-0.001972361
f P1/q2	-0.004812817	-9.99998E-09	-0.002624459	-0.00341987	-0.00234561
g p2/q2	-0.016012387	-0.01111712€	-0.013865238	-0.005720132	-0.016398934
h p3/q2	-3.7291E-10	-0.005814602	-1E-08	-1E-08	0
i p4/q2	1.1259E-16	-0.002543762	-1E-08	-1E-08	-8.2297E-05
k P1/q3	-0.00278263	-1.07544E-13	-0.008823929	-1E-08	-0.012644833
l p2/q3	-3.7291E-10	-0.005814602	-1E-08	-1E-08	-3.41369E-17
m p3/q3	-0.085044646	-0.064772907	-0.11881272	-0.036892078	-0.092755307
n p4/q3	-9.76562E-10	-9.99993E-09	-1E-08	-1E-08	-0.010840906
p P1/q4	-0.002701661	-0.007077142	-0.002448955	-1E-08	-0.001972361
q p2/q4	-5.38039E-11	-0.002543762	-1E-08	-1E-08	-8.2297E-05
r p3/q4	-9.76562E-10	-1E-08	-1E-08	-1E-08	-0.010840906
s p4/q4	-0.040988382	-0.009726847	-0.028562107	-0.028619576	-0.020980024
u P1/q5	-0.006591888	-0.013401102	-0.013448608	-1E-08	-1E-08
v p2/q5	-0.011141097	-0.01111712€	-0.013865238	-1E-08	-0.014755522
w p3/q5	-0.021399294	-0.0083688€	-1E-08	-0.004375339	-0.019568552
x p4/q5	1.00825E-16	-0.001008197	-0.002549608	-0.007321281	-0.001890093
y p5/q5	-0.081260336	-0.03856642	-0.150790785	-0.179503555	-0.101444324
e p5/q1	-0.006591888	-0.013401102	-0.013448608	-0.00000001	-0.00000001
j p5/q2	-0.011141097	-0.01111712€	-0.013865238	-0.00000001	-0.014755522
o p5/q3	-0.021399294	-0.0083688€	-1E-08	-0.004375339	-0.019568552
t p5/q4	0	-0.001008197	-0.002549608	-0.007321281	-0.001890093
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.017162537	-0.013401102	-0.014472004	-0.009322337	-0.020508174
bb	-0.004812817	-1E-08	-0.002624459	-0.00341987	-0.00234561
cc	-0.00278263	-0.00000001	-0.008823929	-1E-08	-0.012644833
dd	-0.002701661	-0.007077142	-0.002448955	-1E-08	-0.001972361
ee	-0.006591888	-0.013401102	-0.013448608	-0.00000001	-0.00000001
ff	-0.004812817	-9.99998E-09	-0.002624459	-0.00341987	-0.00234561
gg	-0.016012387	-0.01111712€	-0.013865238	-0.005720132	-0.016398934
hh	-3.7291E-10	-0.005814602	-1E-08	-1E-08	-0.00000001
ii	-0.00000001	-0.002543762	-1E-08	-1E-08	-8.2297E-05
jj	-0.011141097	-0.01111712€	-0.013865238	-0.00000001	-0.014755522
kk	-0.00278263	-1.07544E-13	-0.008823929	-1E-08	-0.012644833
ll	-3.7291E-10	-0.005814602	-1E-08	-1E-08	-3.41369E-17
mm	-0.085044646	-0.064772907	-0.11881272	-0.036892078	-0.092755307
nn	-9.76562E-10	-9.99993E-09	-1E-08	-1E-08	-0.010840906
oo	-0.021399294	-0.0083688€	-1E-08	-0.004375339	-0.019568552
pp	-0.002701661	-0.007077142	-0.002448955	-1E-08	-0.001972361
qq	-5.38039E-11	-0.002543762	-1E-08	-1E-08	-8.2297E-05
rr	-9.76562E-10	-1E-08	-1E-08	-1E-08	-0.010840906
ss	-0.040988382	-0.009726847	-0.028562107	-0.028619576	-0.020980024
tt	-0.00000001	-0.001008197	-0.002549608	-0.007321281	-0.001890093
uu	-0.006591888	-0.013401102	-0.013448608	-1E-08	-1E-08
vv	-0.011141097	-0.01111712€	-0.013865238	-1E-08	-0.014755522
ww	-0.021399294	-0.0083688€	-1E-08	-0.004375339	-0.019568552
xx	-0.00000001	-0.001008197	-0.002549608	-0.007321281	-0.001890093
yy	-0.081260336	-0.03856642	-0.150790785	-0.179503555	-0.101444324
KNOWN PRICE BEFORE TAXES					
P1	14,814	14,814	14,628	14,628	15,431
P2	18,937	18,937	19,990	19,990	19,902
P3	24,631	24,631	27,894	27,894	27,762
P4	18,710	18,710	17,799	17,799	18,315
P5	27,535	27,535	33,250	33,250	32,687

QUARTER	24	24	25	25	26
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	213076	213076	212911	212911	265131
Csub1	59035	59035	66888	66888	81642
Fsub1	114072	114072	111361	111361	105976
Gsub1	132486	132486	148720	148720	194344
Asub2	403923	403923	372149	372149	443230
Csub2	225226	225226	253975	253975	295194
Fsub2	458872	458872	453633	453633	519200
Gsub2	563804	563804	528724	528724	612909
Asub3	87998	87998	68074	68074	75960
Csub3	115603	115603	94252	94252	125421
Fsub3	72852	72852	91162	91162	125855
Gsub3	162010	162010	129859	129859	138857
asub4	103631	103631	94837	94837	92958
Csub4	91611	91611	92210	92210	96564
fsub4	249346	249346	232187	232187	256424
gsub4	251275	251275	229785	229785	258315
asub5	106519	106519	113036	113036	132737
Csub5	16752	16752	17255	17255	13466
fsub5	69190	69190	63041	63041	75610
gsub5	110868	110868	82188	82188	92465
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	518,669	518,669	539,880	539,880	647,093
tseg2	1,651,825	1,651,825	1,608,481	1,608,481	1,870,533
tseg3	438,463	438,463	383,347	383,347	466,093
tseg4	695,863	695,863	649,019	649,019	704,261
tseg5	303,329	303,329	275,520	275,520	314,278
tsum	3,608,149	3,608,149	3,456,247	3,456,247	4,002,258
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	1.66	2.13	1.87	2.91	1.16
Elasiticity21	0.64	0.00	0.48	2.37	0.21
Elasiticity31	0.09	0.00	0.27	0.00	0.29
Elasiticity41	0.14	1.96	0.20	0.00	0.13
Elasiticity51	0.25	1.38	0.38	0.00	0.00
Elasiticity12	0.16	0.00	0.12	0.58	0.06
Elasiticity22	0.72	1.03	0.90	2.17	0.65
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.27	0.00	0.00	0.00
Elasiticity52	0.14	0.43	0.14	0.00	0.15
Elasiticity13	0.06	0.00	0.20	0.00	0.22
Elasiticity23	0.00	0.35	0.00	0.00	0.00
Elasiticity33	0.66	0.87	0.61	1.97	0.64
Elasiticity43	0.00	0.00	0.00	0.00	0.22
Elasiticity53	0.19	0.21	0.00	0.06	0.15
Elasiticity14	0.08	1.16	0.13	0.00	0.10
Elasiticity24	0.00	0.64	0.00	0.00	0.01
Elasiticity34	0.00	0.00	0.00	0.00	0.22
Elasiticity44	0.66	2.76	0.96	0.96	1.24
Elasiticity54	0.00	0.11	0.03	0.07	0.04
Elasiticity15	0.23	1.27	0.33	0.00	0.00
Elasiticity25	0.53	1.62	0.48	0.00	0.56
Elasiticity35	0.25	0.27	0.00	0.07	0.18
Elasiticity45	0.00	0.17	0.04	0.09	0.05
Elasiticity55	1.12	2.35	0.80	0.67	1.03
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	24	24	25	25	26
MCasub1	8,000	9,814	8,000	11,128	8,000
MCcsub1	12,048	13,163	11,568	12,983	11,402
MCfsub1	9,349	10,633	9,378	11,787	10,159
MCgsub1	8,000	9,814	8,000	11,128	8,000
MCasub2	10,235	12,463	12,808	17,257	10,007
MCcsub2	14,846	15,326	16,074	18,318	14,654
MCfsub2	10,235	11,970	12,554	17,026	10,007
MCgsub2	8,000	9,814	11,171	16,490	8,000
MCasub3	14,236	15,650	17,870	24,834	13,872
MCcsub3	14,236	15,650	16,113	24,418	13,872
MCfsub3	16,531	16,555	16,113	24,418	10,654
MCgsub3	8,000	9,814	11,171	22,894	8,000
MCasub4	13,843	15,002	14,650	14,626	14,752
MCcsub4	14,772	16,780	15,199	15,275	14,752
MCfsub4	8,141	14,185	11,171	11,128	11,285
MCgsub4	8,000	13,710	11,171	11,128	10,884
MCasub5	11,171	15,330	8,000	12,013	10,884
MCcsub5	20,839	22,576	26,045	29,112	24,240
MCfsub5	14,568	17,459	15,632	20,128	14,267
MCgsub5	8,000	13,710	11,171	16,490	10,884
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.006591888	-0.013401102	-0.013448608	-0.00000001	-0.00000001
j	-0.011141097	-0.01111712€	-0.013865238	-0.00000001	-0.014755522
o	-0.021399294	-0.0083688€	-1E-08	-0.004375339	-0.019568552
t	0	-0.001008197	-0.002549608	-0.007321281	-0.001890093
y	-0.08126033€	-0.03856642	-0.150790785	-0.179503555	-0.101444324
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	6814.29661	5000	6628.02381	3500	7430.946309
XMCcsub1	2766.077804	1651.107293	3060.388035	1644.955473	4029.193465
XMCfsub1	5464.897365	4180.89698	5249.955688	2841.158098	5272.185416
XMCgsub1	6814.29661	5000	6628.02381	3500	7430.946309
XMCasub2	8701.629978	6474.149498	7181.798358	2733.222674	9895.047239
XMCcsub2	4090.79733€	3610.868337	3916.465714	1671.763001	5248.245333
XMCfsub2	8701.629978	6967.077018	7436.2115	2963.927005	9895.047239
XMCgsub2	10936.6719€	9122.375348	8819.342583	3500	11902.09627
XMCasub3	10395.33732	8981.27186€	10024.03953	3059.708454	13889.99316
XMCcsub3	10395.33732	8981.27186€	11781.34071	3475.913742	13889.99316
XMCfsub3	8100.040295	8076.546798	11781.34071	3475.913742	17107.33147
XMCgsub3	16631.47917	14817.1825€	16723.35415	5000	19761.60563
XMCasub4	4867.762774	3708.205788	3148.633051	3172.971075	3562.989418
XMCcsub4	3937.916279	1930.000443	2599.409781	2524.041209	3562.989418
XMCfsub4	10569.57847	4525.394987	6628.02381	6670.665079	7030.628864
XMCgsub4	10710.410€	5000	6628.02381	6670.665079	7430.946309
XMCasub5	16364.41541	12204.78731	25250	21236.8755€	21802.97632
XMCcsub5	6696.133278	4959.20078	7205.241111	4137.97017€	8447.830862
XMCfsub5	12967.07074	10076.19535	17618.29417	13122.07408	18420.67762
XMCgsub5	19535.1621€	13824.75157	22079.33492	16759.99234	21802.97632
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	36,765	30,755	35,340	25,162	40,372
constant2	51,262	44,992	47,529	31,037	56,790
constant3	69,855	65,175	78,204	43,242	92,961
constant4	48,634	33,657	38,361	38,391	40,168
constant5	83,389	68,919	106,013	89,136	102,622

QUARTER	24	24	25	25	26
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	8,834,148,818	6,436,106,351	8,777,224,450	4,535,611,745	12,371,572,357
TSseg2	41,293,116,915	33,287,942,713	33,851,691,705	13,521,311,181	52,867,431,819
TSseg3	15,315,425,983	13,705,988,228	14,681,648,126	4,443,867,396	22,888,840,398
TSseg4	16,603,299,675	8,146,361,670	10,272,817,709	10,297,562,790	12,092,556,892
TSseg5	13,389,313,875	9,889,435,625	15,927,679,357	12,375,453,975	17,406,025,915
Tssum	95,435,305,265	71,465,834,587	83,511,061,348	45,173,807,088	117,626,427,381
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	5,692,699,677	4,133,899,951	5,590,982,021	2,843,481,257	8,069,561,767
CSseg2	26,697,900,761	21,519,395,117	22,147,999,228	8,884,489,988	34,499,989,047
CSseg3	9,914,354,835	8,888,467,962	9,643,168,106	2,941,802,732	15,194,579,209
CSseg4	10,411,351,566	5,200,503,187	6,672,557,806	6,682,245,405	7,694,945,140
CSseg5	8,471,003,102	6,276,422,840	10,023,862,661	7,698,822,913	10,989,406,116
Cssum	61,187,309,941	46,018,689,058	54,078,569,822	29,050,842,294	76,448,481,279
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	3,141,449,141	2,302,206,399	3,186,242,429	1,692,130,489	4,302,010,590
PSseg2	14,595,216,154	11,768,547,596	11,703,692,476	4,636,821,192	18,367,442,772
PSseg3	5,401,071,148	4,817,520,266	5,038,480,020	1,502,064,664	7,694,261,189
PSseg4	6,191,948,109	2,945,858,483	3,600,259,904	3,615,317,386	4,397,611,752
PSseg5	4,918,310,773	3,613,012,784	5,903,816,697	4,676,631,063	6,416,619,799
Pssum	34,247,995,324	25,447,145,528	29,432,491,525	16,122,964,793	41,177,946,102
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	4,052,101,563	4,052,101,563	4,217,812,500	4,217,812,500	5,055,414,063
CStravseg2	12,904,882,813	12,904,882,813	12,566,257,813	12,566,257,813	14,613,539,063
CStravseg3	3,425,492,188	3,425,492,188	2,994,898,438	2,994,898,438	3,641,351,563
CStravseg4	5,436,429,688	5,436,429,688	5,070,460,938	5,070,460,938	5,502,039,063
CStravseg5	2,369,757,813	2,369,757,813	2,152,500,000	2,152,500,000	2,455,296,875
Cstravsum	28,188,664,063	28,188,664,063	27,001,929,688	27,001,929,688	31,267,640,625
FIRST ORDER CONDITIONS					
foc1l	6.94742E-07	-1.10731E-10	5.19594E-09	-9.34869E-06	0.000100163
foc2l	-1.45862E-08	9.22785E-05	-2.62344E-09	5.23186E-06	-6.37194E-05
foc3l	-1.35205E-08	-0.000384076	-3.23359E-08	-1.46423E-09	3.19841E-05
foc4l	-6.92908E-07	2.49897E-06	1.09239E-08	-6.45205E-06	7.28963E-05
foc5l	6.92971E-07	-8.91782E-08	4.08977E-09	-6.3415E-06	8.65463E-05
foc6l	-1.46341E-08	0.000132835	-1.99384E-09	3.56102E-06	-5.38859E-05
foc7l	-1.52243E-08	-0.000509605	-3.48257E-08	-1.43806E-09	3.22577E-05
foc8l	-6.92775E-07	-0.000136478	1.16724E-08	-4.30428E-06	5.74701E-05
foc9l	7.01306E-07	2.55828E-07	4.72573E-09	-7.48765E-06	0.000114213
foc10l	-1.46565E-08	0.000105448	-2.47974E-09	4.19791E-06	-7.38073E-05
foc11l	-1.35117E-08	-0.000437759	-3.32675E-08	-1.61407E-09	3.22199E-05
foc12l	-6.92609E-07	-4.16484E-05	1.12438E-08	-5.12293E-06	8.8377E-05
foc13l	7.01917E-07	4.97052E-08	5.21027E-09	-8.49345E-06	0.000121159
foc14l	-1.47586E-08	8.94169E-05	-2.78442E-09	4.75677E-06	-7.88248E-05
foc15l	-1.24969E-08	-0.000391139	-3.20693E-08	-1.65613E-09	3.20702E-05
foc16l	-6.92715E-07	1.40356E-05	1.087E-08	-5.84131E-06	9.62535E-05
foc17l	5.85782E-07	0.000117001	-1.19871E-08	2.09591E-06	-2.59758E-05
foc18l	5.87625E-07	0.000409653	-1.23127E-08	1.38404E-06	-1.98938E-05
foc19l	5.82483E-07	0.000227479	-1.16888E-08	1.65527E-06	-3.22001E-05
foc20l	5.81495E-07	0.000115983	-1.15833E-08	1.89335E-06	-3.53029E-05

QUARTER	24	24	25	25	26
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	15370.43551	15413.61387	15065.00043	15005.29265	16101.55749
p1c1l	15370.43551	15413.61387	15065.00043	15005.29265	16101.55749
p1f1l	15370.43551	15413.61387	15065.00043	15005.29265	16101.55749
p1g1l	15370.43551	15413.61387	15065.00043	15005.29265	16101.55749
p2a2l	19676.17971	19729.73629	20886.70165	20828.54336	20620.00552
p2c2l	19676.17971	19729.73629	20886.70165	20828.54336	20620.00552
p2f2l	19676.17971	19729.73629	20886.70165	20828.54336	20620.00552
p2g2l	19676.17971	19729.73629	20886.70165	20828.54336	20620.00552
p3a3l	25442.05701	25503.78863	28877.82031	28880.11182	28705.34197
p3c3l	25442.05701	25503.78863	28877.82031	28880.11182	28705.34197
p3f3l	25442.05701	25503.78863	28877.82031	28880.11182	28705.34197
p3g3l	25442.05701	25503.78863	28877.82031	28880.11182	28705.34197
p4a4l	19548.3626	19601.88734	19094.00532	19028.18899	19201.87782
p4c4l	19548.3626	19601.88734	19094.00532	19028.18899	19201.87782
p4f4l	19548.3626	19601.88734	19094.00532	19028.18899	19201.87782
p4g4l	19548.3626	19601.88734	19094.00532	19028.18899	19201.87782
p5a5l	28597.72416	28601.06462	43426.95844	33826.47757	58573.65168
p5c5l	28597.72416	28601.06462	43426.95844	33826.47757	58573.65168
p5f5l	28597.72416	28601.06462	43426.95844	33826.47757	58573.65168
p5g5l	28597.72416	28601.06462	43426.95844	33826.47757	58573.65168
lemp_a1	2.50	2.33	2.21	2.37	2.61
lemp_c1	2.50	2.33	2.21	2.37	2.61
lemp_f1	2.50	2.33	2.21	2.37	2.61
lemp_g1	2.50	2.33	2.21	2.37	2.61
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	3.53	3.29	3.13	3.35	3.69
lemp_c2	3.53	3.29	3.13	3.35	3.69
lemp_f2	3.53	3.29	3.13	3.35	3.69
lemp_g2	3.53	3.29	3.13	3.35	3.69
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	4.04	3.77	3.58	3.83	4.22
lemp_c3	4.04	3.77	3.58	3.83	4.22
lemp_f3	4.04	3.77	3.58	3.83	4.22
lemp_g3	4.04	3.77	3.58	3.83	4.22
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	4.04	3.77	3.58	3.83	4.22
lemp_c4	4.04	3.77	3.58	3.83	4.22
lemp_f4	4.04	3.77	3.58	3.83	4.22
lemp_g4	4.04	3.77	3.58	3.83	4.22
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	4.04	3.77	3.58	3.83	4.22
lemp_c5	4.044246724	3.765456314	3.578186519	3.831075625	4.2228203
lemp_f5	4.044246724	3.765456314	3.578186519	3.831075625	4.2228203
lemp_g5	4.044246724	3.765456314	3.578186519	3.831075625	4.2228203

QUARTER	24	24	25	25	26
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	209513.123	253452.1415	153831.2902	224273.4486	337720.739
Csub1nl	55792.54522	32696.95565	0	56578.77224	158377.9265
Fsub1nl	108883.3347	0	54611.00312	114792.3081	178128.8038
Gsub1nl	127264.8177	16.21521143	96153.52565	161282.4624	264311.3765
Asub2nl	392169.1167	421489.0365	291128.6069	314876.6393	150336.3397
Csub2nl	212406.3081	191726.7697	180565.2369	229570.0534	0
Fsub2nl	448601.3262	364573.8497	380522.5305	420663.4662	223204.952
Gsub2nl	553861.391	456489.2575	453121.3966	486585.4008	317951.6787
Asub3nl	84958.43352	85340.36428	70874.27579	65484.07681	0
Csub3nl	112405.5812	112684.2878	97089.47884	88137.57768	49308.85319
Fsub3nl	70731.70521	70643.36846	93033.62216	82831.81317	49734.03927
Gsub3nl	160033.1639	159891.7184	131543.3399	121828.8034	62737.66605
asub4nl	98850.34948	49364.85103	82841.69088	85548.15422	90777.68472
Csub4nl	86296.9	92646.67831	85356.10267	87402.4524	93500.37447
fsub4nl	244591.2392	327988.088	217832.7495	220845.8649	250169.8319
gsub4nl	246815.5644	347464.2236	212548.5898	215852.4118	252525.3808
asub5nl	107933.1059	84423.62026	184896.4888	110036.863	436273.3277
Csub5nl	18842.06375	32424.96187	89072.55768	14152.43651	316928.0456
fsub5nl	70297.53443	129612.3932	132632.1971	58888.81655	379769.4206
gsub5nl	111685.7704	180432.7985	151925.3076	78408.48865	396777.2332
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	501,454	286,165	304,596	556,927	938,539
tseg2nl	1,607,038	1,434,279	1,305,338	1,451,696	691,493
tseg3nl	428,129	428,560	392,541	358,282	161,781
tseg4nl	676,554	817,464	598,579	609,649	686,973
tseg5nl	308,758	426,894	558,527	261,487	1,529,748
tsumnl	3,521,933	3,393,362	3,159,580	3,238,040	4,008,534
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	17,215	232,504	235,284	(17,047)	(291,446)
lostsales2l	44,787	217,546	303,143	156,785	1,179,040
lostsales3l	10,334	9,903	(9,194)	25,065	304,312
lostsales4l	19,309	(121,601)	50,440	39,370	17,288
lostsales5l	(5,429)	(123,565)	(283,007)	14,033	(1,215,470)
lostsuml	86,216	214,787	296,667	218,207	(6,276)
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	5,364,313,891	2,195,045,233	3,087,835,067	2,828,210,055	11,389,334,688
CSlsetseg2	25,379,817,017	18,116,543,494	17,388,620,485	7,409,831,932	12,505,636,794
CSlsetseg3	9,507,167,926	8,500,791,915	9,681,346,844	2,572,806,396	5,197,688,857
CSlsetseg4	9,838,995,370	5,744,907,011	5,766,311,347	5,902,112,289	7,201,532,229
CSlsetseg5	8,458,593,345	8,605,686,803	17,478,047,399	7,231,318,820	33,691,166,034
Cslsetsum	58,548,887,549	43,162,974,456	53,402,161,141	25,944,279,493	69,985,358,602
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	2,986,033,474	1,286,207,970	1,845,270,033	1,583,531,700	6,076,056,922
PSlsetseg2	13,902,938,582	9,798,262,822	9,391,700,595	3,954,607,305	7,347,305,599
PSlsetseg3	5,167,425,827	4,591,269,830	5,053,682,619	1,345,592,457	2,759,623,042
PSlsetseg4	5,880,584,859	3,356,989,473	3,374,584,016	3,454,497,244	4,185,182,578
PSlsetseg5	4,977,940,412	4,947,807,091	15,998,884,787	4,332,693,748	65,841,540,391
Pslsetsum	32,914,923,155	23,980,537,186	35,664,122,050	14,670,922,454	86,209,708,532

QUARTER	24	24	25	25	26
-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	8,350,347,365	3,481,253,204	4,933,105,100	4,411,741,755	17,465,391,610
TSlsetseg2	39,282,755,599	27,914,806,316	26,780,321,080	11,364,439,238	19,852,942,393
TSlsetseg3	14,674,593,753	13,092,061,745	14,735,029,463	3,918,398,853	7,957,311,899
TSlsetseg4	15,719,580,230	9,101,896,484	9,140,895,362	9,356,609,533	11,386,714,808
TSlsetseg5	13,436,533,757	13,553,493,894	33,476,932,185	11,564,012,568	99,532,706,425
Tslsetsum	91,463,810,704	67,143,511,643	89,066,283,191	40,615,201,948	156,195,067,135
dwllset	3,971,494,561	4,322,322,944	(5,555,221,844)	4,558,605,140	(38,568,639,754)
surpluslset	373,350,451,329	349,030,152,268	359,085,580,066	310,634,498,823	468,871,473,385
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	134.51	155.16	171.83	149.89	123.37
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	168,556,027	103,311,903	115,720,938	197,618,922	302,134,720
taxrevlsetseg2	763,931,685	732,288,108	701,335,643	728,485,320	314,811,907
taxrevlsetseg3	232,894,679	250,389,686	241,348,396	205,744,045	84,284,247
taxrevlsetseg4	368,033,658	477,610,228	368,028,353	350,091,639	357,898,535
taxrevlsetseg5	167,959,249	249,416,332	343,402,561	150,159,012	796,966,345
taxrevlsetsum	1,701,375,299	1,813,016,257	1,769,835,891	1,632,098,938	1,856,095,754
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	336.13	361.02	379.92	354.84	321.92
taxc1	336.13	361.02	379.92	354.84	321.92
taxf1	336.13	361.02	379.92	354.84	321.92
taxg1	336.13	361.02	379.92	354.84	321.92
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	475.37	510.56	537.28	501.82	455.26
taxc2	475.37	510.56	537.28	501.82	455.26
taxf2	475.37	510.56	537.28	501.82	455.26

QUARTER	24	24	25	25	26
taxg2	475.37	510.56	537.28	501.82	455.26
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	543.98	584.26	614.84	574.25	520.98
taxc3	543.98	584.26	614.84	574.25	520.98
taxf3	543.98	584.26	614.84	574.25	520.98
taxg3	543.98	584.26	614.84	574.25	520.98
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	543.98	584.26	614.84	574.25	520.98
taxc4	543.98	584.26	614.84	574.25	520.98
taxf4	543.98	584.26	614.84	574.25	520.98
taxg4	543.98	584.26	614.84	574.25	520.98
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	543.98	584.26	614.84	574.25	520.98
taxc5	543.9826377	584.2585378	614.8365907	574.2512588	520.9788349
taxf5	543.9826377	584.2585378	614.8365907	574.2512588	520.9788349
taxg5	543.9826377	584.2585378	614.8365907	574.2512588	520.9788349
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	9,553,965,057	(2,774,365,940)	(2,047,207,735)	12,923,377,591	29,455,994,237
pollution reduction 2	11,067,629,882	7,039,022,994	4,805,493,984	8,636,309,005	(42,459,425,508)
pollution reduction 3	7,230,981,516	8,682,588,804	9,273,329,699	6,573,798,689	(4,824,024,454)
pollution reduction 4	11,355,334,628	19,933,541,107	12,593,732,554	11,264,611,780	10,113,754,330
pollution reduction 5	792,088,917	7,119,212,976	15,374,651,498	601,902,935	47,713,701,364
Total reduction	40	39.99999994	40	40	39.99999997
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.01152	0.00279	0.00646	0.00310	0.00628
	138.2069773	33.45678621	77.56496226	37.20117007	75.32618662
FOC-PMET					
foc1p	6.34966E-06	1.71114E-05	3.28146E-09	-1.25659E-05	0.000221498
foc2p	2.71304E-05	0.000354786	-3.32034E-09	6.98126E-06	-0.000159095
foc3p	5.27796E-05	-0.000430506	1.39387E-08	-1.54085E-09	3.42284E-06
foc4p	1.79094E-05	0.000183155	-2.82415E-09	-8.97712E-06	0.00024451
foc5p	6.33698E-06	1.72387E-05	2.25896E-09	-9.54577E-06	0.000206776
foc6p	2.71305E-05	0.000340169	-2.71118E-09	5.30321E-06	-0.000148465
foc7p	5.12339E-05	-0.000368401	1.16653E-08	-1.51101E-09	3.71878E-06
foc8p	1.80029E-05	0.000188237	-2.14451E-09	-6.82002E-06	0.000227825
foc9p	6.35628E-06	1.7117E-05	2.81273E-09	-1.07049E-05	0.000235541
foc10p	2.71303E-05	0.000368231	-3.17561E-09	5.9473E-06	-0.000169178
foc11p	5.27799E-05	-0.000484133	1.30144E-08	-1.68302E-09	3.658E-06
foc12p	1.79099E-05	0.000139068	-2.52072E-09	-7.648E-06	0.000259984
foc13p	6.35686E-06	1.71491E-05	3.29965E-09	-1.17107E-05	0.00024249
foc14p	2.71304E-05	0.000351786	-3.48155E-09	6.50616E-06	-0.000174196
foc15p	5.27806E-05	-0.000437712	1.42108E-08	-1.72525E-09	3.50899E-06
foc16p	1.79096E-05	0.000194549	-2.8835E-09	-8.36638E-06	0.000267863
foc17p	3.73881E-05	0.000300087	1.14596E-09	2.96368E-06	-9.8686E-05
foc18p	4.34099E-05	0.000284523	6.7439E-10	2.25134E-06	-9.20748E-05
foc19p	3.73847E-05	0.000410689	1.43882E-09	2.52306E-06	-0.000104907
foc20p	3.73838E-05	0.000299328	1.54978E-09	2.76112E-06	-0.000108011

QUARTER	24	24	25	25	26
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	14,906.12	14,979.31	14,528.62	14,590.77	15,693.99
p1c1	14,906.12	14,979.31	14,528.62	14,590.77	15,693.99
p1f1	14,906.12	14,979.31	14,528.62	14,590.77	15,693.99
p1g1	14,906.12	14,979.31	14,528.62	14,590.77	15,693.99
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	19,203.59	19,250.52	20,366.05	20,341.76	20,189.58
p2c2	19,203.59	19,250.52	20,366.05	20,341.76	20,189.58
p2f2	19,203.59	19,250.52	20,366.05	20,341.76	20,189.58
p2g2	19,203.59	19,250.52	20,366.05	20,341.76	20,189.58
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	25,890.61	24,910.72	28,888.46	28,355.21	28,156.52
p3c3	25,890.61	24,910.72	28,888.46	28,355.21	28,156.52
p3f3	25,890.61	24,910.72	28,888.46	28,355.21	28,156.52
p3g3	25,890.61	24,910.72	28,888.46	28,355.21	28,156.52
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	19,059.18	19,002.94	18,519.58	18,453.45	18,778.28
p4c4	19,059.18	19,002.94	18,519.58	18,453.45	18,778.28
p4f4	19,059.18	19,002.94	18,519.58	18,453.45	18,778.28
p4g4	19,059.18	19,002.94	18,519.58	18,453.45	18,778.28
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	27,816.99	28,038.31	33,315.63	33,813.28	32,474.55
p5c5	27816.9924	28038.3062	33315.6340	33813.2765	32474.5521
p5f5	27816.9924	28038.3062	33315.6340	33813.2765	32474.5521
p5g5	27816.9924	28038.3062	33315.6340	33813.2765	32474.5521
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	1,551	24,368	2,614	25,040	6,089
dp/dgas2	11,907	67,626	29,397	53,299	23,391
dp/dgas3	190,707	52,889	193,149	63,192	16,308
dp/dgas4	15,930	51,087	32,726	48,215	33,808
dp/dgas5	31,784	4,116	138,820	5,016	151,914
sum of dpdgas	251,879	200,087	396,706	194,762	231,510
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,272	11,910	11,580	11,906	11,729
VMT2	11,628	11,923	11,823	11,909	11,804
VMT3	11,894	11,901	11,921	11,904	11,732
VMT4	11,632	11,899	11,808	11,890	11,814
VMT5	11,632	11,899	11,808	11,890	11,814

QUARTER	24	24	25	25	26
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.07898	0.00980	0.04557	0.01020	0.02943
tpmc1	0.07898	0.00980	0.04557	0.01020	0.02943
tpmf1	0.07898	0.00980	0.04557	0.01020	0.02943
tpmg1	0.07898	0.00980	0.04557	0.01020	0.02943
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.04031	0.00832	0.01922	0.00989	0.02123
tpmc2	0.04031	0.00832	0.01922	0.00989	0.02123
tpmf2	0.04031	0.00832	0.01922	0.00989	0.02123
tpmg2	0.04031	0.00832	0.01922	0.00989	0.02123
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.01153	0.01077	0.00858	0.01039	0.02910
tpmc3	0.01153	0.01077	0.00858	0.01039	0.02910
tpmf3	0.01153	0.01077	0.00858	0.01039	0.02910
tpmg3	0.01153	0.01077	0.00858	0.01039	0.02910
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.03988	0.01096	0.02085	0.01189	0.02021
tpmc4	0.03988	0.01096	0.02085	0.01189	0.02021
tpmf4	0.03988	0.01096	0.02085	0.01189	0.02021
tpmg4	0.03988	0.01096	0.02085	0.01189	0.02021
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.03988	0.01096	0.02085	0.01189	0.02021
tpmc5	0.039881922	0.010957365	0.020845222	0.011893505	0.020210869
tpmf5	0.039881922	0.010957365	0.020845222	0.011893505	0.020210869
tpmg5	0.039881922	0.010957365	0.020845222	0.011893505	0.020210869
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	3,563,826,600	4,014,470,947	3,900,500,636	4,146,858,389	4,835,235,873
cstravelpmetseg2	12,141,297,998	12,761,530,138	12,211,685,279	12,397,315,663	14,146,634,998
cstravelpmetseg3	3,370,670,233	3,370,213,012	2,958,233,860	2,951,045,814	3,478,939,215
cstravelpmetseg4	5,120,208,872	5,332,271,992	4,922,286,713	4,984,315,407	5,345,309,402
cstravelpmetseg5	2,228,140,723	2,315,005,806	2,088,544,131	2,113,498,141	2,385,600,154
cstravelpmetsum	26,424,144,426	27,793,491,894	26,081,250,620	26,593,033,416	30,191,719,642
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	6.86	3.52	7.05	3.29	4.69
epm_c1	6.86	3.52	7.05	3.29	4.69
epm_f1	6.86	3.52	7.05	3.29	4.69
epm_g1	6.86	3.52	7.05	3.29	4.69
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	3.50	2.99	2.97	3.19	3.38
epm_c2	3.50	2.99	2.97	3.19	3.38
epm_f2	3.50	2.99	2.97	3.19	3.38
epm_g2	3.50	2.99	2.97	3.19	3.38

QUARTER	24	24	25	25	26
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	1.00	3.86	1.33	3.35	4.64
epm_c3	1.00	3.86	1.33	3.35	4.64
epm_f3	1.00	3.86	1.33	3.35	4.64
epm_g3	1.00	3.86	1.33	3.35	4.64
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	3.46	3.93	3.22	3.84	3.22
epm_c4	3.46	3.93	3.22	3.84	3.22
epm_f4	3.46	3.93	3.22	3.84	3.22
epm_g4	3.46	3.93	3.22	3.84	3.22
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	3.46	3.93	3.22	3.84	3.22
epm_c5	3.462799575	3.930095968	3.224944084	3.836493762	3.219735933
epm_f5	3.462799575	3.930095968	3.224944084	3.836493762	3.219735933
epm_g5	3.462799575	3.930095968	3.224944084	3.836493762	3.219735933
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	217072.714	257921.5302	225503.1636	230564.4987	260597.1049
Csub1n	62974.42558	54206.64386	70931.95229	62869.8223	81837.04165
Fsub1n	116442.9257	4469.390452	126282.8765	121083.3583	101005.1697
Gsub1n	134824.4087	4485.605262	167825.399	167573.5126	187187.7424
Asub2n	391615.0635	419772.2335	352187.8506	309363.4815	439871.8252
Csub2n	210369.4774	202606.6094	240849.8898	224056.8954	287423.8006
Fsub2n	448047.2729	362857.048	441581.7742	415150.3084	512740.4375
Gsub2n	553307.3377	454772.4555	514180.6403	481072.243	607487.1642
Asub3n	77593.69138	85568.16281	62041.79977	64213.57833	77284.21222
Csub3n	104475.9043	112977.7032	88311.95493	86835.89489	126033.4654
Fsub3n	63366.96307	70871.167	84201.14614	81561.3147	127018.2515
Gsub3n	152668.4218	160119.5169	122710.8639	120558.3049	140021.8783
asub4n	97460.68661	47554.80896	82486.13226	84742.44212	81844.81019
Csub4n	84932.13314	76103.82196	84982.33996	86529.47647	84607.09286
fsub4n	243201.5764	326178.0444	217477.1909	220040.1528	241236.9574
gsub4n	245425.9015	345654.1804	212193.0311	215046.6997	243592.5062
asub5n	105297.7555	84555.48117	109471.3573	113230.7771	125678.026
Csub5n	18500.98097	23296.93498	14562.07178	17609.29129	8586.762298
fsub5n	67662.18408	129744.2532	57207.06568	62082.73066	69174.11889
gsub5n	109050.42	180564.6587	76500.17612	81602.40276	86181.93148
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	531,314	321,083	590,543	582,091	630,627
tseg2n	1,603,339	1,440,008	1,548,800	1,429,643	1,847,523
tseg3n	398,105	429,537	357,266	353,169	470,358
tseg4n	671,020	795,491	597,139	606,359	651,281
tseg5n	300,511	418,161	257,741	274,525	289,621
tsumn	3,504,290	3,404,280	3,351,489	3,245,787	3,889,410
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	5,774,556,437	2,494,255,420	6,109,825,585	3,002,326,288	7,724,783,769
CSPMETseg2	25,315,468,489	18,128,721,140	20,597,481,253	7,268,615,504	33,351,232,682

QUARTER	24	24	25	25	26
CSPMETseg3	8,313,602,505	8,525,215,673	8,513,402,755	2,512,852,613	15,129,128,637
CSPMETseg4	9,709,485,449	5,606,063,154	5,720,263,307	5,870,653,568	6,742,808,361
CSPMETseg5	8,159,505,037	8,537,882,255	8,995,646,855	7,585,519,395	9,713,415,219
CsPMETsum	57,272,617,917	43,292,137,643	49,936,619,755	26,239,967,369	72,661,368,668
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	3,192,174,121	1,396,502,910	3,357,990,203	1,670,589,815	4,242,609,234
PSpmetseg2	13,876,720,508	9,767,409,214	10,998,394,324	3,883,999,094	17,778,522,288
PSpmetseg3	4,571,199,717	4,603,400,816	4,469,666,823	1,315,624,202	7,726,614,473
PSpmetseg4	5,815,740,696	3,314,984,007	3,351,599,164	3,438,918,253	3,955,748,144
PSpmetseg5	4,748,490,329	4,927,421,725	5,407,129,366	4,657,054,287	5,706,428,290
Pspmetsum	32,204,325,372	24,009,718,672	27,584,779,881	14,966,185,651	39,409,922,429
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	8,966,730,558	3,890,758,330	9,467,815,789	4,672,916,103	11,967,393,003
TSPMETseg2	39,192,188,998	27,896,130,354	31,595,875,577	11,152,614,597	51,129,754,971
TSPMETseg3	12,884,802,222	13,128,616,490	12,983,069,579	3,828,476,815	22,855,743,110
TSPMETseg4	15,525,226,145	8,921,047,162	9,071,862,471	9,309,571,821	10,698,556,504
TSPMETseg5	12,907,995,366	13,465,303,980	14,402,776,221	12,242,573,683	15,419,843,509
TSPMETsum	89,476,943,289	67,301,856,315	77,521,399,636	41,206,153,019	112,071,291,097
dwlpmet	6,031,277,161	4,173,321,847	6,021,060,604	3,978,555,026	5,598,474,863
pmetsurplus	370,634,432,072	349,095,061,186	347,226,707,586	311,116,440,323	424,314,311,553
pmetsurplus10	132,817,132,238	98,953,634,141	112,495,452,009	71,779,139,583	152,588,834,774
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	473,003,622	37,488,419	311,659,812	70,675,163	217,661,688
taxrevpmetseg2	682,486,354	128,167,241	313,325,497	149,323,383	411,537,314
taxrevpmetseg3	54,578,222	55,049,629	36,543,373	43,676,980	160,576,991
taxrevpmetseg4	311,302,683	103,717,587	146,978,583	85,750,289	155,503,772
taxrevpmetseg5	170,233,572	61,405,718	80,772,910	48,569,498	87,302,637
taxrevpmetsum	1,691,604,452	385,828,593	889,280,175	397,995,315	1,032,582,403
pmetrev10	16,916,044,523	3,858,285,932	8,892,801,752	3,979,953,148	10,325,824,035
SALES LOST AS RESULT OF PMET-					
lostsales1	(12,645)	197,586	(50,663)	(42,211)	16,466
lostsales2	48,486	211,817	59,681	178,838	23,010
lostsales3	40,358	8,926	26,081	30,178	(4,265)
lostsales4	24,843	(99,628)	51,880	42,660	52,980
lostsales5	2,818	(114,832)	17,779	995	24,657
lostsum	103,859	203,869	104,758	210,460	112,848
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	122.4958822	238.8920618	119.135909	255.3555637	179.1793708
taxc1p	122.4958822	238.8920618	119.135909	255.3555637	179.1793708
taxf1p	122.4958822	238.8920618	119.135909	255.3555637	179.1793708
taxg1p	122.4958822	238.8920618	119.135909	255.3555637	179.1793708
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	479.9899298	562.8109865	564.9994561	526.870378	496.6632065
taxc2p	479.9899298	562.8109865	564.9994561	526.870378	496.6632065
taxf2p	479.9899298	562.8109865	564.9994561	526.870378	496.6632065
taxg2p	479.9899298	562.8109865	564.9994561	526.870378	496.6632065
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	24	24	25	25	26
taxa3p	2198.210068	569.5682702	1657.294439	656.4934348	474.5671973
taxc3p	2198.210068	569.5682702	1657.294439	656.4934348	474.5671973
taxf3p	2198.210068	569.5682702	1657.294439	656.4934348	474.5671973
taxg3p	2198.210068	569.5682702	1657.294439	656.4934348	474.5671973
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	635.3240931	559.7827682	682.1823704	573.4402652	683.2858489
taxc4p	635.3240931	559.7827682	682.1823704	573.4402652	683.2858489
taxf4p	635.3240931	559.7827682	682.1823704	573.4402652	683.2858489
taxg4p	635.3240931	559.7827682	682.1823704	573.4402652	683.2858489
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	635.3240931	559.7827682	682.1823704	573.4402652	683.2858489
taxc5p	635.3240931	559.7827682	682.1823704	573.4402652	683.2858489
taxf5p	635.3240931	559.7827682	682.1823704	573.4402652	683.2858489
taxg5p	635.3240931	559.7827682	682.1823704	573.4402652	683.2858489
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	-13790142560	-5087839312	-16446929629	8211236519	-3543510411
pollution reduction 2p	1363142767(	1293678814(	21248457358	10683909892	18434279576
pollution reduction 3p	20567511393	8390437544	17300001031	8495984964	5564908033
pollution reduction 4p	16661855745	17692909147	15427112553	11335319770	16940196499
pollution reduction 5p	2929344012	6067678351	2471358687	1273548854	2604126309
Total reductionp	39.99999626	39.99997387	40	40	40.00000001
DIFFERENCE-					
Tsdiff	(2,716)	(65)	(11,859)	(482)	(44,557)

QUARTER	26	27	27	28	28
COEFFICIENTS OF DEMAND					
a P1/q1	-0.005144508	-0.004939401	-0.002656958	-0.014002067	-0.004986719
b p2/q1	-0.001850038	-0.002821735	-0.002252547	0	-0.000183432
c p3/q1	-0.002389539	-0.000683594	-7.57172E-14	-0.006471408	-1E-08
d p4/q1	-1E-08	-1E-08	-1.15907E-13	0	-5.15396E-17
f P1/q2	-0.001850038	-0.002821735	-0.002252547	4.45192E-17	-0.000183432
g p2/q2	-0.009046062	-0.008080427	-0.009255214	-0.014917379	-0.009862921
h p3/q2	0	0	-5.2558E-13	-0.00519992	-5.42609E-17
i p4/q2	-1E-08	-0.002992019	-1.00001E-08	-0.000753116	-0.000181112
k P1/q3	-0.002389539	-0.000683594	5.87079E-12	-0.006471408	-1E-08
l p2/q3	4.4378E-16	0	-5.25968E-12	-0.00519992	9.25308E-18
m p3/q3	-0.067311947	-0.048058152	-0.035103366	-0.076195825	-0.070120319
n p4/q3	-0.0099852	-1E-08	-0.005293947	-0.002056119	-1E-08
p P1/q4	-1E-08	-1E-08	9.50053E-12	8.90341E-17	1.22596E-17
q p2/q4	-1E-08	-0.002992019	-1.00078E-08	-0.000753116	-0.000181112
r p3/q4	-0.0099852	-1E-08	-0.005293947	-0.002056119	-1E-08
s p4/q4	-0.012881414	-0.017298067	-0.016607522	-0.018736866	-0.025030268
u P1/q5	5.21169E-17	-1E-08	-0.002656958	-0.014002067	-3.08447E-17
v p2/q5	-0.006331459	-0.004842082	-1.00009E-08	-0.005683897	-0.000671513
w p3/q5	-0.0246259	6.69603E-16	-0.000303344	-1E-08	-0.013757838
x p4/q5	-0.004400081	-0.000840281	-0.006442888	4.81207E-16	-0.004790129
y p5/q5	-0.116653813	-0.026227578	-0.029519265	-0.020940658	-0.063306799
e p5/q1	0	-0.00000001	-0.002656958	-0.014002067	0
j p5/q2	-0.006331459	-0.004842082	-0.00000001	-0.005683897	-0.000671513
o p5/q3	-0.0246259	0	-0.000303344	-0.00000001	-0.013757838
t p5/q4	-0.004400081	-0.000840281	-0.006442888	0	-0.004790129
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.005144508	-0.004939401	-0.002656958	-0.014002067	-0.004986719
bb	-0.001850038	-0.002821735	-0.002252547	-0.00000001	-0.000183432
cc	-0.002389539	-0.000683594	-7.57172E-14	-0.006471408	-1E-08
dd	-1E-08	-1E-08	-1.15907E-13	-0.00000001	-5.15396E-17
ee	-0.00000001	-0.00000001	-0.002656958	-0.014002067	-0.00000001
ff	-0.001850038	-0.002821735	-0.002252547	-0.00000001	-0.000183432
gg	-0.009046062	-0.008080427	-0.009255214	-0.014917379	-0.009862921
hh	-0.00000001	-0.00000001	-5.2558E-13	-0.00519992	-5.42609E-17
ii	-1E-08	-0.002992019	-1.00001E-08	-0.000753116	-0.000181112
jj	-0.006331459	-0.004842082	-0.00000001	-0.005683897	-0.000671513
kk	-0.002389539	-0.000683594	-0.00000001	-0.006471408	-1E-08
ll	-0.00000001	-0.00000001	-5.25968E-12	-0.00519992	-0.00000001
mm	-0.067311947	-0.048058152	-0.035103366	-0.076195825	-0.070120319
nn	-0.0099852	-1E-08	-0.005293947	-0.002056119	-1E-08
oo	-0.0246259	-0.00000001	-0.000303344	-0.00000001	-0.013757838
pp	-1E-08	-1E-08	-0.00000001	-0.00000001	-0.00000001
qq	-1E-08	-0.002992019	-1.00078E-08	-0.000753116	-0.000181112
rr	-0.0099852	-1E-08	-0.005293947	-0.002056119	-1E-08
ss	-0.012881414	-0.017298067	-0.016607522	-0.018736866	-0.025030268
tt	-0.004400081	-0.000840281	-0.006442888	-0.00000001	-0.004790129
uu	-0.00000001	-1E-08	-0.002656958	-0.014002067	-3.08447E-17
vv	-0.006331459	-0.004842082	-1.00009E-08	-0.005683897	-0.000671513
ww	-0.0246259	-0.00000001	-0.000303344	-1E-08	-0.013757838
xx	-0.004400081	-0.000840281	-0.006442888	-0.00000001	-0.004790129
yy	-0.116653813	-0.026227578	-0.029519265	-0.020940658	-0.063306799
KNOWN PRICE BEFORE TAXES					
P1	15,431	15,567	15,567	15,455	15,455
P2	19,902	19,188	19,188	19,656	19,656
P3	27,762	27,017	27,017	26,609	26,609
P4	18,315	18,483	18,483	20,731	20,731
P5	32,687	35,356	35,356	37,800	37,800

QUARTER	26	27	27	28	28
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	265131	260198	260198	197449	197449
Csub1	81642	65061	65061	53775	53775
Fsub1	105976	96373	96373	85218	85218
Gsub1	194344	201744	201744	191863	191863
Asub2	443230	473236	473236	394156	394156
Csub2	295194	243985	243985	242241	242241
Fsub2	519200	449608	449608	398823	398823
Gsub2	612909	567343	567343	517012	517012
Asub3	75960	93865	93865	88309	88309
Csub3	125421	96689	96689	110266	110266
Fsub3	125855	108285	108285	124161	124161
Gsub3	138857	128316	128316	154084	154084
asub4	92958	101068	101068	81992	81992
Csub4	96564	89200	89200	105204	105204
fsub4	256424	243090	243090	235586	235586
gsub4	258315	220705	220705	226826	226826
asub5	132737	122858	122858	122106	122106
Csub5	13466	10842	10842	10213	10213
fsub5	75610	60485	60485	58268	58268
gsub5	92465	101672	101672	96919	96919
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	647,093	623,376	623,376	528,305	528,305
tseg2	1,870,533	1,734,172	1,734,172	1,552,232	1,552,232
tseg3	466,093	427,155	427,155	476,820	476,820
tseg4	704,261	654,063	654,063	649,608	649,608
tseg5	314,278	295,857	295,857	287,506	287,506
tsum	4,002,258	3,734,623	3,734,623	3,494,471	3,494,471
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	4.64	5.06	9.40	2.09	5.87
Elasiticity21	1.22	2.18	2.82	0.00	0.14
Elasiticity31	0.30	0.12	0.00	0.31	0.00
Elasiticity41	0.00	0.00	0.00	0.00	0.00
Elasiticity51	0.00	0.00	1.92	3.42	0.00
Elasiticity12	0.33	0.63	0.82	0.00	0.04
Elasiticity22	1.18	1.37	1.20	0.85	1.28
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.23	0.00	0.04	0.01
Elasiticity52	0.10	0.47	0.00	0.44	0.03
Elasiticity13	0.23	0.10	0.00	0.20	0.00
Elasiticity23	0.00	0.00	0.00	0.19	0.00
Elasiticity33	0.88	1.32	1.80	0.73	0.80
Elasiticity43	0.45	0.00	0.39	0.06	0.00
Elasiticity53	0.22	0.00	0.02	0.00	0.25
Elasiticity14	0.00	0.00	0.00	0.00	0.00
Elasiticity24	0.00	0.63	0.00	0.08	0.02
Elasiticity34	0.45	0.00	0.38	0.06	0.00
Elasiticity44	2.02	1.63	1.70	1.70	1.27
Elasiticity54	0.14	0.10	0.71	0.00	0.18
Elasiticity15	0.00	0.00	1.78	2.57	0.00
Elasiticity25	0.38	1.48	0.00	1.24	0.07
Elasiticity35	0.28	0.00	0.03	0.00	0.29
Elasiticity45	0.17	0.12	0.82	0.00	0.22
Elasiticity55	0.89	4.56	4.05	6.28	2.08
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	26	27	27	28	28
MCasub1	13,315	12,882	13,483	10,455	14,455
MCcsub1	14,317	14,491	14,816	13,859	15,160
MCfsub1	13,921	13,748	14,138	12,663	14,983
MCgsub1	13,315	12,882	13,483	10,455	14,455
MCasub2	14,461	13,732	14,221	12,583	15,661
MCcsub2	16,946	16,714	16,784	15,349	17,250
MCfsub2	14,461	14,263	14,810	12,583	15,661
MCgsub2	13,315	12,882	13,483	10,455	14,455
MCasub3	17,932	22,325	23,147	16,370	18,723
MCcsub3	17,932	22,325	23,147	16,370	18,723
MCfsub3	14,822	21,746	21,909	14,027	17,090
MCgsub3	13,315	20,710	21,311	10,455	14,455
MCasub4	15,799	15,215	15,515	18,683	17,991
MCcsub4	15,799	16,201	16,420	18,336	17,991
MCfsub4	13,551	12,882	13,483	15,731	14,455
MCgsub4	13,315	12,882	13,483	15,731	14,455
MCasub5	11,991	29,755	30,356	30,395	28,344
MCcsub5	25,654	33,815	34,259	35,576	35,082
MCfsub5	16,235	31,388	31,715	33,333	31,206
MCgsub5	13,315	29,755	30,356	30,395	28,344
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	0	-0.00000001	-0.002656958	-0.014002067	0
j	-0.006331459	-0.004842082	-0.00000001	-0.005683897	-0.000671513
o	-0.02462599	0	-0.000303344	-0.00000001	-0.013757838
t	-0.004400081	-0.000840281	-0.006442888	0	-0.004790129
y	-0.116653813	-0.026227578	-0.029519265	-0.020940658	-0.06330679
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	2115.631494	2685.388275	2084.400902	5000	1000
XMCcsub1	1113.573002	1075.856715	751.1848168	1596.084784	295.2381421
XMCfsub1	1509.783873	1818.66821	1429.454784	2792.542811	472.2689222
XMCgsub1	2115.631494	2685.388275	2084.400902	5000	1000
XMCasub2	5441.404141	5456.302093	4966.874797	7072.248266	3994.923186
XMCcsub2	2956.427019	2474.481517	2404.684769	4307.051552	2405.156196
XMCfsub2	5441.404141	4925.200165	4378.321566	7072.248266	3994.923186
XMCgsub2	6586.781458	6306.753074	5705.765702	9200.252185	5200.252185
XMCasub3	9829.439364	4691.605626	3870.044853	10238.682	7885.875394
XMCcsub3	9829.439364	4691.605626	3870.044853	10238.682	7885.875394
XMCfsub3	12939.7471	5270.999651	5107.552097	12582.32318	9519.258316
XMCgsub3	14446.29082	6306.753074	5705.765702	16153.65817	12153.65817
XMCasub4	2516.226341	3268.10451	2967.634221	2048.630257	2740.06582
XMCcsub4	2516.226341	2282.03184	2063.02803	2395.58007	2740.06582
XMCfsub4	4764.325925	5600.987373	5000	5000	6275.918851
XMCgsub4	5000	5600.987373	5000	5000	6275.918851
XMCasub5	20696.11847	5600.987373	5000	7404.978305	9456.285502
XMCcsub5	7032.965416	1540.950709	1097.181659	2223.863536	2718.345432
XMCfsub5	16452.52058	3968.544067	3641.43428	4466.999266	6594.227073
XMCgsub5	19372.03001	5600.987373	5000	7404.978305	9456.285502
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	23,334	23,831	21,916	29,964	18,375
constant2	40,010	38,350	36,643	47,414	35,373
constant3	75,453	47,971	45,564	75,767	63,999
constant4	33,424	35,234	33,512	35,052	38,649
constant5	95,769	52,062	50,090	60,041	66,715

QUARTER	26	27	27	28	28
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	3,780,075,602	4,061,701,981	3,128,309,760	6,102,883,590	1,216,559,417
TSseg2	28,953,079,537	25,592,925,547	23,277,267,831	32,951,591,654	18,637,453,916
TSseg3	16,728,294,164	6,749,424,937	5,983,865,351	17,804,093,889	13,534,750,503
TSseg4	8,310,406,126	8,609,775,321	7,718,178,169	7,383,582,607	9,234,888,082
TSseg5	15,789,657,440	3,985,659,981	3,534,289,311	5,102,032,228	6,639,796,675
Tssum	73,561,512,869	48,999,487,767	43,641,910,420	69,344,183,967	49,263,448,594
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	2,557,080,638	2,575,941,525	1,978,803,757	3,832,519,218	771,125,173
CSseg2	18,806,291,795	16,614,568,991	15,134,402,223	21,543,462,039	12,198,343,498
CSseg3	11,114,331,360	4,475,393,194	3,961,200,513	11,719,693,516	8,914,207,900
CSseg4	5,320,263,367	5,478,207,356	4,915,248,213	4,651,526,710	5,819,898,533
CSseg5	9,912,601,014	2,471,325,911	2,179,491,515	3,197,161,423	4,156,638,858
Cssum	47,710,568,174	31,615,436,977	28,169,146,220	44,944,362,905	31,860,213,962
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	1,222,994,963	1,485,760,456	1,149,506,003	2,270,364,373	445,434,244
PSseg2	10,146,787,742	8,978,356,556	8,142,865,608	11,408,129,615	6,439,110,418
PSseg3	5,613,962,804	2,274,031,743	2,022,664,837	6,084,400,373	4,620,542,603
PSseg4	2,990,142,759	3,131,567,965	2,802,929,956	2,732,055,898	3,414,989,549
PSseg5	5,877,056,426	1,514,334,070	1,354,797,796	1,904,870,805	2,483,157,817
Pssum	25,850,944,695	17,384,050,790	15,472,764,200	24,399,821,063	17,403,234,631
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	5,055,414,063	4,870,125,000	4,870,125,000	4,127,382,813	4,127,382,813
CStravseg2	14,613,539,063	13,548,218,750	13,548,218,750	12,126,812,500	12,126,812,500
CStravseg3	3,641,351,563	3,337,148,438	3,337,148,438	3,725,156,250	3,725,156,250
CStravseg4	5,502,039,063	5,109,867,188	5,109,867,188	5,075,062,500	5,075,062,500
CStravseg5	2,455,296,875	2,311,382,813	2,311,382,813	2,246,140,625	2,246,140,625
Cstravsum	31,267,640,625	29,176,742,188	29,176,742,188	27,300,554,688	27,300,554,688
FIRST ORDER CONDITIONS					
foc1l	-4.76784E-05	0.000208614	-8.25161E-06	-1.09031E-07	8.50378E-11
foc2l	7.81196E-07	0.000124885	8.0781E-06	6.10062E-05	-1.59588E-11
foc3l	-0.000243029	6.21276E-06	-4.07851E-06	1.42276E-05	7.32143E-11
foc4l	0.000167609	9.96751E-06	-8.8023E-06	-1.8299E-05	2.6148E-11
foc5l	-5.20665E-05	0.0002088	-8.27627E-06	-1.08486E-07	9.04947E-11
foc6l	8.52691E-07	0.000124998	8.07034E-06	6.0245E-05	-6.36646E-12
foc7l	-0.000265447	6.21568E-06	-4.10378E-06	1.40642E-05	7.95808E-11
foc8l	0.000182999	9.96762E-06	-8.75612E-06	-1.80735E-05	2.86491E-11
foc9l	-5.23238E-05	0.000208816	-8.27004E-06	-1.08809E-07	8.86757E-11
foc10l	8.65471E-07	0.000125007	8.06383E-06	8.78438E-05	-1.56213E-11
foc11l	-0.000266569	6.2153E-06	-4.08462E-06	2.01056E-05	7.83302E-11
foc12l	0.000183762	9.96739E-06	-8.79186E-06	-2.61561E-05	3.06102E-11
foc13l	-4.97777E-05	0.000208786	-8.24383E-06	-1.08292E-07	8.32188E-11
foc14l	8.23539E-07	0.000124989	8.06065E-06	9.24085E-05	-2.06839E-11
foc15l	-0.000253566	6.21378E-06	-4.07029E-06	2.11029E-05	7.57154E-11
foc16l	0.000174836	9.96711E-06	-8.75999E-06	-2.74943E-05	2.85922E-11
foc17l	-5.96178E-06	1.09317E-05	7.28372E-07	0.000249214	3.76258E-09
foc18l	-6.49825E-06	1.09324E-05	7.34135E-07	0.000246135	-1.12782E-08
foc19l	-6.48704E-06	1.09314E-05	6.95823E-07	0.000358406	-1.99339E-08
foc20l	-6.17722E-06	1.09306E-05	6.24581E-07	0.000376966	-9.3587E-10

QUARTER	26	27	27	28	28
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	16195.62081	16014.11438	16138.95875	16016.96565	16068.66933
p1c1l	16195.62081	16014.11438	16138.95875	16016.96565	16068.66933
p1f1l	16195.62081	16014.11438	16138.95875	16016.96565	16068.66933
p1g1l	16195.62081	16014.11438	16138.95875	16016.96565	16068.66933
p2a2l	20623.28831	19820.63716	19997.18852	20437.14262	20504.45091
p2c2l	20623.28831	19820.63716	19997.18852	20437.14262	20504.45091
p2f2l	20623.28831	19820.63716	19997.18852	20437.14262	20504.45091
p2g2l	20623.28831	19820.63716	19997.18852	20437.14262	20504.45091
p3a3l	28789.00473	27739.5307	27941.56595	27467.92647	27541.60373
p3c3l	28789.00473	27739.5307	27941.56595	27467.92647	27541.60373
p3f3l	28789.00473	27739.5307	27941.56595	27467.92647	27541.60373
p3g3l	28789.00473	27739.5307	27941.56595	27467.92647	27541.60373
p4a4l	19275.80347	19206.2852	19408.3191	21576.67419	21651.99258
p4c4l	19275.80347	19206.2852	19408.3191	21576.67419	21651.99258
p4f4l	19275.80347	19206.2852	19408.3191	21576.67419	21651.99258
p4g4l	19275.80347	19206.2852	19408.3191	21576.67419	21651.99258
p5a5l	32140.16683	42837.98238	36191.77398	38786.46295	38377.175
p5c5l	32140.16683	42837.98238	36191.77398	38786.46295	38377.175
p5f5l	32140.16683	42837.98238	36191.77398	38786.46295	38377.175
p5g5l	32140.16683	42837.98238	36191.77398	38786.46295	38377.175
lemp_a1	2.42	3.00	2.35	2.50	2.31
lemp_c1	2.42	3.00	2.35	2.50	2.31
lemp_f1	2.42	3.00	2.35	2.50	2.31
lemp_g1	2.42	3.00	2.35	2.50	2.31
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	3.43	4.25	3.32	3.54	3.26
lemp_c2	3.43	4.25	3.32	3.54	3.26
lemp_f2	3.43	4.25	3.32	3.54	3.26
lemp_g2	3.43	4.25	3.32	3.54	3.26
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	3.92	4.86	3.80	4.05	3.73
lemp_c3	3.92	4.86	3.80	4.05	3.73
lemp_f3	3.92	4.86	3.80	4.05	3.73
lemp_g3	3.92	4.86	3.80	4.05	3.73
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	3.92	4.86	3.80	4.05	3.73
lemp_c4	3.92	4.86	3.80	4.05	3.73
lemp_f4	3.92	4.86	3.80	4.05	3.73
lemp_g4	3.92	4.86	3.80	4.05	3.73
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	3.92	4.86	3.80	4.05	3.73
lemp_c5	3.919439448	4.862960067	3.801840012	4.045564353	3.730682878
lemp_f5	3.919439448	4.862960067	3.801840012	4.045564353	3.730682878
lemp_g5	3.919439448	4.862960067	3.801840012	4.045564353	3.730682878

QUARTER	26	27	27	28	28
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	228003.2035	377792.5855	222312.4298	197572.7459	163609.4278
Csub1nl	67622.18846	182512.9409	27000.11488	56173.89757	27854.31247
Fsub1nl	60442.36528	213833.9021	58275.07252	109625.3836	57651.31096
Gsub1nl	136338.715	319269.6602	163730.5141	218193.9581	159142.4291
Asub2nl	442938.6701	229243.6314	460666.7153	386512.0605	374619.5236
Csub2nl	284268.1997	0	231364.7759	235022.7876	223122.3536
Fsub2nl	516951.2264	205606.0687	436998.7489	399603.7878	378173.75
Gsub2nl	616316.9571	323343.127	554759.4571	518833.0925	496054.2989
Asub3nl	81275.54675	88456.99396	88917.40255	86288.26856	87112.38413
Csub3nl	130058.7149	91234.71453	91676.16293	108036.14	108942.8532
Fsub3nl	131177.6021	102845.2663	103294.643	119484.4224	123099.0041
Gsub3nl	144388.4557	122897.606	123355.5011	149214.6862	153206.8604
asub4nl	79129.35436	118491.5841	90717.93225	71408.10739	75133.32676
Csub4nl	81935.06555	106584.0561	78846.64212	93627.54161	97522.57343
fsub4nl	234366.6397	260476.4733	232718.9963	224755.79	228750.8623
gsub4nl	236697.6123	238109.2045	210336.6606	216700.9528	220619.745
asub5nl	118917.8162	418198.5315	117755.3773	111753.3821	111264.449
Csub5nl	0	306102.3056	5685.146736	0	0
fsub5nl	62133.13545	355772.1115	55356.01738	26706.07205	46573.2679
gsub5nl	78890.34669	396993.779	96566.23649	62049.14164	84604.41957
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	492,406	1,093,409	471,318	581,566	408,257
tseg2nl	1,860,475	758,193	1,683,790	1,539,972	1,471,970
tseg3nl	486,900	405,435	407,244	463,024	472,361
tseg4nl	632,129	723,661	612,620	606,492	622,027
tseg5nl	259,941	1,477,067	275,363	200,509	242,442
tsumnl	3,731,852	4,457,765	3,450,335	3,391,562	3,217,057
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	154,687	(470,033)	152,058	(53,261)	120,048
lostsales2l	10,058	975,979	50,382	12,260	80,262
lostsales3l	(20,807)	21,720	19,911	13,796	4,459
lostsales4l	72,132	(69,598)	41,443	43,116	27,581
lostsales5l	54,337	(1,181,210)	20,494	86,997	45,064
lostsuml	270,406	(723,142)	284,288	102,909	277,414
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	1,757,549,338	4,273,796,887	1,361,335,538	4,055,572,199	470,695,649
CSlsetseg2	18,034,289,552	7,024,322,766	14,013,768,614	20,771,490,467	10,942,823,142
CSlsetseg3	11,360,376,765	4,101,354,307	3,588,292,325	11,181,731,169	8,610,576,308
CSlsetseg4	4,471,771,304	5,799,289,543	4,320,252,639	4,086,416,730	5,286,421,591
CSlsetseg5	8,269,891,341	6,812,591,103	1,913,480,505	2,130,856,381	3,435,197,581
Cslsetsum	43,893,878,300	28,011,354,605	25,197,129,621	42,226,066,946	28,745,714,271
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	972,330,237	2,334,693,208	840,767,969	2,410,427,404	311,086,394
PSlsetseg2	9,639,733,272	4,182,617,881	7,582,056,527	11,085,254,686	5,856,077,940
PSlsetseg3	5,814,221,950	2,086,327,093	1,835,532,093	5,797,512,005	4,463,339,282
PSlsetseg4	2,602,880,417	3,291,974,256	2,505,263,126	2,430,997,230	3,132,422,064
PSlsetseg5	4,577,603,333	16,164,037,590	1,190,806,412	1,385,955,085	2,013,222,670
Pslsetsum	23,606,769,209	28,059,650,027	13,954,426,125	23,110,146,411	15,776,148,350

QUARTER	26	27	27	28	28
-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	2,729,879,575	6,608,490,094	2,202,103,507	6,465,999,604	781,782,043
TSlsetseg2	27,674,022,824	11,206,940,646	21,595,825,141	31,856,745,154	16,798,901,082
TSlsetseg3	17,174,598,714	6,187,681,401	5,423,824,417	16,979,243,174	13,073,915,590
TSlsetseg4	7,074,651,721	9,091,263,799	6,825,515,765	6,517,413,960	8,418,843,655
TSlsetseg5	12,847,494,674	22,976,628,693	3,104,286,917	3,516,811,466	5,448,420,251
Tslsetsum	67,500,647,509	56,071,004,632	39,151,555,747	65,336,213,357	44,521,862,620
dwllset	6,060,865,360	(7,071,516,865)	4,490,354,673	4,007,970,610	4,741,585,973
surpluslset	380,177,053,759	347,838,426,507	330,918,977,622	338,341,760,232	317,527,409,495
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	143.21	93.03	152.21	134.42	158.07
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	170,785,414	305,656,024	168,527,700	195,420,836	148,763,641
taxrevlsetseg2	912,569,339	299,740,170	851,451,651	731,812,149	758,536,676
taxrevlsetseg3	273,299,465	183,418,343	235,658,565	251,794,719	278,553,406
taxrevlsetseg4	354,816,829	327,383,914	354,503,215	329,813,876	366,811,750
taxrevlsetseg5	145,906,287	668,224,036	159,343,399	109,037,670	142,969,188
taxrevlsetsum	1,857,377,334	1,784,422,487	1,769,484,531	1,617,879,250	1,695,634,662
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	346.84	279.54	357.57	336.03	364.39
taxc1	346.84	279.54	357.57	336.03	364.39
taxf1	346.84	279.54	357.57	336.03	364.39
taxg1	346.84	279.54	357.57	336.03	364.39
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	490.50	395.34	505.68	475.21	515.32
taxc2	490.50	395.34	505.68	475.21	515.32
taxf2	490.50	395.34	505.68	475.21	515.32

QUARTER	26	27	27	28	28
taxg2	490.50	395.34	505.68	475.21	515.32
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	561.30	452.40	578.67	543.81	589.70
taxc3	561.30	452.40	578.67	543.81	589.70
taxf3	561.30	452.40	578.67	543.81	589.70
taxg3	561.30	452.40	578.67	543.81	589.70
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	561.30	452.40	578.67	543.81	589.70
taxc4	561.30	452.40	578.67	543.81	589.70
taxf4	561.30	452.40	578.67	543.81	589.70
taxg4	561.30	452.40	578.67	543.81	589.70
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	561.30	452.40	578.67	543.81	589.70
taxc5	561.3047552	452.3993555	578.6671698	543.8054639	589.7043711
taxf5	561.3047552	452.3993555	578.6671698	543.8054639	589.7043711
taxg5	561.3047552	452.3993555	578.6671698	543.8054639	589.7043711
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	4,381,118,879	34,294,201,134	4,446,229,867	13,974,390,387	4,528,704,805
pollution reduction 2	16,902,946,456	(39,099,691,090)	15,739,471,516	11,798,504,223	13,423,581,792
pollution reduction 3	9,734,280,918	2,578,046,160	7,820,908,701	7,750,139,313	9,922,065,467
pollution reduction 4	10,258,235,836	7,202,373,526	11,489,299,523	9,550,475,248	12,544,789,983
pollution reduction 5	(1,276,582,097)	35,025,070,132	504,090,086	(3,073,509,110)	(419,142,047)
Total reduction	39.99999999	39.99999986	39.99999969	40.00000006	40
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.00287	0.00776	0.00327	0.00581	0.00693
	34.48632684	93.16578945	39.2016829	69.68342343	83.11582988
FOC-PMET					
foc1p	-5.23417E-05	6.64877E-05	5.25967E-05	-2.66917E-07	-1.36666E-05
foc2p	9.41032E-07	4.36583E-05	6.20274E-06	3.26397E-05	0.000197146
foc3p	-0.000263883	1.0657E-05	-4.8801E-06	7.70618E-06	-8.1841E-05
foc4p	0.00018106	1.12448E-05	7.01342E-06	-2.57537E-05	-5.71904E-05
foc5p	-5.64321E-05	6.80007E-05	5.25892E-05	-2.63887E-07	-1.36653E-05
foc6p	1.00155E-06	4.41036E-05	6.19942E-06	0.00013375	0.000197097
foc7p	-0.000284823	1.06607E-05	-4.85836E-06	2.96294E-05	-8.18535E-05
foc8p	0.000195457	1.10806E-05	7.05404E-06	-5.54574E-05	-5.71949E-05
foc9p	-5.69863E-05	6.6802E-05	5.25933E-05	-2.66775E-07	-1.36679E-05
foc10p	1.02526E-06	4.38475E-05	6.20461E-06	5.94773E-05	0.000197092
foc11p	-0.000287419	1.06591E-05	-4.88268E-06	1.35824E-05	-8.18493E-05
foc12p	0.00019721	1.12459E-05	7.01041E-06	-3.36111E-05	-5.71997E-05
foc13p	-5.44409E-05	6.65581E-05	5.26193E-05	-2.6466E-07	-1.36681E-05
foc14p	9.83301E-07	4.37006E-05	6.22396E-06	6.40417E-05	0.00019711
foc15p	-0.000274419	1.06572E-05	-4.83405E-06	1.458E-05	-8.18547E-05
foc16p	0.000188286	1.12451E-05	7.08106E-06	-3.49492E-05	-5.71749E-05
foc17p	-5.81988E-06	1.43982E-05	-1.69967E-05	0.00014132	-3.62613E-05
foc18p	-6.29577E-06	1.06571E-05	-2.49777E-05	0.000558327	9.08899E-05
foc19p	-6.34502E-06	1.43977E-05	-1.69971E-05	0.000250513	-3.62743E-05
foc20p	-6.03529E-06	1.43984E-05	-1.68312E-05	0.000269072	-3.62677E-05

QUARTER	26	27	27	28	28
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	15,802.38	15,647.56	15,690.49	15,537.69	15,575.30
p1c1	15,802.38	15,647.56	15,690.49	15,537.69	15,575.30
p1f1	15,802.38	15,647.56	15,690.49	15,537.69	15,575.30
p1g1	15,802.38	15,647.56	15,690.49	15,537.69	15,575.30
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	20,130.06	19,475.62	19,539.23	20,190.33	20,033.94
p2c2	20,130.06	19,475.62	19,539.23	20,190.33	20,033.94
p2f2	20,130.06	19,475.62	19,539.23	20,190.33	20,033.94
p2g2	20,130.06	19,475.62	19,539.23	20,190.33	20,033.94
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	28,272.06	28,030.49	27,357.44	26,893.99	26,996.63
p3c3	28,272.06	28,030.49	27,357.44	26,893.99	26,996.63
p3f3	28,272.06	28,030.49	27,357.44	26,893.99	26,996.63
p3g3	28,272.06	28,030.49	27,357.44	26,893.99	26,996.63
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	18,708.66	19,058.17	18,803.92	21,293.60	21,083.64
p4c4	18,708.66	19,058.17	18,803.92	21,293.60	21,083.64
p4f4	18,708.66	19,058.17	18,803.92	21,293.60	21,083.64
p4g4	18,708.66	19,058.17	18,803.92	21,293.60	21,083.64
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	33,008.14	35,493.80	35,764.61	38,688.49	38,397.93
p5c5	33008.13991	35493.80113	35764.60883	38688.49351	38397.92553
p5f5	33008.13991	35493.80113	35764.60883	38688.49351	38397.92553
p5g5	33008.13991	35493.80113	35764.60883	38688.49351	38397.92553
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	30,085	2,775	15,473	1,940	3,837
dp/dgas2	48,913	17,605	62,400	75,087	29,916
dp/dgas3	63,824	167,478	45,138	19,070	28,956
dp/dgas4	48,118	53,906	39,941	74,925	25,659
dp/dgas5	5,652	149,705	10,849	6,887	6,887
sum of dpdgas	196,594	391,470	173,802	177,909	95,254
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,917	11,553	11,877	11,538	11,641
VMT2	11,908	11,749	11,914	11,895	11,818
VMT3	11,908	11,907	11,884	11,761	11,789
VMT4	11,894	11,836	11,876	11,880	11,775
VMT5	11,894	11,836	11,876	11,880	11,775

QUARTER	26	27	27	28	28
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.00896	0.04848	0.01332	0.05015	0.03894
tpmc1	0.00896	0.04848	0.01332	0.05015	0.03894
tpmf1	0.00896	0.04848	0.01332	0.05015	0.03894
tpmg1	0.00896	0.04848	0.01332	0.05015	0.03894
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.00994	0.02722	0.00938	0.01140	0.01972
tpmc2	0.00994	0.02722	0.00938	0.01140	0.01972
tpmf2	0.00994	0.02722	0.00938	0.01140	0.01972
tpmg2	0.00994	0.02722	0.00938	0.01140	0.01972
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.00995	0.01010	0.01262	0.02588	0.02294
tpmc3	0.00995	0.01010	0.01262	0.02588	0.02294
tpmf3	0.00995	0.01010	0.01262	0.02588	0.02294
tpmg3	0.00995	0.01010	0.01262	0.02588	0.02294
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.01146	0.01780	0.01341	0.01306	0.02437
tpmc4	0.01146	0.01780	0.01341	0.01306	0.02437
tpmf4	0.01146	0.01780	0.01341	0.01306	0.02437
tpmg4	0.01146	0.01780	0.01341	0.01306	0.02437
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.01146	0.01780	0.01341	0.01306	0.02437
tpmc5	0.011462751	0.017800501	0.013414152	0.01305782	0.024369483
tpmf5	0.011462751	0.017800501	0.013414152	0.01305782	0.024369483
tpmg5	0.011462751	0.017800501	0.013414152	0.01305782	0.024369483
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	4,996,892,250	4,540,411,410	4,777,608,572	3,773,489,899	3,907,445,478
cstravelpmetseg2	14,398,603,090	12,982,053,497	13,363,967,647	11,922,966,648	11,784,831,217
cstravelpmetseg3	3,586,391,737	3,292,299,584	3,275,696,235	3,581,721,473	3,598,867,848
cstravelpmetseg4	5,415,362,718	4,989,474,029	5,012,069,039	4,986,079,277	4,897,698,430
cstravelpmetseg5	2,411,769,083	2,271,383,059	2,264,863,721	2,213,691,737	2,164,358,732
cstravelpmetsum	30,809,018,877	28,075,621,579	28,694,205,214	26,477,949,034	26,353,201,705
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	3.12	6.24	4.08	8.64	5.62
epm_c1	3.12	6.24	4.08	8.64	5.62
epm_f1	3.12	6.24	4.08	8.64	5.62
epm_g1	3.12	6.24	4.08	8.64	5.62
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	3.46	3.51	2.87	1.96	2.85
epm_c2	3.46	3.51	2.87	1.96	2.85
epm_f2	3.46	3.51	2.87	1.96	2.85
epm_g2	3.46	3.51	2.87	1.96	2.85

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OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	3.46	1.30	3.86	4.46	3.31
epm_c3	3.46	1.30	3.86	4.46	3.31
epm_f3	3.46	1.30	3.86	4.46	3.31
epm_g3	3.46	1.30	3.86	4.46	3.31
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	3.99	2.29	4.11	2.25	3.52
epm_c4	3.99	2.29	4.11	2.25	3.52
epm_f4	3.99	2.29	4.11	2.25	3.52
epm_g4	3.99	2.29	4.11	2.25	3.52
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	3.99	2.29	4.11	2.25	3.52
epm_c5	3.988624783	2.292751644	4.106196713	2.248652994	3.51838876
epm_f5	3.988624783	2.292751644	4.106196713	2.248652994	3.51838876
epm_g5	3.988624783	2.292751644	4.106196713	2.248652994	3.51838876
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	241405.035	246407.1295	249298.4043	210655.0272	180999.5119
Csub1n	81319.04336	60786.61586	56627.27892	35005.8176	45245.80258
Fsub1n	73844.19676	82448.44611	85261.04694	122707.6648	75041.39498
Gsub1n	149740.5465	187884.2042	190716.4885	231276.2393	176532.5131
Asub2n	430379.5655	481835.6053	450661.6572	379161.4828	370643.0959
Csub2n	271199.3451	235717.0239	220716.9025	213952.7784	219107.7069
Fsub2n	504392.1218	458198.0427	426993.6907	392253.2101	374197.3224
Gsub2n	603757.8525	575935.1009	544754.3989	511482.5148	492077.8712
Asub3n	75092.93788	80013.93975	89088.19563	86184.48876	84761.03101
Csub3n	123635.6022	82654.26547	91737.14848	111774.0487	106475.4627
Fsub3n	124994.9932	94402.21211	103465.436	119380.6426	120747.651
Gsub3n	138205.8468	114454.5518	123526.2942	149110.9064	150855.5072
asub4n	79334.49945	78981.46558	90026.20248	62437.87725	72714.7806
Csub4n	82107.30998	68954.69663	79003.14291	84787.1828	94991.12294
fsub4n	234571.7848	220966.3548	232027.2665	215785.5598	226332.3161
gsub4n	236902.7574	198599.086	209644.9309	207730.7226	218201.1989
asub5n	133232.6651	90726.48709	122060.9735	105539.5875	121081.3737
Csub5n	14956.94841	0	7894.526795	26261.03347	10408.33862
fsub5n	76447.98435	28300.06712	59661.61357	20492.27739	56390.19265
gsub5n	93205.1956	69521.7346	100871.8327	55835.34698	94421.34432
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	546,309	577,526	581,903	599,645	477,819
tseg2n	1,809,729	1,751,686	1,643,127	1,496,850	1,456,026
tseg3n	461,929	371,525	407,817	466,450	462,840
tseg4n	632,916	567,502	610,702	570,741	612,239
tseg5n	317,843	188,548	290,489	208,128	282,301
tsumn	3,768,726	3,456,787	3,534,037	3,341,814	3,291,226
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	1,983,746,096	2,324,372,412	1,751,275,646	4,296,178,974	633,071,429
CSPMETseg2	17,548,965,469	16,111,075,388	13,570,798,638	19,734,018,173	10,737,295,892

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CSPMETseg3	10,750,432,114	3,390,091,548	3,596,312,843	11,283,219,723	8,409,409,964
CSPMETseg4	4,482,273,224	4,317,609,033	4,327,677,032	3,647,117,582	5,185,816,307
CSPMETseg5	9,963,759,587	1,310,772,450	2,059,496,834	2,212,669,087	3,973,348,553
CsPMETsum	44,729,176,490	27,453,920,831	25,305,560,992	41,173,203,538	28,938,942,145
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	1,085,251,572	1,350,413,714	1,033,529,559	2,599,268,234	392,273,720
PSpmetseg2	9,398,167,233	8,765,079,979	7,361,830,956	10,602,269,978	5,753,371,688
PSpmetseg3	5,509,714,224	1,730,771,095	1,839,626,717	5,840,324,523	4,362,927,261
PSpmetseg4	2,608,170,306	2,547,549,281	2,507,537,888	2,211,189,793	3,082,318,993
PSpmetseg5	5,852,576,921	854,872,659	1,303,566,444	1,326,147,128	2,430,184,643
Pspmetsum	24,453,880,256	15,248,686,727	14,046,091,564	22,579,199,655	16,021,076,306
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	3,068,997,668	3,674,786,126	2,784,805,205	6,895,447,208	1,025,345,150
TSPMETseg2	26,947,132,701	24,876,155,367	20,932,629,594	30,336,288,150	16,490,667,580
TSPMETseg3	16,260,146,338	5,120,862,643	5,435,939,560	17,123,544,246	12,772,337,225
TSPMETseg4	7,090,443,530	6,865,158,313	6,835,214,920	5,858,307,375	8,268,135,300
TSPMETseg5	15,816,336,509	2,165,645,109	3,363,063,278	3,538,816,214	6,403,533,196
TSPMETsum	69,183,056,746	42,702,607,558	39,351,652,556	63,752,403,194	44,960,018,451
dwlpmet	4,393,577,489	6,351,807,572	4,299,450,963	5,616,860,958	4,329,200,726
pmetsurplus	381,708,249,337	333,920,755,805	331,027,143,434	336,507,148,224	317,707,859,492
pmetsurplus10	104,427,079,440	81,240,161,591	72,779,296,512	98,205,606,917	80,529,044,150
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	58,319,817	323,459,365	92,040,885	346,944,452	216,598,688
taxrevpmetseg2	191,647,693	504,242,828	165,251,570	178,687,253	298,847,736
taxrevpmetseg3	54,748,967	44,674,255	61,152,991	141,994,885	125,166,043
taxrevpmetseg4	86,293,135	119,564,560	97,291,778	88,534,795	175,688,640
taxrevpmetseg5	52,490,769	54,252,237	57,606,650	41,364,083	105,281,292
taxrevpmetsum	443,500,382	1,046,193,245	473,343,874	797,525,469	921,582,399
pmetrev10	4,435,003,817	10,461,932,454	4,733,438,742	7,975,254,689	9,215,823,994
SALES LOST AS RESULT OF PMET-					
lostsales1	100,784	45,850	41,473	(71,340)	50,486
lostsales2	60,804	(17,514)	91,045	55,382	96,206
lostsales3	4,164	55,630	19,338	10,370	13,980
lostsales4	71,345	86,561	43,361	78,867	37,369
lostsales5	(3,565)	107,309	5,368	79,378	5,205
lostsum	233,532	277,836	200,586	152,657	203,245
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	269.4947059	134.5271428	206.0579152	97.27169243	149.4117127
taxc1p	269.4947059	134.5271428	206.0579152	97.27169243	149.4117127
taxf1p	269.4947059	134.5271428	206.0579152	97.27169243	149.4117127
taxg1p	269.4947059	134.5271428	206.0579152	97.27169243	149.4117127
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	485.9600722	479.1986634	585.205097	855.8744689	590.0084908
taxc2p	485.9600722	479.1986634	585.205097	855.8744689	590.0084908
taxf2p	485.9600722	479.1986634	585.205097	855.8744689	590.0084908
taxg2p	485.9600722	479.1986634	585.205097	855.8744689	590.0084908
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	26	27	27	28	28
taxa3p	635.2385329	1691.330081	569.5684051	493.588331	664.2489506
taxc3p	635.2385329	1691.330081	569.5684051	493.588331	664.2489506
taxf3p	635.2385329	1691.330081	569.5684051	493.588331	664.2489506
taxg3p	635.2385329	1691.330081	569.5684051	493.588331	664.2489506
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	551.568553	959.5457084	535.7755981	978.3634939	625.2862176
taxc4p	551.568553	959.5457084	535.7755981	978.3634939	625.2862176
taxf4p	551.568553	959.5457084	535.7755981	978.3634939	625.2862176
taxg4p	551.568553	959.5457084	535.7755981	978.3634939	625.2862176
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	551.568553	959.5457084	535.7755981	978.3634939	625.2862176
taxc5p	551.568553	959.5457084	535.7755981	978.3634939	625.2862176
taxf5p	551.568553	959.5457084	535.7755981	978.3634939	625.2862176
taxg5p	551.568553	959.5457084	535.7755981	978.3634939	625.2862176
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	3249714651	-14370735372	-488971414	-26699246872	-9188979864
pollution reduction 2p	14298937205	16825176056	23011058994	38298676240	20576557558
pollution reduction 3p	11336742862	17431365058	7732317016	6084260151	12140812194
pollution reduction 4p	10033303883	19977400781	9483707946	20529783458	14145586878
pollution reduction 5p	1081301510	136793650.1	261871174.4	1786526567	2326000510
Total reductionp	40.00000011	40.00000017	39.99998372	39.99999954	39.99997728
DIFFERENCE-					
Tsdiff	(1,531)	(13,918)	(108)	(1,835)	(180)

QUARTER	29	29	30	30	31
COEFFICIENTS OF DEMAND					
a P1/q1	-0.007047572	-0.021960256	-0.014241762	-0.004084274	-0.001380373
b p2/q1	-0.003058322	-0.001721358	-1E-08	-1E-08	-0.001380373
c p3/q1	-1E-08	-1E-08	-1E-08	-0.000290027	-0.000389264
d p4/q1	-0.000476924	-0.000119896	-0.000575808	-1E-08	-1E-08
f P1/q2	-0.003058322	-0.001721358	-1E-08	-1E-08	-0.001380373
g p2/q2	-0.003448205	-0.006982413	-0.005510078	-0.006999173	-0.008124494
h p3/q2	-0.003448205	-1E-08	0	-0.00034007	-1E-08
i p4/q2	-0.001959933	-0.003199033	-6.75663E-05	-0.003045962	-0.005310688
k P1/q3	-1E-08	-1E-08	-1E-08	-0.000290027	-0.000389264
l p2/q3	-0.003448205	-1E-08	-1.32503E-17	-0.00034007	-1E-08
m p3/q3	-0.013135555	-0.011553969	-0.02721455	-0.059178283	-0.067243227
n p4/q3	-0.005529258	-0.011553969	-1E-08	-0.002164485	-0.00155858
p P1/q4	-0.000476924	-0.000119896	-0.000575808	-1E-08	-1E-08
q p2/q4	-0.001959933	-0.003199033	-6.75663E-05	-0.003045962	-0.005310688
r p3/q4	-0.005529258	-0.011553969	-1E-08	-0.002164485	-0.00155858
s p4/q4	-0.013082296	-0.020632893	-0.018371587	-0.011264878	-0.023658632
u P1/q5	-0.007047572	-1E-08	-1E-08	-1E-08	-1E-08
v p2/q5	-0.003448205	-0.006982413	-0.001711693	-0.006999173	-0.008124494
w p3/q5	-1E-08	-0.007144792	-0.005942939	-0.004583823	-0.023003431
x p4/q5	-0.002439047	-0.001483474	-0.002956938	-1E-08	-0.008600279
y p5/q5	-0.017595774	-0.039815173	-0.025149288	-0.115540458	-0.102921201
e p5/q1	-0.007047572	-0.00000001	-0.00000001	-0.00000001	-0.00000001
j p5/q2	-0.003448205	-0.006982413	-0.001711693	-0.006999173	-0.008124494
o p5/q3	-0.00000001	-0.007144792	-0.005942939	-0.004583823	-0.023003431
t p5/q4	-0.002439047	-0.001483474	-0.002956938	-0.00000001	-0.008600279
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.007047572	-0.021960256	-0.014241762	-0.004084274	-0.001380373
bb	-0.003058322	-0.001721358	-1E-08	-1E-08	-0.001380373
cc	-1E-08	-1E-08	-1E-08	-0.000290027	-0.000389264
dd	-0.000476924	-0.000119896	-0.000575808	-1E-08	-1E-08
ee	-0.007047572	-0.00000001	-0.00000001	-0.00000001	-0.00000001
ff	-0.003058322	-0.001721358	-1E-08	-1E-08	-0.001380373
gg	-0.003448205	-0.006982413	-0.005510078	-0.006999173	-0.008124494
hh	-0.003448205	-1E-08	-0.00000001	-0.00034007	-1E-08
ii	-0.001959933	-0.003199033	-6.75663E-05	-0.003045962	-0.005310688
jj	-0.003448205	-0.006982413	-0.001711693	-0.006999173	-0.008124494
kk	-1E-08	-1E-08	-1E-08	-0.000290027	-0.000389264
ll	-0.003448205	-1E-08	-1.32503E-17	-0.00034007	-1E-08
mm	-0.013135555	-0.011553969	-0.02721455	-0.059178283	-0.067243227
nn	-0.005529258	-0.011553969	-1E-08	-0.002164485	-0.00155858
oo	-0.00000001	-0.007144792	-0.005942939	-0.004583823	-0.023003431
pp	-0.000476924	-0.000119896	-0.000575808	-1E-08	-1E-08
qq	-0.001959933	-0.003199033	-6.75663E-05	-0.003045962	-0.005310688
rr	-0.005529258	-0.011553969	-1E-08	-0.002164485	-0.00155858
ss	-0.013082296	-0.020632893	-0.018371587	-0.011264878	-0.023658632
tt	-0.002439047	-0.001483474	-0.002956938	-0.00000001	-0.008600279
uu	-0.007047572	-1E-08	-1E-08	-1E-08	-1E-08
vv	-0.003448205	-0.006982413	-0.001711693	-0.006999173	-0.008124494
ww	-1E-08	-0.007144792	-0.005942939	-0.004583823	-0.023003431
xx	-0.002439047	-0.001483474	-0.002956938	-1E-08	-0.008600279
yy	-0.017595774	-0.039815173	-0.025149288	-0.115540458	-0.102921201
KNOWN PRICE BEFORE TAXES					
P1	16,224	16,224	16,494	16,494	15,454
P2	21,842	21,842	21,192	21,192	20,369
P3	28,722	28,722	26,510	26,510	28,754
P4	19,324	19,324	20,517	20,517	23,205
P5	35,523	35,523	31,235	31,235	32,567

QUARTER	29	29	30	30	31
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	193201	193201	242655	242655	245592
Csub1	67824	67824	80007	80007	64828
Fsub1	95616	95616	105026	105026	97984
Gsub1	187950	187950	237065	237065	222454
Asub2	430983	430983	473116	473116	462501
Csub2	277760	277760	349278	349278	271333
Fsub2	428984	428984	490221	490221	437254
Gsub2	488027	488027	612257	612257	461979
Asub3	78976	78976	88507	88507	91579
Csub3	105478	105478	132231	132231	141461
Fsub3	122033	122033	121855	121855	119011
Gsub3	156235	156235	165960	165960	178577
asub4	92328	92328	106288	106288	127139
Csub4	125861	125861	133808	133808	105029
fsub4	254441	254441	289504	289504	240545
gsub4	224352	224352	246046	246046	224815
asub5	110789	110789	136449	136449	139791
Csub5	14383	14383	9262	9262	7458
fsub5	61222	61222	61419	61419	63528
gsub5	80976	80976	93219	93219	80918
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	544,591	544,591	664,753	664,753	630,858
tseg2	1,625,754	1,625,754	1,924,872	1,924,872	1,633,067
tseg3	462,722	462,722	508,553	508,553	530,628
tseg4	696,982	696,982	775,646	775,646	697,528
tseg5	267,370	267,370	300,349	300,349	291,695
tsum	3,597,419	3,597,419	4,174,173	4,174,173	3,783,776
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	4.23	1.36	1.74	6.08	17.75
Elasiticity21	5.05	0.45	0.00	0.00	3.97
Elasiticity31	0.00	0.00	0.00	0.05	0.19
Elasiticity41	0.18	0.01	0.07	0.00	0.00
Elasiticity51	3.71	0.00	0.00	0.00	0.00
Elasiticity12	1.26	0.11	0.00	0.00	1.16
Elasiticity22	3.90	1.92	2.00	1.57	1.54
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.52	0.26	0.01	0.41	0.39
Elasiticity52	1.24	0.55	0.20	0.14	0.19
Elasiticity13	0.00	0.00	0.00	0.04	0.12
Elasiticity23	3.59	0.00	0.00	0.03	0.00
Elasiticity33	4.73	5.37	1.92	0.88	0.81
Elasiticity43	1.34	2.02	0.00	0.13	0.04
Elasiticity53	0.00	1.19	0.53	0.04	0.20
Elasiticity14	0.12	0.01	0.05	0.00	0.00
Elasiticity24	1.36	0.70	0.02	1.06	0.81
Elasiticity34	1.33	2.00	0.00	0.11	0.04
Elasiticity44	2.12	1.34	1.44	2.35	1.41
Elasiticity54	0.54	0.09	0.26	0.00	0.16
Elasiticity15	3.45	0.00	0.00	0.00	0.00
Elasiticity25	4.64	2.05	0.87	0.61	0.68
Elasiticity35	0.00	1.67	0.77	0.06	0.33
Elasiticity45	0.77	0.13	0.44	0.00	0.28
Elasiticity55	7.55	3.34	4.14	0.90	1.08
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					

QUARTER	29	29	30	30	31
MCasub1	12,716	11,224	12,994	15,494	14,454
MCcsub1	14,734	14,240	15,285	16,135	14,941
MCfsub1	13,682	13,352	14,840	16,036	14,679
MCgsub1	12,724	11,224	12,994	15,494	14,454
MCasub2	18,949	17,449	18,394	16,618	14,454
MCcsub2	20,025	19,291	19,267	18,252	17,454
MCfsub2	18,949	17,449	18,394	16,434	14,885
MCgsub2	18,342	16,842	17,692	15,494	14,454
MCasub3	25,666	25,930	23,347	20,222	19,096
MCcsub3	25,666	25,930	22,891	18,230	18,882
MCfsub3	24,210	23,912	22,891	18,230	18,882
MCgsub3	23,722	23,722	21,510	15,494	14,454
MCasub4	16,507	14,972	17,957	17,655	16,393
MCcsub4	16,507	14,612	17,957	17,655	18,995
MCfsub4	14,324	11,224	14,919	15,494	14,454
MCgsub4	14,324	11,224	15,517	15,494	14,454
MCasub5	30,523	27,423	26,235	11,811	11,233
MCcsub5	33,499	32,044	29,283	27,156	25,438
MCfsub5	31,626	28,797	27,346	20,204	17,680
MCgsub5	30,523	27,423	26,235	15,494	14,454
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.007047572	-0.00000001	-0.00000001	-0.00000001	-0.00000001
j	-0.003448205	-0.006982413	-0.001711693	-0.006999173	-0.008124494
o	-0.00000001	-0.007144792	-0.005942939	-0.004583823	-0.023003431
t	-0.002439047	-0.001483474	-0.002956938	-0.00000001	-0.008600279
y	-0.017595774	-0.039815173	-0.025149288	-0.115540458	-0.102921201
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	3508.551506	5000	3500	1000	1000
XMCcsub1	1490.273962	1984.301256	1209.375883	359.1608098	512.664023
XMCfsub1	2542.010267	2872.345191	1654.384264	458.5175083	774.9930954
XMCgsub1	3500	5000	3500	1000	1000
XMCasub2	2893.32612	4393.128218	2797.544478	4573.710585	5915.422823
XMCcsub2	1816.752865	2551.405807	1925.100247	2939.344082	2914.937685
XMCfsub2	2893.32612	4393.128218	2797.544478	4758.108879	5484.230615
XMCgsub2	3500	5000	3500	5697.346939	5915.422823
XMCasub3	3055.570828	2791.906954	3163.23968	6288.644321	9657.998197
XMCcsub3	3055.570828	2791.906954	3619.332141	8279.66162	9871.374001
XMCfsub3	4511.945093	4809.900624	3619.332141	8279.66162	9871.374001
XMCgsub3	5000	5000	5000	11015.68381	14299.97934
XMCasub4	2816.894907	4352.396194	2559.925337	2862.227689	6812.109285
XMCcsub4	2816.894907	4711.842296	2559.925337	2862.227689	4210.43795
XMCfsub4	5000	8100.094703	5597.767584	5022.291667	8751.199223
XMCgsub4	5000	8100.094703	5000	5022.291667	8751.199223
XMCasub5	5000	8100.094703	5000	19424.44919	21333.66633
XMCcsub5	2023.801006	3478.855062	1952.178935	4079.233522	7128.893778
XMCfsub5	3896.952435	6725.732811	3889.365453	11030.98201	14887.29494
XMCgsub5	5000	8100.094703	5000	15740.96825	18113.00314
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	27,251	31,066	26,408	19,357	18,785
constant2	32,997	38,228	32,365	39,302	40,582
constant3	44,260	44,031	42,135	60,508	72,478
constant4	35,099	44,714	36,168	36,218	51,716
constant5	51,372	61,860	47,400	81,742	94,061

QUARTER	29	29	30	30	31
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	4,682,373,953	6,356,236,314	5,244,680,988	1,508,058,485	1,628,108,780
TSseg2	13,768,532,930	20,246,303,615	16,263,295,655	26,441,260,612	25,162,116,473
TSseg3	5,490,244,535	5,425,143,346	6,002,463,683	13,133,467,201	17,609,887,105
TSseg4	8,505,977,216	13,721,271,459	9,535,171,534	9,466,265,770	15,324,356,617
TSseg5	3,345,224,001	5,535,986,590	3,832,752,190	12,417,826,596	14,415,690,700
Tssum	35,792,352,634	51,284,941,323	40,878,364,050	62,966,878,664	74,140,159,676
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	3,002,560,098	4,041,255,908	3,295,149,090	951,446,846	1,050,890,873
CSseg2	9,067,652,170	13,319,544,844	10,753,022,887	17,429,951,295	16,504,505,821
CSseg3	3,594,851,078	3,542,023,338	3,973,073,202	8,644,969,171	11,600,553,350
CSseg4	5,497,396,733	8,848,117,597	6,069,737,594	6,089,368,049	9,943,595,697
CSseg5	2,118,711,449	3,520,872,742	2,427,450,172	7,584,728,863	8,968,840,798
Cssum	23,281,171,529	33,271,814,428	26,518,432,944	40,700,464,224	48,068,386,539
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	1,679,813,854	2,314,980,406	1,949,531,898	556,611,639	577,217,907
PSseg2	4,700,880,760	6,926,758,771	5,510,272,769	9,011,309,317	8,657,610,652
PSseg3	1,895,393,457	1,883,120,008	2,029,390,481	4,488,498,030	6,009,333,755
PSseg4	3,008,580,483	4,873,153,862	3,465,433,940	3,376,897,721	5,380,760,920
PSseg5	1,226,512,552	2,015,113,847	1,405,302,018	4,833,097,733	5,446,849,902
Pssum	12,511,181,106	18,013,126,895	14,359,931,106	22,266,414,440	26,071,773,137
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	4,254,617,188	4,254,617,188	5,193,382,813	5,193,382,813	4,928,578,125
CStravseg2	12,701,203,125	12,701,203,125	15,038,062,500	15,038,062,500	12,758,335,938
CStravseg3	3,615,015,625	3,615,015,625	3,973,070,313	3,973,070,313	4,145,531,250
CStravseg4	5,445,171,875	5,445,171,875	6,059,734,375	6,059,734,375	5,449,437,500
CStravseg5	2,088,828,125	2,088,828,125	2,346,476,563	2,346,476,563	2,278,867,188
Cstravsum	28,104,835,938	28,104,835,938	32,610,726,563	32,610,726,563	29,560,750,000
FIRST ORDER CONDITIONS					
foc1l	-4.00877E-07	-0.00028846	0.000116132	-2.99289E-10	1.32214E-06
foc2l	2.55616E-07	0.000120903	0.000149534	5.48611E-07	1.86954E-06
foc3l	-1.16271E-07	-3.1827E-07	0.000176368	-1.99574E-06	-0.000432988
foc4l	-3.12312E-07	-0.000115515	-0.000421175	-2.03224E-10	-0.0005942
foc5l	-3.76954E-07	-0.000292674	0.000116125	-2.92744E-10	1.32215E-06
foc6l	2.38962E-07	0.000123308	0.000149531	6.62367E-07	1.86948E-06
foc7l	-1.10347E-07	-3.17484E-07	0.000176365	-2.163E-06	-0.000433005
foc8l	-2.9149E-07	-0.000117814	-0.000421164	-1.98497E-10	-0.000594269
foc9l	-3.77674E-07	-0.00028803	0.000116127	-2.94767E-10	1.32189E-06
foc10l	2.39399E-07	0.000121011	0.000149531	6.74303E-07	1.8695E-06
foc11l	-1.10724E-07	-3.18418E-07	0.000176363	-2.21512E-06	-0.0004329
foc12l	-2.9201E-07	-0.00011562	-0.000421164	-1.96882E-10	-0.000594251
foc13l	-3.91713E-07	-0.000287227	0.00011613	-3.02647E-10	1.32215E-06
foc14l	2.49165E-07	0.000120466	0.000149533	5.75965E-07	1.86952E-06
foc15l	-1.14182E-07	-3.17989E-07	0.000176364	-2.00702E-06	-0.000432989
foc16l	-3.04214E-07	-0.000115099	-0.00042117	-1.97487E-10	-0.0005942
foc17l	-1.02464E-08	0.000245793	-0.000234386	-2.87427E-06	0.000707368
foc18l	-8.2369E-09	0.000247446	-0.000234371	-3.32303E-06	0.000707456
foc19l	-8.21024E-09	0.000244437	-0.000234373	-3.30861E-06	0.000707373
foc20l	-9.37143E-09	0.000244411	-0.000234381	-3.03366E-06	0.000707369

QUARTER	29	29	30	30	31
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	16777.26911	16777.63538	17023.39782	17051.40502	15925.10115
p1c1l	16777.26911	16777.63538	17023.39782	17051.40502	15925.10115
p1f1l	16777.26911	16777.63538	17023.39782	17051.40502	15925.10115
p1g1l	16777.26911	16777.63538	17023.39782	17051.40502	15925.10115
p2a2l	22638.61732	22638.76377	21956.15323	21995.09248	21019.87123
p2c2l	22638.61732	22638.76377	21956.15323	21995.09248	21019.87123
p2f2l	22638.61732	22638.76377	21956.15323	21995.09248	21019.87123
p2g2l	22638.61732	22638.76377	21956.15323	21995.09248	21019.87123
p3a3l	29604.72238	29605.91797	27394.52991	27423.86825	29506.88619
p3c3l	29604.72238	29605.91797	27394.52991	27423.86825	29506.88619
p3f3l	29604.72238	29605.91797	27394.52991	27423.86825	29506.88619
p3g3l	29604.72238	29605.91797	27394.52991	27423.86825	29506.88619
p4a4l	20252.17691	20250.02576	21343.15081	21390.02035	23950.68061
p4c4l	20252.17691	20250.02576	21343.15081	21390.02035	23950.68061
p4f4l	20252.17691	20250.02576	21343.15081	21390.02035	23950.68061
p4g4l	20252.17691	20250.02576	21343.15081	21390.02035	23950.68061
p5a5l	36293.18812	36171.74673	35398.43981	31236.42682	53047.8774
p5c5l	36293.18812	36171.74673	35398.43981	31236.42682	53047.8774
p5f5l	36293.18812	36171.74673	35398.43981	31236.42682	53047.8774
p5g5l	36293.18812	36171.74673	35398.43981	31236.42682	53047.8774
lemp_a1	2.42	2.41	2.59	2.45	2.91
lemp_c1	2.42	2.41	2.59	2.45	2.91
lemp_f1	2.42	2.41	2.59	2.45	2.91
lemp_g1	2.42	2.41	2.59	2.45	2.91
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET					
lemp_a2	3.42	3.41	3.66	3.47	4.11
lemp_c2	3.42	3.41	3.66	3.47	4.11
lemp_f2	3.42	3.41	3.66	3.47	4.11
lemp_g2	3.42	3.41	3.66	3.47	4.11
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-					
lemp_a3	3.91	3.91	4.19	3.97	4.70
lemp_c3	3.91	3.91	4.19	3.97	4.70
lemp_f3	3.91	3.91	4.19	3.97	4.70
lemp_g3	3.91	3.91	4.19	3.97	4.70
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET					
lemp_a4	3.91	3.91	4.19	3.97	4.70
lemp_c4	3.91	3.91	4.19	3.97	4.70
lemp_f4	3.91	3.91	4.19	3.97	4.70
lemp_g4	3.91	3.91	4.19	3.97	4.70
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET					
lemp_a5	3.91	3.91	4.19	3.97	4.70
lemp_c5	3.911978795	3.907687688	4.19173229	3.969425599	4.7030577
lemp_f5	3.911978795	3.907687688	4.19173229	3.969425599	4.7030577
lemp_g5	3.911978795	3.907687688	4.19173229	3.969425599	4.7030577

QUARTER	29	29	30	30	31
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM					
Asub1nl	221041.3185	189017.5641	234355.7538	207385.6595	451049.2907
Csub1nl	86618.42674	63785.26616	72470.60807	47349.56449	277439.659
Fsub1nl	113992.342	91542.70559	97421.57578	72432.56294	307240.8128
Gsub1nl	211385.1237	183887.8083	228712.0869	201890.5582	427691.3198
Asub2nl	366745.4382	403830.9584	393530.0365	457857.6201	193496.8878
Csub2nl	222739.0363	246890.1927	274206.4286	339329.5709	0
Fsub2nl	371303.3616	399926.2961	414527.7393	479812.8323	166568.9662
Gsub2nl	424832.8794	460077.987	533013.2498	597499.7866	192313.8913
Asub3nl	81905.50653	56251.96178	50043.72074	86064.12612	8876.7619
Csub3nl	105576.2906	75803.54468	94450.17051	130178.5281	58738.46386
Fsub3nl	124125.7133	96240.16254	83128.66541	119515.2565	36294.08786
Gsub3nl	159807.5448	132998.4028	127172.6052	163440.304	95900.78745
asub4nl	85559.66851	98351.03442	74086.57882	92864.08017	100839.3222
Csub4nl	119133.2358	136605.1879	99976.59633	116437.3372	79029.12244
fsub4nl	245811.4223	262154.7522	255689.5362	272252.336	214721.5519
gsub4nl	215929.0015	230373.833	213671.2724	231990.3161	198718.1582
asub5nl	91736.13012	106872.8919	275285.2884	127382.4674	371503.9914
Csub5nl	2.38459E-05	13394.60499	148679.9548	0	239440.5992
fsub5nl	48817.25171	59760.12624	200524.3162	52080.10027	295351.5017
gsub5nl	66149.1686	78317.70526	231154.1031	83973.07928	312675.6053
TOTAL SALES FOR EACH SEGMENT AFTER LSET					
tseg1nl	633,037	528,233	632,960	529,058	1,463,421
tseg2nl	1,385,621	1,510,725	1,615,277	1,874,500	552,380
tseg3nl	471,415	361,294	354,795	499,198	199,810
tseg4nl	666,433	727,485	643,424	713,544	593,308
tseg5nl	206,703	258,345	855,644	263,436	1,218,972
tsumnl	3,363,209	3,386,083	4,102,100	3,879,736	4,027,891
SALES LOST 'AS RESULT OF LSET-					
lostsales1l	(88,446)	16,358	31,793	135,695	(832,563)
lostsales2l	240,133	115,029	309,595	50,372	1,080,687
lostsales3l	(8,693)	101,428	153,758	9,355	330,818
lostsales4l	30,549	(30,503)	132,222	62,102	104,220
lostsales5l	60,667	9,025	(555,295)	36,913	(927,277)
lostsuml	234,210	211,336	72,073	294,437	(244,115)
-CONSUMER SURPLUS UNDER LSET-					
CSlsetseg1	3,315,102,890	3,773,663,938	2,970,159,694	609,906,048	2,092,950,578
CSlsetseg2	7,176,398,457	11,775,283,783	8,406,214,527	16,220,960,828	5,402,902,706
CSlsetseg3	3,454,315,505	2,605,934,968	2,614,954,136	8,257,885,001	4,292,998,716
CSlsetseg4	4,947,216,355	8,898,571,996	4,769,190,570	5,290,272,032	8,236,691,421
CSlsetseg5	1,558,383,640	3,318,252,172	5,134,375,973	6,652,424,649	24,997,211,725
Cslsetsum	20,451,416,847	30,371,706,856	23,894,894,899	37,031,448,558	45,022,755,146
-PRODUCER SURPLUS UNDER LSET					
PSlsetseg1	1,844,474,153	2,178,926,103	1,793,792,824	391,767,891	1,102,752,057
PSlsetseg2	3,768,914,928	6,178,527,285	4,406,940,521	8,468,667,930	3,103,525,378
PSlsetseg3	1,817,868,214	1,409,137,352	1,378,226,976	4,311,787,356	2,358,750,565
PSlsetseg4	2,754,189,052	4,915,667,001	2,801,557,567	2,963,681,984	4,525,093,606
PSlsetseg5	906,341,609	1,825,254,422	6,266,243,161	4,078,894,057	43,518,357,916
Pslsetsum	11,091,787,956	16,507,512,163	16,646,761,049	20,214,799,218	54,608,479,522

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-TOTAL SURPLUS UNDER LSET-					
TSlsetseg1	5,159,577,043	5,952,590,042	4,763,952,518	1,001,673,939	3,195,702,635
TSlsetseg2	10,945,313,385	17,953,811,068	12,813,155,048	24,689,628,758	8,506,428,084
TSlsetseg3	5,272,183,718	4,015,072,320	3,993,181,111	12,569,672,356	6,651,749,281
TSlsetseg4	7,701,405,406	13,814,238,997	7,570,748,137	8,253,954,016	12,761,785,027
TSlsetseg5	2,464,725,249	5,143,506,593	11,400,619,134	10,731,318,706	68,515,569,641
Tslsetsum	31,543,204,802	46,879,219,020	40,541,655,948	57,246,247,776	99,631,234,669
dwllset	4,249,147,832	4,405,722,304	336,708,102	5,720,630,889	(25,491,074,993)
surpluslset	312,591,564,177	327,927,578,395	366,648,921,573	383,353,513,401	395,238,734,669
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-					
LSET	143.76	144.07	125.21	139.63	99.46
ABATEMENTCONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-					
taxrevlsetseg1	219,980,270	183,762,525	205,273,897	181,186,938	422,999,626
taxrevlsetseg2	680,947,856	743,244,451	740,831,729	907,870,105	225,799,731
taxrevlsetseg3	265,112,153	203,405,958	186,211,643	276,673,802	93,467,325
taxrevlsetseg4	374,785,601	409,568,703	337,696,367	395,472,069	277,538,152
taxrevlsetseg5	116,244,396	145,446,558	449,078,311	146,005,614	570,211,532
taxrevlsetsum	1,657,070,276	1,685,428,194	1,919,091,947	1,907,208,529	1,590,016,365
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS					
taxa1	347.50	347.88	324.31	342.47	289.05
taxc1	347.50	347.88	324.31	342.47	289.05
taxf1	347.50	347.88	324.31	342.47	289.05
taxg1	347.50	347.88	324.31	342.47	289.05
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-					
taxa2	491.44	491.98	458.64	484.33	408.78
taxc2	491.44	491.98	458.64	484.33	408.78
taxf2	491.44	491.98	458.64	484.33	408.78

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taxg2	491.44	491.98	458.64	484.33	408.78
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS					
taxa3	562.38	562.99	524.84	554.24	467.78
taxc3	562.38	562.99	524.84	554.24	467.78
taxf3	562.38	562.99	524.84	554.24	467.78
taxg3	562.38	562.99	524.84	554.24	467.78
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-					
taxa4	562.38	562.99	524.84	554.24	467.78
taxc4	562.38	562.99	524.84	554.24	467.78
taxf4	562.38	562.99	524.84	554.24	467.78
taxg4	562.38	562.99	524.84	554.24	467.78
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-					
taxa5	562.38	562.99	524.84	554.24	467.78
taxc5	562.3752365	562.9927916	524.8426778	554.2363611	467.7807802
taxf5	562.3752365	562.9927916	524.8426778	554.2363611	467.7807802
taxg5	562.3752365	562.9927916	524.8426778	554.2363611	467.7807802
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	17,044,898,62(	10,669,426,515	10,968,785,805	5,719,161,733	55,691,973,067
pollution reduction 2	3,484,522,231	9,679,831,144	(1,851,083,010)	14,454,362,50(	(42,197,502,587)
pollution reduction 3	9,192,038,581	4,469,245,712	1,879,816,53(	8,944,205,25(	(6,028,784,115)
pollution reduction 4	11,966,554,957	14,632,663,57(	6,927,921,471	11,615,141,10(	3,172,712,103
pollution reduction 5	(1,688,014,390)	548,833,249	22,074,559,198	(732,870,583)	29,361,600,045
Total reduction	40	40.00000019	39.99999999	40	39.99999851
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM					
PMET	0.01140	0.00304	0.01017	0.00179	0.01264
	136.778613(	36.47386475	122.0162417	21.53026386	151.7176733
FOC-PMET					
foc1p	-1.27754E-05	-0.000326144	2.37265E-08	-1.00214E-05	9.63326E-11
foc2p	1.26278E-06	4.27826E-05	-1.2537E-07	-1.86076E-05	3.45381E-10
foc3p	-9.40866E-06	-6.3141E-06	-5.38427E-07	-6.67335E-05	1.65396E-06
foc4p	-1.65386E-05	-0.00016172	5.03052E-07	6.25076E-05	2.21517E-06
foc5p	-1.26084E-05	-0.000275055	5.57084E-08	-1.00213E-05	-1.84229E-10
foc6p	9.54648E-07	3.96809E-05	-9.50563E-08	-1.90371E-05	1.14832E-10
foc7p	-9.49097E-06	-6.31369E-06	-4.8211E-07	-6.67051E-05	1.54308E-06
foc8p	-1.60965E-05	-0.000159869	4.01566E-07	6.25076E-05	2.08744E-06
foc9p	-1.27523E-05	-0.000325713	1.90014E-08	-1.00213E-05	-9.17465E-11
foc10p	1.24666E-06	4.28902E-05	-1.28684E-07	-1.84809E-05	2.00203E-10
foc11p	-9.40317E-06	-6.31402E-06	-5.42956E-07	-6.69547E-05	1.65227E-06
foc12p	-1.65184E-05	-0.000161825	5.13876E-07	6.25078E-05	2.21438E-06
foc13p	-1.27663E-05	-0.00032491	2.22236E-08	-1.00214E-05	-3.70331E-11
foc14p	1.2565E-06	4.23455E-05	-1.26939E-07	-1.85793E-05	2.76259E-11
foc15p	-9.40651E-06	-6.31372E-06	-5.41798E-07	-6.67457E-05	1.6536E-06
foc16p	-1.65306E-05	-0.000161304	5.08493E-07	6.25077E-05	2.21505E-06
foc17p	-1.11258E-05	0.000248356	3.69195E-07	4.41347E-05	-9.80546E-06
foc18p	-9.57095E-06	0.00011746	2.56631E-07	4.21791E-06	-9.20376E-06
foc19p	-1.1124E-05	0.000247	3.8252E-07	4.36971E-05	-9.8002E-06
foc20p	-1.11251E-05	0.000246975	3.74988E-07	4.39724E-05	-9.80419E-06

QUARTER	29	29	30	30	31
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-					
p1a1	16,315.18	16,393.96	16,584.73	16,649.51	15,528.67
p1c1	16,315.18	16,393.96	16,584.73	16,649.51	15,528.67
p1f1	16,315.18	16,393.96	16,584.73	16,649.51	15,528.67
p1g1	16,315.18	16,393.96	16,584.73	16,649.51	15,528.67
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-					
p2a2	22,454.21	22,138.18	21,502.56	21,553.43	20,680.39
p2c2	22,454.21	22,138.18	21,502.56	21,553.43	20,680.39
p2f2	22,454.21	22,138.18	21,502.56	21,553.43	20,680.39
p2g2	22,454.21	22,138.18	21,502.56	21,553.43	20,680.39
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-					
p3a3	29,080.03	28,949.30	28,003.76	26,877.66	30,410.57
p3c3	29,080.03	28,949.30	28,003.76	26,877.66	30,410.57
p3f3	29,080.03	28,949.30	28,003.76	26,877.66	30,410.57
p3g3	29,080.03	28,949.30	28,003.76	26,877.66	30,410.57
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET					
p4a4	20,183.50	19,778.43	21,026.55	20,800.08	23,572.47
p4c4	20,183.50	19,778.43	21,026.55	20,800.08	23,572.47
p4f4	20,183.50	19,778.43	21,026.55	20,800.08	23,572.47
p4g4	20,183.50	19,778.43	21,026.55	20,800.08	23,572.47
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-					
p5a5	36,496.42	36,024.74	31,229.63	31,677.99	31,923.33
p5c5	36496.42448	36024.74102	31229.6303	31677.99463	31923.33302
p5f5	36496.42448	36024.74102	31229.6303	31677.99463	31923.33302
p5g5	36496.42448	36024.74102	31229.6303	31677.99463	31923.33302
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-					
dp/dgas1	2,559	32,538	2,093	39,321	1,141
dp/dgas2	52,553	44,678	12,770	102,353	12,940
dp/dgas3	15,587	24,766	260,713	81,623	272,591
dp/dgas4	76,519	76,519	33,985	62,009	13,690
dp/dgas5	12,168	5,136	133,870	7,191	124,785
sum of dpdgas	159,385	183,636	443,432	292,497	425,147
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,436	11,918	11,411	11,943	11,111
VMT2	11,824	11,901	11,663	11,950	11,627
VMT3	11,630	11,849	11,915	11,936	11,907
VMT4	11,833	11,914	11,764	11,926	11,585
VMT5	11,833	11,914	11,764	11,926	11,585

QUARTER	29	29	30	30	31
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-					
tpma1	0.06117	0.00886	0.06388	0.00619	0.09648
tpmc1	0.06117	0.00886	0.06388	0.00619	0.09648
tpmf1	0.06117	0.00886	0.06388	0.00619	0.09648
tpmg1	0.06117	0.00886	0.06388	0.00619	0.09648
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2					
tpma2	0.01909	0.01069	0.03657	0.00543	0.04051
tpmc2	0.01909	0.01069	0.03657	0.00543	0.04051
tpmf2	0.01909	0.01069	0.03657	0.00543	0.04051
tpmg2	0.01909	0.01069	0.03657	0.00543	0.04051
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-					
tpma3	0.04011	0.01643	0.00926	0.00695	0.01010
tpmc3	0.04011	0.01643	0.00926	0.00695	0.01010
tpmf3	0.04011	0.01643	0.00926	0.00695	0.01010
tpmg3	0.04011	0.01643	0.00926	0.00695	0.01010
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4					
tpma4	0.01810	0.00935	0.02566	0.00798	0.04508
tpmc4	0.01810	0.00935	0.02566	0.00798	0.04508
tpmf4	0.01810	0.00935	0.02566	0.00798	0.04508
tpmg4	0.01810	0.00935	0.02566	0.00798	0.04508
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-					
tpma5	0.01810	0.00935	0.02566	0.00798	0.04508
tpmc5	0.018102781	0.00934818	0.025655677	0.007978412	0.045075676
tpmf5	0.018102781	0.00934818	0.025655677	0.007978412	0.045075676
tpmg5	0.018102781	0.00934818	0.025655677	0.007978412	0.045075676
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-					
cstravelpmetseg1	3,556,394,680	4,198,063,916	4,706,285,433	5,151,273,594	4,301,859,587
cstravelpmetseg2	12,555,543,119	12,509,971,499	14,253,439,528	14,920,697,280	12,000,644,471
cstravelpmetseg3	3,281,442,033	3,537,584,217	3,930,411,262	3,931,881,776	4,088,005,232
cstravelpmetseg4	5,324,233,118	5,367,301,016	5,841,421,725	5,988,975,715	5,086,933,390
cstravelpmetseg5	2,037,167,549	2,056,601,298	2,283,141,252	2,317,483,099	2,140,317,583
cstravelpmetsum	26,754,780,500	27,669,521,947	31,014,699,200	32,310,311,463	27,617,760,263
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-					
epm_a1	5.37	2.91	6.28	3.45	7.63
epm_c1	5.37	2.91	6.28	3.45	7.63
epm_f1	5.37	2.91	6.28	3.45	7.63
epm_g1	5.37	2.91	6.28	3.45	7.63
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET					
epm_a2	1.67	3.52	3.60	3.02	3.20
epm_c2	1.67	3.52	3.60	3.02	3.20
epm_f2	1.67	3.52	3.60	3.02	3.20
epm_g2	1.67	3.52	3.60	3.02	3.20

QUARTER	29	29	30	30	31
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET					
epm_a3	3.52	5.41	0.91	3.88	0.80
epm_c3	3.52	5.41	0.91	3.88	0.80
epm_f3	3.52	5.41	0.91	3.88	0.80
epm_g3	3.52	5.41	0.91	3.88	0.80
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET					
epm_a4	1.59	3.08	2.52	4.45	3.57
epm_c4	1.59	3.08	2.52	4.45	3.57
epm_f4	1.59	3.08	2.52	4.45	3.57
epm_g4	1.59	3.08	2.52	4.45	3.57
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-					
epm_a5	1.59	3.08	2.52	4.45	3.57
epm_c5	1.588211525	3.075576615	2.523173318	4.446807766	3.565228062
epm_f5	1.588211525	3.075576615	2.523173318	4.446807766	3.565228062
epm_g5	1.588211525	3.075576615	2.523173318	4.446807766	3.565228062
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC					
Asub1n	314514.552	190031.3471	238945.1136	217161.7669	225382.8641
Csub1n	147252.6025	66352.04953	77174.59427	57122.34372	53151.94635
Fsub1n	207465.5754	92556.48862	102010.9357	82208.67035	81574.38623
Gsub1n	304858.3572	184901.5913	233301.4468	211666.6656	202024.8933
Asub2n	183109.6379	405568.8036	444378.6114	440579.315	451499.829
Csub2n	28613.09892	227724.5019	319585.6371	322694.8891	256731.4682
Fsub2n	187667.5612	401664.1414	465376.3142	462534.5272	424571.9074
Gsub2n	241197.079	461815.8322	583861.8247	580221.4815	450316.8325
Asub3n	138636.4563	70703.18824	58599.61538	84977.43116	78123.66798
Csub3n	167851.5564	66337.86617	99136.86928	129138.7057	127605.0556
Fsub3n	180856.6631	110691.389	91684.56006	118428.5615	105540.9939
Gsub3n	216538.4946	147449.6293	135728.4998	162353.609	165147.6935
asub4n	60763.65008	86731.47399	92981.00557	99857.56568	123029.4532
Csub4n	87707.83273	140651.1673	116035.7662	123247.7846	101131.9157
fsub4n	221015.4038	250535.1917	274583.963	279245.8215	236911.6828
gsub4n	191132.983	218754.2725	232565.6991	238983.8016	220908.2891
asub5n	90469.54747	111030.0709	108887.0872	137605.8859	131651.0561
Csub5n	36573.32833	30895.24003	0	9657.173925	681.9797732
fsub5n	47550.66906	63917.30524	34126.11493	62303.5187	55498.56644
gsub5n	64882.58594	82474.88426	64755.90189	94196.49771	72822.67007
TOTAL SALES FOR EACH SEGMENT AFTER PMET-					
tseg1n	974,091	533,841	651,432	568,159	562,134
tseg2n	640,587	1,496,773	1,813,202	1,806,030	1,583,120
tseg3n	703,883	395,182	385,150	494,898	476,417
tseg4n	560,620	696,672	716,166	741,335	681,981
tseg5n	239,476	288,318	207,769	303,763	260,654
tsumn	3,118,658	3,410,786	3,773,720	3,914,186	3,564,307
-CONSUMER SURPLUS UNDER PMET					
CSPMETseg1	5,249,963,574	3,839,204,498	3,156,168,868	699,995,510	884,436,888
CSPMETseg2	3,055,484,358	11,683,703,407	9,424,046,084	15,525,711,597	15,338,440,258

QUARTER	29	29	30	30	31
CSPMETseg3	5,122,367,631	2,899,695,580	2,256,291,617	8,181,459,632	9,364,828,250
CSPMETseg4	3,792,682,138	8,436,778,174	5,109,521,509	5,531,603,179	9,386,259,666
CSPMETseg5	1,754,762,130	3,717,493,000	1,323,019,376	7,595,015,746	7,365,225,702
CsPMETsum	18,975,259,831	30,576,874,659	21,269,047,453	37,533,785,664	42,339,190,764
PRODUCER SURPLUS UNDER PMET-					
PSpmetseg1	2,853,607,951	2,209,009,895	1,886,653,302	436,813,766	498,068,842
PSpmetseg2	1,718,518,953	6,164,782,301	4,920,395,342	8,120,043,872	8,074,018,368
PSpmetseg3	2,647,180,488	1,581,286,384	1,199,789,994	4,273,565,910	4,895,066,197
PSpmetseg4	2,184,158,256	4,659,638,390	2,975,606,133	3,084,545,291	5,100,133,178
PSpmetseg5	937,428,764	2,043,154,644	818,578,276	4,866,473,077	4,630,148,861
Pspmetsum	10,340,894,411	16,657,871,615	11,801,023,048	20,781,441,916	23,197,435,446
-TOTAL SURPLUS UNDER PMET					
TSPMETseg1	8,103,571,525	6,048,214,394	5,042,822,170	1,136,809,276	1,382,505,730
TSPMETseg2	4,774,003,311	17,848,485,708	14,344,441,426	23,645,755,469	23,412,458,625
TSPMETseg3	7,769,548,119	4,480,981,964	3,456,081,611	12,455,025,542	14,259,894,447
TSPMETseg4	5,976,840,393	13,096,416,564	8,085,127,642	8,616,148,470	14,486,392,844
TSPMETseg5	2,692,190,894	5,760,647,644	2,141,597,652	12,461,488,823	11,995,374,564
TSPMETsum	29,316,154,242	47,234,746,274	33,070,070,501	58,315,227,580	65,536,626,210
dwlpmet	6,462,764,138	4,060,373,239	7,903,057,255	4,658,826,958	8,692,111,239
pmetsurplus	310,498,856,166	328,181,323,756	358,229,699,061	384,350,734,470	360,258,348,472
pmetsurplus10	69,705,831,669	79,155,626,230	79,097,406,258	93,557,931,301	111,698,506,109
TOTAL TAX REVENUE UNDER PMET-					
taxrevpmetseg1	681,427,355	56,360,247	474,848,854	42,008,872	602,605,778
taxrevpmetseg2	171,362,076	169,910,961	670,042,581	99,897,892	649,822,755
taxrevpmetseg3	328,355,461	76,939,725	42,506,772	41,078,254	57,302,009
taxrevpmetseg4	120,092,170	77,590,318	216,140,482	70,541,210	356,118,984
taxrevpmetseg5	62,252,631	44,334,550	97,724,966	39,712,998	188,562,437
taxrevpmetsum	1,363,489,693	425,135,801	1,501,263,656	293,239,226	1,854,411,964
pmetrev10	13,634,896,928	4,251,358,009	15,012,636,557	2,932,392,258	18,544,119,635
SALES LOST AS RESULT OF PMET-					
lostsales1	(429,500)	10,750	13,321	96,594	68,724
lostsales2	985,167	128,981	111,670	118,842	49,947
lostsales3	(241,161)	67,540	123,403	13,655	54,211
lostsales4	136,362	310	59,480	34,311	15,547
lostsales5	27,894	(20,948)	92,580	(3,414)	31,041
lostsum	478,761	186,633	400,453	259,987	219,469
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-					
taxa1p	156.5237646	288.2277974	133.7102145	243.4377889	110.0745599
taxc1p	156.5237646	288.2277974	133.7102145	243.4377889	110.0745599
taxf1p	156.5237646	288.2277974	133.7102145	243.4377889	110.0745599
taxg1p	156.5237646	288.2277974	133.7102145	243.4377889	110.0745599
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-					
taxa2p	1003.160463	477.640132	467.0565711	555.4414297	524.2727508
taxc2p	1003.160463	477.640132	467.0565711	555.4414297	524.2727508
taxf2p	1003.160463	477.640132	467.0565711	555.4414297	524.2727508
taxg2p	1003.160463	477.640132	467.0565711	555.4414297	524.2727508
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-					

QUARTER	29	29	30	30	31
taxa3p	625.1851712	406.9448251	2414.965911	567.610418	2753.558332
taxc3p	625.1851712	406.9448251	2414.965911	567.610418	2753.558332
taxf3p	625.1851712	406.9448251	2414.965911	567.610418	2753.558332
taxg3p	625.1851712	406.9448251	2414.965911	567.610418	2753.558332
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-					
taxa4p	1385.205916	715.313021	871.9179075	494.736925	617.0713238
taxc4p	1385.205916	715.313021	871.9179075	494.736925	617.0713238
taxf4p	1385.205916	715.313021	871.9179075	494.736925	617.0713238
taxg4p	1385.205916	715.313021	871.9179075	494.736925	617.0713238
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5					
taxa5p	1385.205916	715.313021	871.9179075	494.736925	617.0713238
taxc5p	1385.205916	715.313021	871.9179075	494.736925	617.0713238
taxf5p	1385.205916	715.313021	871.9179075	494.736925	617.0713238
taxg5p	1385.205916	715.313021	871.9179075	494.736925	617.0713238
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-					
pollution reduction 1p	6318718656	7937255889	-14395558194	1396276814	-22052578348
pollution reduction 2p	-19411821940	7673365274	10896721630	21040295783	18829366630
pollution reduction 3p	23436543158	-852318677.9	18277749550	9440405991	25610233931
pollution reduction 4p	23192172256	20445497216	24582585439	878814815(	16470674328
pollution reduction 5p	6464388664	4796207678	638501574.8	-665134346.6	1142303458
Total reductionp	40.00000079	40.00000738	40	39.99999239	40
DIFFERENCE-					
Tsdiff	(2,093)	(254)	(8,419)	(997)	(34,980)

x

QUARTER	31	32	32
COEFFICIENTS OF DEMAND			
a P1/q1	-0.001920301	-0.004804135	-0.001498055
b p2/q1	-0.000143298	-1E-08	-0.001498055
c p3/q1	-1E-08	-2.97627E-17	-1E-08
d p4/q1	-0.001625657	0	-0.000349033
f P1/q2	-0.000143298	-1E-08	-0.001498055
g p2/q2	-0.012664513	-0.008325317	-0.011472612
h p3/q2	-0.000163009	-1E-08	-0.005119752
i p4/q2	-1E-08	-0.000562176	-0.000661193
k P1/q3	-1E-08	-1.33442E-17	-1E-08
l p2/q3	-0.000163009	-1E-08	-0.005119752
m p3/q3	-0.067193884	-0.039167097	-0.038588315
n p4/q3	-0.002994118	2.02634E-17	-0.009312122
p P1/q4	-0.001625657	6.85765E-18	-0.000349033
q p2/q4	-1E-08	-0.000562176	-0.000661193
r p3/q4	-0.002994118	-4.44115E-17	-0.009312122
s p4/q4	-0.032261813	-0.035503548	-0.011594486
u P1/q5	-0.001920301	-0.001888229	-0.000511639
v p2/q5	-1E-08	-1E-08	-0.008336156
w p3/q5	-0.019259961	-0.010800748	-1E-08
x p4/q5	-0.007382487	-0.006829616	-0.003831746
y p5/q5	-0.040019547	-0.060379932	-0.008336156
e p5/q1	-0.001920301	-0.001888229	-0.000511639
j p5/q2	-0.00000001	-1E-08	-0.008336156
o p5/q3	-0.019259961	-0.010800748	-0.00000001
t p5/q4	-0.007382487	-0.006829616	-0.003831746
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR			
aa	-0.001920301	-0.004804135	-0.001498055
bb	-0.000143298	-1E-08	-0.001498055
cc	-1E-08	-2.97627E-17	-1E-08
dd	-0.001625657	-0.00000001	-0.000349033
ee	-0.001920301	-0.001888229	-0.000511639
ff	-0.000143298	-1E-08	-0.001498055
gg	-0.012664513	-0.008325317	-0.011472612
hh	-0.000163009	-1E-08	-0.005119752
ii	-1E-08	-0.000562176	-0.000661193
jj	-0.00000001	-1E-08	-0.008336156
kk	-1E-08	-1.33442E-17	-1E-08
ll	-0.000163009	-1E-08	-0.005119752
mm	-0.067193884	-0.039167097	-0.038588315
nn	-0.002994118	-0.00000001	-0.009312122
oo	-0.019259961	-0.010800748	-0.00000001
pp	-0.001625657	-0.00000001	-0.000349033
qq	-1E-08	-0.000562176	-0.000661193
rr	-0.002994118	-4.44115E-17	-0.009312122
ss	-0.032261813	-0.035503548	-0.011594486
tt	-0.007382487	-0.006829616	-0.003831746
uu	-0.001920301	-0.001888229	-0.000511639
vv	-1E-08	-1E-08	-0.008336156
ww	-0.019259961	-0.010800748	-1E-08
xx	-0.007382487	-0.006829616	-0.003831746
yy	-0.040019547	-0.060379932	-0.008336156
KNOWN PRICE BEFORE TAXES			
P1	15,454	14,116	14,116
P2	20,369	24,113	24,113
P3	28,754	28,667	28,667
P4	23,205	21,997	21,997
P5	32,567	34,491	34,491

QUARTER	31	32	32
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM			
Asub1	245592	180842	180842
Csub1	64828	48537	48537
Fsub1	97984	71174	71174
Gsub1	222454	172171	172171
Asub2	462501	413497	413497
Csub2	271333	253276	253276
Fsub2	437254	394302	394302
Gsub2	461979	403534	403534
Asub3	91579	95547	95547
Csub3	141461	130013	130013
Fsub3	119011	172453	172453
Gsub3	178577	183830	183830
asub4	127139	97559	97559
Csub4	105029	124016	124016
fsub4	240545	248092	248092
gsub4	224815	227754	227754
asub5	139791	133615	133615
Csub5	7458	8983	8983
fsub5	63528	61766	61766
gsub5	80918	83338	83338
TOTAL SALES IN EACH SEGMENT BEFORE TAXES			
tseg1	630,858	472,724	472,724
tseg2	1,633,067	1,464,609	1,464,609
tseg3	530,628	581,843	581,843
tseg4	697,528	697,421	697,421
tseg5	291,695	287,702	287,702
tsum	3,783,776	3,504,299	3,504,299
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j			
Elasiticity11	12.76	6.22	19.93
Elasiticity21	0.19	0.00	4.45
Elasiticity31	0.00	0.00	0.00
Elasiticity41	0.97	0.00	0.94
Elasiticity51	1.29	0.47	2.99
Elasiticity12	0.06	0.00	0.84
Elasiticity22	0.98	1.98	1.44
Elasiticity32	0.00	0.00	0.00
Elasiticity42	0.00	0.03	0.07
Elasiticity52	0.00	0.00	2.05
Elasiticity13	0.00	0.00	0.00
Elasiticity23	0.01	0.00	0.48
Elasiticity33	0.81	1.26	1.28
Elasiticity43	0.06	0.00	0.79
Elasiticity53	0.44	0.27	0.00
Elasiticity14	0.58	0.00	0.41
Elasiticity24	0.00	0.07	0.17
Elasiticity34	0.06	0.00	0.86
Elasiticity44	1.03	0.89	2.72
Elasiticity54	0.27	0.16	1.96
Elasiticity15	1.32	0.32	2.01
Elasiticity25	0.00	0.00	7.31
Elasiticity35	0.71	0.46	0.00
Elasiticity45	0.45	0.24	3.03
Elasiticity55	2.79	1.99	14.38
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM			

QUARTER	31	32	32
MCasub1	14,454	12,988	13,116
MCcsub1	15,112	13,856	13,607
MCfsub1	14,700	13,644	13,288
MCgsub1	14,454	13,116	13,116
MCasub2	14,454	20,613	17,428
MCcsub2	16,898	21,925	20,304
MCfsub2	14,795	20,672	17,904
MCgsub2	14,454	20,613	17,428
MCasub3	19,461	23,505	21,976
MCcsub3	18,747	23,505	21,223
MCfsub3	18,747	21,289	17,723
MCgsub3	14,454	20,613	17,428
MCasub4	17,395	17,391	19,129
MCcsub4	19,233	17,391	19,129
MCfsub4	14,454	12,552	16,997
MCgsub4	14,454	13,116	16,997
MCasub5	23,816	24,407	29,491
MCcsub5	28,644	31,611	31,811
MCfsub5	25,778	27,087	29,721
MCgsub5	23,816	25,610	29,491

EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM			
e	-0.001920301	-0.001888229	-0.000511639
j	-0.00000001	-1E-08	-0.008336156
o	-0.019259961	-0.010800748	-0.00000001
t	-0.007382487	-0.006829616	-0.003831746
y	-0.040019547	-0.060379932	-0.008336156

MARKUP FOR EACH FIRM BY SEGMENT			
XMCasub1	1000	1128.282697	1000
XMCcsub1	342.041637	260.1161788	509.9146434
XMCfsub1	753.739017	472.0154258	828.9177566
XMCgsub1	1000	1000	1000
XMCasub2	5915.422823	3500	6684.967331
XMCcsub2	3471.261172	2187.649779	3809.007552
XMCfsub2	5574.004558	3440.90925	6208.578602
XMCgsub2	5915.422823	3500	6684.967331
XMCasub3	9292.723241	5161.190505	6690.291466
XMCcsub3	10006.4274	5161.190505	7443.262717
XMCfsub3	10006.4274	7377.54235	10943.90751
XMCgsub3	14299.97934	8053.695238	11238.66257
XMCasub4	5810.027048	4606.09967	2868.356697
XMCcsub4	3972.298622	4606.09967	2868.356697
XMCfsub4	8751.199223	9445.707966	5000
XMCgsub4	8751.199223	8880.785575	5000
XMCasub5	8751.199223	10083.21744	5000
XMCcsub5	3922.479582	2879.375267	2679.300394
XMCfsub5	6788.604287	7403.754255	4770.045433
XMCgsub5	8751.199223	8880.785575	5000

LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT			
constant1	18,593	16,931	17,409
constant2	41,228	36,698	47,462
constant3	72,381	54,563	65,112
constant4	50,476	49,546	37,737
constant5	60,821	63,802	52,012

QUARTER	31	32	32
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES			
TSseg1	1,554,376,638	1,087,624,109	1,215,066,856
TSseg2	25,879,808,921	13,986,805,432	25,973,487,092
TSseg3	17,586,095,102	11,450,800,648	16,162,978,836
TSseg4	14,739,589,700	14,993,324,948	8,503,565,412
TSseg5	6,512,810,833	6,787,031,872	3,923,980,630
Tssum	66,272,681,194	48,305,587,010	55,779,078,826
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES			
CSseg1	990,302,399	665,191,725	778,306,737
CSseg2	17,031,995,333	9,216,360,348	17,098,876,392
CSseg3	11,575,035,234	7,533,852,411	10,602,707,620
CSseg4	9,511,244,049	9,606,689,395	5,488,779,277
CSseg5	4,120,822,098	4,216,490,153	2,520,520,848
Cssum	43,229,399,112	31,238,584,032	36,489,190,874
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES			
PSseg1	564,074,239	422,432,384	436,760,119
PSseg2	8,847,813,588	4,770,445,085	8,874,610,700
PSseg3	6,011,059,868	3,916,948,237	5,560,271,216
PSseg4	5,228,345,651	5,386,635,553	3,014,786,135
PSseg5	2,391,988,735	2,570,541,719	1,403,459,782
Pssum	23,043,282,082	17,067,002,978	19,289,887,952
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES			
CStravseg1	4,928,578,125	3,693,156,250	3,693,156,250
CStravseg2	12,758,335,938	11,442,257,813	11,442,257,813
CStravseg3	4,145,531,250	4,545,648,438	4,545,648,438
CStravseg4	5,449,437,500	5,448,601,563	5,448,601,563
CStravseg5	2,278,867,188	2,247,671,875	2,247,671,875
Cstravsum	29,560,750,000	27,377,335,938	27,377,335,938
FIRST ORDER CONDITIONS			
foc1l	1.06041E-10	-1.63921E-05	-5.69176E-06
foc2l	-4.6098E-11	0.000116288	-0.000104569
foc3l	-6.63931E-11	0.000166785	4.45934E-05
foc4l	1.02204E-10	-0.000221804	7.9717E-07
foc5l	1.04706E-10	-1.63953E-05	-4.21997E-06
foc6l	-4.02451E-11	0.000116227	-7.46967E-05
foc7l	-7.43512E-11	0.000166942	3.17829E-05
foc8l	1.0391E-10	-0.000221855	2.51809E-07
foc9l	1.07008E-10	-1.64016E-05	-5.78508E-06
foc10l	-4.41389E-11	0.000116064	-0.000106448
foc11l	-7.00311E-11	0.000167327	4.54008E-05
foc12l	1.05615E-10	-0.0002219	8.30398E-07
foc13l	1.09935E-10	-1.64049E-05	-5.62169E-06
foc14l	-4.38957E-11	0.000116119	-0.000103149
foc15l	-8.00355E-11	0.000167268	4.39904E-05
foc16l	1.03796E-10	-0.000221976	7.71851E-07
foc17l	3.45608E-11	-0.000217999	-4.71874E-06
foc18l	2.38742E-11	-0.000217908	-3.76534E-06
foc19l	2.68301E-11	-0.000217667	-4.77927E-06
foc20l	2.63753E-11	-0.000217754	-4.67105E-06

QUARTER	31	32	32
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET			
p1a1l	16051.84444	14683.10317	14692.29902
p1c1l	16051.84444	14683.10317	14692.29902
p1f1l	16051.84444	14683.10317	14692.29902
p1g1l	16051.84444	14683.10317	14692.29902
p2a2l	21199.15435	24918.72433	24932.69199
p2c2l	21199.15435	24918.72433	24932.69199
p2f2l	21199.15435	24918.72433	24932.69199
p2g2l	21199.15435	24918.72433	24932.69199
p3a3l	29711.86543	29627.17727	29639.25792
p3c3l	29711.86543	29627.17727	29639.25792
p3f3l	29711.86543	29627.17727	29639.25792
p3g3l	29711.86543	29627.17727	29639.25792
p4a4l	24155.97318	22931.2887	22944.72568
p4c4l	24155.97318	22931.2887	22944.72568
p4f4l	24155.97318	22931.2887	22944.72568
p4g4l	24155.97318	22931.2887	22944.72568
p5a5l	33295.19583	38135.9379	35496.82715
p5c5l	33295.19583	38135.9379	35496.82715
p5f5l	33295.19583	38135.9379	35496.82715
p5g5l	33295.19583	38135.9379	35496.82715
lemp_a1	2.28	2.33	2.30
lemp_c1	2.28	2.33	2.30
lemp_f1	2.28	2.33	2.30
lemp_g1	2.28	2.33	2.30
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER LSET			
lemp_a2	3.23	3.30	3.25
lemp_c2	3.23	3.30	3.25
lemp_f2	3.23	3.30	3.25
lemp_g2	3.23	3.30	3.25
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER LSET-			
lemp_a3	3.69	3.78	3.72
lemp_c3	3.69	3.78	3.72
lemp_f3	3.69	3.78	3.72
lemp_g3	3.69	3.78	3.72
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER LSET			
lemp_a4	3.69	3.78	3.72
lemp_c4	3.69	3.78	3.72
lemp_f4	3.69	3.78	3.72
lemp_g4	3.69	3.78	3.72
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER LSET			
lemp_a5	3.69	3.78	3.72
lemp_c5	3.691156438	3.777101282	3.717921687
lemp_f5	3.691156438	3.777101282	3.717921687
lemp_g5	3.691156438	3.777101282	3.717921687

QUARTER	31	32	32
SALES AFTER LSET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM			
Asub1nl	177286.6803	131853.9788	147424.4974
Csub1nl	0	0	0
Fsub1nl	31114.87544	23411.05181	43218.917
Gsub1nl	153361.3375	124843.4713	143754.0901
Asub2nl	447195.8506	389357.8348	332347.8846
Csub2nl	255566.2881	229939.2728	194619.8017
Fsub2nl	421537.6238	372106.3677	310982.9865
Gsub2nl	446346.6262	380567.3408	322710.868
Asub3nl	90308.54866	76660.02549	114288.8625
Csub3nl	140243.0325	110939.1189	142692.1138
Fsub3nl	117770.0552	153005.5109	191452.4192
Gsub3nl	177316.2835	164326.4359	201880.3088
asub4nl	125086.6964	82262.52153	39482.80751
Csub4nl	102638.2916	108699.0894	78364.84928
fsub4nl	238498.1047	232632.0582	188255.4718
gsub4nl	222828.3315	212441.114	170248.3341
asub5nl	132042.6023	180934.8585	218988.7483
Csub5nl	0	56627.63933	69503.15164
fsub5nl	55878.1567	109284.3562	150780.1245
gsub5nl	73286.36384	130833.3286	168744.0531
TOTAL SALES FOR EACH SEGMENT AFTER LSET			
tseg1nl	361,763	280,109	334,398
tseg2nl	1,570,646	1,371,971	1,160,662
tseg3nl	525,638	504,931	650,314
tseg4nl	689,051	636,035	476,351
tseg5nl	261,207	477,680	608,016
tsumnl	3,408,306	3,270,725	3,229,740
SALES LOST 'AS RESULT OF LSET-			
lostsales1l	269,095	192,615	138,326
lostsales2l	62,421	92,638	303,947
lostsales3l	4,990	76,912	(68,471)
lostsales4l	8,477	61,386	221,070
lostsales5l	30,488	(189,978)	(320,314)
lostsuml	375,470	233,574	274,559
-CONSUMER SURPLUS UNDER LSET-			
CSlsetseg1	459,715,104	314,794,712	454,284,637
CSlsetseg2	15,729,241,735	8,080,680,347	13,074,670,742
CSlsetseg3	11,214,387,156	6,295,481,453	11,534,178,976
CSlsetseg4	9,068,035,892	8,464,081,726	3,523,274,418
CSlsetseg5	3,594,988,226	6,130,117,071	5,020,858,442
Cslsetsum	40,066,368,113	29,285,155,309	33,607,267,215
-PRODUCER SURPLUS UNDER LSET			
PSlsetseg1	303,973,424	241,753,172	275,021,526
PSlsetseg2	8,189,845,162	4,186,985,680	6,802,203,242
PSlsetseg3	5,833,630,729	3,317,264,719	6,053,694,122
PSlsetseg4	5,005,500,027	4,816,755,763	2,018,133,744
PSlsetseg5	2,055,093,951	5,143,312,167	2,736,338,149
Pslsetsum	21,388,043,292	17,706,071,501	17,885,390,784

QUARTER	31	32	32
-TOTAL SURPLUS UNDER LSET-			
TSlsetseg1	763,688,528	556,547,884	729,306,164
TSlsetseg2	23,919,086,896	12,267,666,027	19,876,873,984
TSlsetseg3	17,048,017,885	9,612,746,172	17,587,873,098
TSlsetseg4	14,073,535,919	13,280,837,488	5,541,408,162
TSlsetseg5	5,650,082,177	11,273,429,238	7,757,196,591
Tslsetsum	61,454,411,406	46,991,226,810	51,492,657,999
dwllset	4,818,269,789	1,314,360,200	4,286,420,827
surpluslset	357,061,911,406	320,764,586,185	325,266,017,374
LUMP SUM EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM-			
LSET	161.47	154.21	159.16
ABATEMENTCONSTANT FROM ABATEMENT EQUATION			
Abate1	840	840	840
Abate2	1680	1680	1680
Abate3	2200	2200	2200
Abate4	2200	2200	2200
Abate5	1680	1680	1680
-EMISSIONS OF OLDEST NON-GROSS POLLUTER-			
max emis1	7.5	7.5	7.5
max emis2	7.5	7.5	7.5
max emis3	7.5	7.5	7.5
max emis4	7.5	7.5	7.5
max emis5	7.5	7.5	7.5
cur_emis1	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2
TOTAL TAX REVENUE UNDER LSET-			
taxrevlsetseg1	133,233,228	100,813,489	122,268,272
taxrevlsetseg2	818,053,957	698,316,372	600,165,930
taxrevlsetseg3	313,290,277	294,100,771	384,809,114
taxrevlsetseg4	410,687,859	370,463,066	281,870,708
taxrevlsetseg5	155,684,453	278,228,282	359,780,405
taxrevlsetsum	1,830,949,773	1,741,921,980	1,748,894,428
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 1 BASED ON EMISSIONS			
taxa1	368.29	359.91	365.64
taxc1	368.29	359.91	365.64
taxf1	368.29	359.91	365.64
taxg1	368.29	359.91	365.64
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 2 BASED ON EMISSIONS-			
taxa2	520.84	508.99	517.09
taxc2	520.84	508.99	517.09
taxf2	520.84	508.99	517.09

QUARTER	31	32	32
taxg2	520.84	508.99	517.09
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 3 BASED ON EMISSIONS			
taxa3	596.02	582.46	591.73
taxc3	596.02	582.46	591.73
taxf3	596.02	582.46	591.73
taxg3	596.02	582.46	591.73
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 4 BASED ON EMISSIONS-			
taxa4	596.02	582.46	591.73
taxc4	596.02	582.46	591.73
taxf4	596.02	582.46	591.73
taxg4	596.02	582.46	591.73
TAX PAID PER VEHICLE BY EACH FIRM WITHIN SEGMENT 5 BASED ON EMISSIONS-			
taxa5	596.02	582.46	591.73
taxc5	596.0191709	582.4572431	591.72844
taxf5	596.0191709	582.4572431	591.72844
taxg5	596.0191709	582.4572431	591.72844
POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET			
pollution reduction 1	(2,324,703,027)	(1,355,132,725)	2,157,138,522
pollution reduction 2	15,894,063,958	11,137,803,971	1,209,793,334
pollution reduction 3	11,289,799,280	8,593,455,740	15,550,216,292
pollution reduction 4	14,753,196,970	11,676,612,943	4,881,078,436
pollution reduction 5	387,642,820	9,947,260,072	16,201,773,851
Total reduction	40	40	40.00000043
PER MILE EMISSIONS TAX SET WITHIN CONSTRAINTS BY PROGRAM			
PMET	0.00185	0.00746	0.00251
	22.15724818	89.53604145	30.17043147
FOC-PMET			
foc1p	6.45664E-06	-6.37998E-08	-4.95719E-06
foc2p	2.29362E-07	1.60733E-05	-0.000100943
foc3p	4.51099E-05	-3.14254E-05	3.71716E-05
foc4p	2.5624E-07	5.72909E-06	5.0987E-06
foc5p	6.45698E-06	-9.47219E-08	-3.66572E-06
foc6p	2.29263E-07	1.53182E-05	-7.55867E-05
foc7p	4.51105E-05	-3.04119E-05	2.63002E-05
foc8p	2.56261E-07	5.81389E-06	4.62382E-06
foc9p	6.45688E-06	-7.3299E-08	-5.05159E-06
foc10p	2.29309E-07	1.58495E-05	-0.000102841
foc11p	4.511E-05	-3.08824E-05	3.79896E-05
foc12p	2.56301E-07	5.57295E-06	5.13414E-06
foc13p	6.457E-06	-7.6608E-08	-4.88619E-06
foc14p	2.29338E-07	1.59047E-05	-9.95171E-05
foc15p	4.5109E-05	-3.09416E-05	3.65682E-05
foc16p	2.5611E-07	5.55707E-06	5.07266E-06
foc17p	2.80161E-07	-2.45538E-05	4.06235E-06
foc18p	2.67147E-07	-2.32531E-05	3.1768E-06
foc19p	2.80257E-07	-2.42213E-05	4.00305E-06
foc20p	2.80319E-07	-2.4308E-05	4.10718E-06

QUARTER	31	32	32
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 1 UNDER PMET-			
p1a1	15,595.23	14,150.44	14,237.73
p1c1	15,595.23	14,150.44	14,237.73
p1f1	15,595.23	14,150.44	14,237.73
p1g1	15,595.23	14,150.44	14,237.73
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 2 UNDER PMET-			
p2a2	20,691.27	24,755.42	24,410.30
p2c2	20,691.27	24,755.42	24,410.30
p2f2	20,691.27	24,755.42	24,410.30
p2g2	20,691.27	24,755.42	24,410.30
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 3 UNDER PMET-			
p3a3	29,085.29	29,085.65	29,081.66
p3c3	29,085.29	29,085.65	29,081.66
p3f3	29,085.29	29,085.65	29,081.66
p3g3	29,085.29	29,085.65	29,081.66
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 4 UNDER PMET			
p4a4	23,565.82	22,618.50	22,333.55
p4c4	23,565.82	22,618.50	22,333.55
p4f4	23,565.82	22,618.50	22,333.55
p4g4	23,565.82	22,618.50	22,333.55
PRICE OF AUTOS FOR EACH FIRM IN SEGMENT 5 UNDER PMET-			
p5a5	32,981.14	34,928.25	34,839.69
p5c5	32981.14222	34928.25459	34839.68733
p5f5	32981.14222	34928.25459	34839.68733
p5g5	32981.14222	34928.25459	34839.68733
CHANGE IN PRICE CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST-			
dp/dgas1	31,513	827	22,383
dp/dgas2	94,854	93,936	61,157
dp/dgas3	73,142	25,793	76,059
dp/dgas4	90,343	64,870	56,559
dp/dgas5	49,081	129,317	51,906
sum of dpdgas	338,934	314,742	268,064
VEHICLE MILES TRAVELED IN EACH SEGMENT UNDER PMET			
VMT1	11,935	11,198	11,910
VMT2	11,947	11,894	11,923
VMT3	11,931	11,768	11,921
VMT4	11,938	11,853	11,909
VMT5	11,938	11,853	11,909

QUARTER	31	32	32
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 1-			
tpma1	0.00702	0.08707	0.00971
tpmc1	0.00702	0.08707	0.00971
tpmf1	0.00702	0.08707	0.00971
tpmg1	0.00702	0.08707	0.00971
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 2			
tpma2	0.00572	0.01155	0.00831
tpmc2	0.00572	0.01155	0.00831
tpmf2	0.00572	0.01155	0.00831
tpmg2	0.00572	0.01155	0.00831
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 3-			
tpma3	0.00745	0.02523	0.00853
tpmc3	0.00745	0.02523	0.00853
tpmf3	0.00745	0.02523	0.00853
tpmg3	0.00745	0.02523	0.00853
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 4			
tpma4	0.00671	0.01591	0.00989
tpmc4	0.00671	0.01591	0.00989
tpmf4	0.00671	0.01591	0.00989
tpmg4	0.00671	0.01591	0.00989
TAX PAID PER MILE BY CONSUMER FOR EACH FIRMS' VEHICLES IN SEGMENT 5-			
tpma5	0.00671	0.01591	0.00989
tpmc5	0.006705512	0.015907338	0.009889173
tpmf5	0.006705512	0.015907338	0.009889173
tpmg5	0.006705512	0.015907338	0.009889173
-CONSUMER SURPLUS UNDER PMET IN TRAVEL SECTOR-			
cstravelpmetseg1	4,889,494,185	3,224,641,614	3,635,369,716
cstravelpmetseg2	12,651,050,344	11,268,427,085	11,326,749,546
cstravelpmetseg3	4,099,248,563	4,376,619,925	4,479,893,903
cstravelpmetseg4	5,395,079,802	5,323,275,561	5,390,758,355
cstravelpmetseg5	2,255,562,208	2,199,472,219	2,178,980,309
cstravelpmetsum	29,290,435,101	26,392,436,405	27,011,751,830
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 1 UNDER PMET-			
epm_a1	3.80	11.67	3.86
epm_c1	3.80	11.67	3.86
epm_f1	3.80	11.67	3.86
epm_g1	3.80	11.67	3.86
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 2 UNDER PMET			
epm_a2	3.10	1.55	3.31
epm_c2	3.10	1.55	3.31
epm_f2	3.10	1.55	3.31
epm_g2	3.10	1.55	3.31

QUARTER	31	32	32
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 3 UNDER PMET			
epm_a3	4.04	3.38	3.39
epm_c3	4.04	3.38	3.39
epm_f3	4.04	3.38	3.39
epm_g3	4.04	3.38	3.39
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 4 UNDER PMET			
epm_a4	3.63	2.13	3.93
epm_c4	3.63	2.13	3.93
epm_f4	3.63	2.13	3.93
epm_g4	3.63	2.13	3.93
OPTIMAL EMISSIONS FOR EACH FIRM WITHIN SEGMENT 5 UNDER PMET-			
epm_a5	3.63	2.13	3.93
epm_c5	3.631594395	2.131968886	3.93332389
epm_f5	3.631594395	2.131968886	3.93332389
epm_g5	3.631594395	2.131968886	3.93332389
SALES AFTER PMET FOR EACH FIRM WITHIN SEGMENT 1. VALUES SET BY PROGRAM TO SATISFY NEW FOC			
Asub1n	203653.4121	177706.6835	201827.7307
Csub1n	24640.77983	46230.60888	0
Fsub1n	57481.60716	69263.75651	97622.15038
Gsub1n	179728.0692	170696.176	198157.3235
Asub2n	446234.7917	361265.5496	314401.6357
Csub2n	254631.9271	201834.4853	249749.3389
Fsub2n	420576.565	344014.0824	293036.7375
Gsub2n	445385.5674	352475.0555	304764.619
Asub3n	88794.55345	91313.84801	117722.9974
Csub3n	138171.9754	125858.081	126738.2121
Fsub3n	116256.06	167659.3334	194886.5542
Gsub3n	175802.2882	178980.2585	205314.4438
asub4n	122222.9154	88351.77629	32675.34051
Csub4n	99457.21873	114973.4974	111722.5678
fsub4n	235634.3236	238721.313	181448.0048
gsub4n	219964.5504	218530.3688	163440.8671
asub5n	138835.7695	125268.7034	232765.6078
Csub5n	8785.737358	0	1207.871566
fsub5n	62671.32386	53618.20109	164556.9841
gsub5n	80079.53101	75167.17348	182520.9127
TOTAL SALES FOR EACH SEGMENT AFTER PMET-			
tseg1n	465,504	463,897	497,607
tseg2n	1,566,829	1,259,589	1,161,952
tseg3n	519,025	563,812	644,662
tseg4n	677,279	660,577	489,287
tseg5n	290,372	254,054	581,051
tsumn	3,519,009	3,201,929	3,374,560
-CONSUMER SURPLUS UNDER PMET			
CSPMETseg1	646,366,555	628,198,047	735,011,368
CSPMETseg2	15,663,936,862	6,838,216,681	13,097,427,639

QUARTER	31	32	32
CSPMETseg3	11,094,448,368	6,998,831,331	11,404,604,678
CSPMETseg4	8,907,812,348	8,553,160,004	3,631,633,182
CSPMETseg5	3,994,201,892	3,406,458,503	4,839,976,219
CsPMETsum	40,306,766,026	26,424,864,565	33,708,653,086
PRODUCER SURPLUS UNDER PMET-			
PSpmetseg1	398,044,597	398,282,902	433,054,706
PSpmetseg2	8,157,146,064	3,565,765,828	6,664,662,548
PSpmetseg3	5,774,159,907	3,668,600,916	6,020,621,305
PSpmetseg4	4,926,292,182	4,860,873,161	2,029,504,203
PSpmetseg5	2,320,081,965	2,176,651,748	2,742,440,675
Pspmetsum	21,575,724,715	14,670,174,556	17,890,283,436
-TOTAL SURPLUS UNDER PMET			
TSPMETseg1	1,044,411,152	1,026,480,949	1,168,066,074
TSPMETseg2	23,821,082,927	10,403,982,510	19,762,090,187
TSPMETseg3	16,868,608,276	10,667,432,247	17,425,225,983
TSPMETseg4	13,834,104,531	13,414,033,165	5,661,137,385
TSPMETseg5	6,314,283,856	5,583,110,251	7,582,416,894
TSPMETsum	61,882,490,741	41,095,039,121	51,598,936,523
dwlpmet	4,399,320,594	7,229,949,389	4,193,159,437
pmetsurplus	357,398,689,333	314,674,383,496	325,242,124,560
pmetsurplus10	93,784,773,421	77,142,455,846	82,136,358,093
TOTAL TAX REVENUE UNDER PMET-			
taxrevpmetseg1	38,978,364	452,307,221	57,570,181
taxrevpmetseg2	91,335,937	151,677,631	90,390,675
taxrevpmetseg3	46,149,859	167,375,061	65,538,503
taxrevpmetseg4	54,217,371	124,555,753	57,622,714
taxrevpmetseg5	30,503,227	69,582,366	81,444,902
taxrevpmetsum	261,184,758	965,498,032	352,566,974
pmetrev10	2,611,847,578	9,654,980,319	3,525,669,741
SALES LOST AS RESULT OF PMET-			
lostsales1	165,354	8,827	(24,883)
lostsales2	66,238	205,020	302,657
lostsales3	11,603	18,031	(62,819)
lostsales4	20,249	36,844	208,134
lostsales5	1,323	33,648	(293,349)
lostsum	264,767	302,370	129,739
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 1-			
taxa1p	221.0795114	71.97906037	217.4191836
taxc1p	221.0795114	71.97906037	217.4191836
taxf1p	221.0795114	71.97906037	217.4191836
taxg1p	221.0795114	71.97906037	217.4191836
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 2-			
taxa2p	542.4385068	1085.122543	508.2505822
taxc2p	542.4385068	1085.122543	508.2505822
taxf2p	542.4385068	1085.122543	508.2505822
taxg2p	542.4385068	1085.122543	508.2505822
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 3-			

QUARTER	31	32	32
taxa3p	545.0840968	650.6791443	648.6138171
taxc3p	545.0840968	650.6791443	648.6138171
taxf3p	545.0840968	650.6791443	648.6138171
taxg3p	545.0840968	650.6791443	648.6138171
-COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 4-			
taxa4p	605.7945245	1031.909994	559.3233768
taxc4p	605.7945245	1031.909994	559.3233768
taxf4p	605.7945245	1031.909994	559.3233768
taxg4p	605.7945245	1031.909994	559.3233768
COST OF ABATEMENT EQUIPMENT USED IN EACH VEHICLE AS RESULT OF PMET IN SEGMENT 5			
taxa5p	605.7945245	1031.909994	559.3233768
taxc5p	605.7945245	1031.909994	559.3233768
taxf5p	605.7945245	1031.909994	559.3233768
taxg5p	605.7945245	1031.909994	559.3233768
POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET-			
pollution reduction 1p	-419666739	-37589252112	316679028(
pollution reduction 2p	1836891118	32170783071	781970925.1
pollution reduction 3p	898316476(	1434648929	1798805518
pollution reduction 4p	1485120544	2602033176(	4378824044
pollution reduction 5p	199338174	5051647988	1368435951
Total reductionp	39.9999957	40.00000001	39.99999994
DIFFERENCE-			
Tsdiff	(337)	(6,090)	24
	x	x	x

Appendix 15a: Difference in Total Surplus Discount Rate of 7%.

Quarter	Set 1: Optimized for LSET	Set 2: Optimized for PMET
32	-4,689	-307
31	-4,913	-251
30	-5,354	-236
29	-2,920	-1,061
28	-2,012	85
27	-1,775	-140
26	-1,423	-193
25	-2,241	-82
24	-3,614	-286
23	-3,488	-180
22	-5,762	-132
21	-3,867	-187
20	-2,895	-169
19	-2,636	-161
18	-4,556	-35
17	-4,624	-1,308
16	-6,805	-40
15	-3,393	-1,390
14	-2,815	-309
13	-4,078	-390
12	-2,294	-1,164
11	-3,209	-1,301
10	-3,449	-61
9	-1,017	-29
8	-4,678	-1,519
7	-3,780	-187
6	-4,369	-195
5	-4,034	-396
4	-1,338	47
3	-1,623	-122
2		
1	-1,129	-141

Note: These calculations used a 7% discount rate. The future gains from trade assumed equal gains from trade in each period, therefore, a annuity discount factor for the 10 years of 7.0236 was used for these future gains from trade to replace the 10 years of equal payments used in the non-discounted calculations.

Appendix 16: Results of Optimizations Excluding Future Gains from Trade

QUARTER	1	1	2	2	3
COEFFICIENTS OF DEMAND					
a P1/q1	-0.004969104	-0.005318171			-0.008146015
b p2/q1	0	-1E-08			-0.000119583
c p3/q1	-0.004110417	-0.004110416			-1E-08
d p4/q1	-0.003347211	-0.002412409			-0.002839266
f P1/q2	2.2992E-18	-1E-08			-0.000119583
g p2/q2	-0.007919378	-0.008171644			-0.006467683
h p3/q2	-0.001645645	-0.001645634			-1E-08
i p4/q2	-0.001179455	-1E-08			-0.00424667
k P1/q3	-0.004110417	-0.004110416			-1E-08
l p2/q3	-0.001645645	-0.001645634			-1E-08
m p3/q3	-0.048778213	-0.048778265			-0.049342772
n p4/q3	1.64209E-17	-1E-08			-0.003250335
p P1/q4	-0.003347211	-0.002412409			-0.002839266
q p2/q4	-0.001179455	-9.99991E-09			-0.004246999
r p3/q4	-7.42605E-17	-1E-08			-0.003250335
s p4/q4	-0.013936053	-0.017897239			-0.00464153
u P1/q5	-0.002922517	-0.004408934			-0.001685035
v p2/q5	-1E-08	-0.000869737			-0.006467683
w p3/q5	-1.51352E-16	-9.99991E-09			-0.00788025
x p4/q5	-0.006861958	-0.007392001			-1E-08
y p5/q5	-0.029198252	-0.020395117			-0.00788025
e p5/q1	-0.002922517	-0.004408934			-0.001685035
j p5/q2	-0.00000001	-0.000869737			-0.006467683
o p5/q3	0	-0.00000001			-0.00788025
t p5/q4	-0.006861958	-0.007392001			-0.00000001
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.004969104	-0.005318171			-0.008146015
bb	-0.00000001	-1E-08			-0.000119583
cc	-0.004110417	-0.004110416			-1E-08
dd	-0.003347211	-0.002412409			-0.002839266
ee	-0.002922517	-0.004408934			-0.001685035
ff	-0.00000001	-1E-08			-0.000119583
gg	-0.007919378	-0.008171644			-0.006467683
hh	-0.001645645	-0.001645634			-1E-08
ii	-0.001179455	-1E-08			-0.00424667
jj	-0.00000001	-0.000869737			-0.006467683
kk	-0.004110417	-0.004110416			-1E-08
ll	-0.001645645	-0.001645634			-1E-08
mm	-0.048778213	-0.048778265			-0.049342772
nn	-0.00000001	-1E-08			-0.003250335
oo	-0.00000001	-0.00000001			-0.00788025
pp	-0.003347211	-0.002412409			-0.002839266
qq	-0.001179455	-9.99991E-09			-0.004246999
rr	-7.42605E-17	-1E-08			-0.003250335
ss	-0.013936053	-0.017897239			-0.00464153
tt	-0.006861958	-0.007392001			-0.00000001
uu	-0.002922517	-0.004408934			-0.001685035
vv	-1E-08	-0.000869737			-0.006467683
ww	-1.51352E-16	-9.99991E-09			-0.00788025
xx	-0.006861958	-0.007392001			-1E-08
yy	-0.029198252	-0.020395117			-0.00788025
KNOWN PRICE BEFORE TAXES					
P1	11,847	11,847			11,534
P2	15,416	15,416			15,769
P3	19,087	19,087			17,858
P4	14,734	14,734			14,304
P5	26,519	26,519			22,584

QUARTER	1	1	2	2	3
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	341,622	341,622			359,326
Csub1	97,391	97,391			128,651
Fsub1	203,833	203,833			211,244
Gsub1	144,852	144,852			180,406
Asub2	262,998	262,998			365,529
Csub2	267,224	267,224			243,589
Fsub2	387,792	387,792			424,418
Gsub2	664,688	664,688			751,663
Asub3	37,038	37,038			44,666
Csub3	57,610	57,610			70,706
Fsub3	44,652	44,652			48,051
Gsub3	82,393	82,393			101,032
asub4	119,719	119,719			135,222
Csub4	61,215	61,215			52,631
fsub4	201,750	201,750			212,169
gsub4	218,322	218,322			264,151
asub5	84,980	84,980			101,272
Csub5	4,458	4,458			5,577
fsub5	78,969	78,969			82,402
gsub5	103,231	103,231			115,555
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	787,698	787,698			879,627
tseg2	1,582,702	1,582,702			1,785,199
tseg3	221,693	221,693			264,455
tseg4	601,006	601,006			664,173
tseg5	271,638	271,638			304,806
tsum	3,464,737	3,464,737			3,898,260
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	(3.03)	(2.83)			(1.61)
Elasiticity21	0.00	0.00			0.04
Elasiticity31	0.41	0.38			0.00
Elasiticity41	0.90	0.47			1.22
Elasiticity51	0.68	1.37			0.67
Elasiticity12	0.00	0.00			0.01
Elasiticity22	(1.23)	(1.19)			(1.37)
Elasiticity32	0.00	0.00			0.00
Elasiticity42	0.10	0.00			1.13
Elasiticity52	0.00	0.09			1.61
Elasiticity13	0.91	0.85			0.00
Elasiticity23	0.30	0.29			0.00
Elasiticity33	(1.77)	(1.77)			(1.37)
Elasiticity43	0.00	0.00			0.77
Elasiticity53	0.00	0.00			1.73
Elasiticity14	0.95	0.50			1.30
Elasiticity24	0.27	0.00			3.36
Elasiticity34	0.00	0.00			0.38
Elasiticity44	(1.76)	(1.37)			(4.64)
Elasiticity54	0.74	0.89			0.00
Elasiticity15	0.88	1.77			0.99
Elasiticity25	0.00	0.30			6.57
Elasiticity35	0.00	0.00			1.19
Elasiticity45	0.91	1.10			0.00
Elasiticity55	(3.34)	(4.79)			(9.40)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					
MCasub1	9,341	9,207			8,000
MCcsub1	10,897	10,913			10,289
MCfsub1	9,734	9,734			9,009

QUARTER	1	1	2	2	3
MCgsub1	9,734	9,734			9,009
MCasub2	13,121	13,121			12,128
MCcsub2	13,121	13,121			13,910
MCfsub2	12,018	12,089			11,562
MCgsub2	9,734	9,734			9,009
MCasub3	15,446	15,446			14,415
MCcsub3	15,446	15,446			14,147
MCfsub3	15,446	15,446			14,147
MCgsub3	13,404	13,404			11,098
MCasub4	11,039	11,149			10,940
MCcsub4	13,226	13,387			12,411
MCfsub4	10,249	10,057			10,740
MCgsub4	9,734	9,734			9,009
MCasub5	22,191	22,139			18,482
MCcsub5	25,661	25,291			20,197
MCfsub5	22,191	22,139			18,482
MCgsub5	21,519	21,519			15,747
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.002922517	-0.004408934			-0.001685035
j	-0.00000001	-0.000869737			-0.006467683
o	0	-0.00000001			-0.00788025
t	-0.006861958	-0.007392001			-0.00000001
y	-0.029198252	-0.020395117			-0.00788025
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	2,505	2,639			3,534
XMCcsub1	950	933			1,245
XMCfsub1	2,113	2,113			2,525
XMCgsub1	2,113	2,113			2,525
XMCasub2	2,296	2,295			3,641
XMCcsub2	2,296	2,295			1,859
XMCfsub2	3,399	3,327			4,207
XMCgsub2	5,683	5,683			6,760
XMCasub3	3,641	3,641			3,443
XMCcsub3	3,641	3,641			3,711
XMCfsub3	3,641	3,641			3,711
XMCgsub3	5,683	5,683			6,760
XMCasub4	3,695	3,585			3,364
XMCcsub4	1,508	1,346			1,893
XMCfsub4	4,484	4,677			3,564
XMCgsub4	5,000	5,000			5,295
XMCasub5	4,328	4,380			4,102
XMCcsub5	858	1,228			2,387
XMCfsub5	4,328	4,380			4,102
XMCgsub5	5,000	5,000			6,837
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	19,478	19,595			21,312
constant2	29,024	28,951			32,212
constant3	35,743	35,743			35,468
constant4	29,476	29,398			28,325
constant5	40,877	41,351			40,098
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	4,690,679,677	4,780,796,445			6,719,526,300
TSseg2	17,081,071,337	16,994,874,923			23,328,034,876
TSseg3	2,821,665,798	2,821,666,068			3,605,992,592
TSseg4	6,961,216,364	6,953,517,149			7,365,562,498
TSseg5	3,179,631,992	3,254,238,492			4,225,933,772
Tssum	34,734,265,169	34,805,093,078			45,245,050,038
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	3,005,447,902	3,051,496,811			4,300,632,505

QUARTER	1	1	2	2	3
CSseg2	10,768,471,015	10,710,437,473			14,677,390,328
CSseg3	1,846,272,782	1,846,272,972			2,328,486,810
CSseg4	4,430,296,828	4,406,745,564			4,656,183,128
CSseg5	1,950,022,548	2,014,490,800			2,669,221,003
Cssum	22,000,511,075	22,029,443,619			28,631,913,774
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	1,685,231,775	1,729,299,635			2,418,893,796
PSseg2	6,312,600,322	6,284,437,450			8,650,644,547
PSseg3	975,393,017	975,393,096			1,277,505,782
PSseg4	2,530,919,536	2,546,771,586			2,709,379,370
PSseg5	1,229,609,444	1,239,747,692			1,556,712,769
Pssum	12,733,754,094	12,775,649,458			16,613,136,264
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	6,153,890,625	6,153,890,625			6,872,085,938
CStravseg2	12,364,859,375	12,364,859,375			13,946,867,188
CStravseg3	1,731,976,563	1,731,976,563			2,066,054,688
CStravseg4	4,695,359,375	4,695,359,375			5,188,851,563
CStravseg5	2,122,171,875	2,122,171,875			2,381,296,875
Cstravsum	27,068,257,813	27,068,257,813			30,455,156,250
FIRST ORDER CONDITIONS UNDER LSET					
foc1l	-5.22854E-06	-6.23426E-05			-9.2269E-06
foc2l	-2.91252E-11	6.44616E-09			-1.43957E-05
foc3l	1.04592E-10	8.75782E-09			6.26423E-05
foc4l	-7.71977E-06	1.05283E-05			-1.87884E-05
foc5l	-5.22627E-06	-5.90408E-05			-9.41369E-06
foc6l	-2.66409E-11	2.25918E-09			-1.46024E-05
foc7l	1.22782E-10	1.8933E-08			6.42699E-05
foc8l	-7.72081E-06	1.2432E-05			-1.8924E-05
foc9l	-5.22823E-06	-6.36096E-05			-9.03054E-06
foc10l	-2.83643E-11	-1.43918E-09			-1.4188E-05
foc11l	9.3678E-11	-1.50156E-08			6.08378E-05
foc12l	-7.7225E-06	4.71456E-06			-1.86533E-05
foc13l	-5.22551E-06	-6.33331E-05			-8.34647E-06
foc14l	-2.15301E-11	-6.09688E-09			-1.3628E-05
foc15l	1.53705E-10	4.01987E-08			5.4779E-05
foc16l	-7.72936E-06	-5.69451E-06			-1.83777E-05
foc17l	8.22884E-06	0.00025644			8.14853E-05
foc18l	8.22784E-06	0.000247757			8.23575E-05
foc19l	8.23414E-06	0.000270509			8.08297E-05
foc20l	8.24483E-06	0.000292083			7.74768E-05
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	12,386	12,406			12,070
p1c1l	12,386	12,406			12,070
p1f1l	12,386	12,406			12,070
p1g1l	12,386	12,406			12,070
p2a2l	16,180	16,209			16,536
p2c2l	16,180	16,209			16,536
p2f2l	16,180	16,209			16,536
p2g2l	16,180	16,209			16,536
p3a3l	19,986	20,019			18,739
p3c3l	19,986	20,019			18,739
p3f3l	19,986	20,019			18,739
p3g3l	19,986	20,019			18,739
p4a4l	15,634	15,667			15,168
p4c4l	15,634	15,667			15,168
p4f4l	15,634	15,667			15,168
p4g4l	15,634	15,667			15,168
p5a5l	30,595	27,395			23,410
p5c5l	30,595	27,395			23,410
p5f5l	30,595	27,395			23,410

QUARTER	1	1	2	2	3
p5g5l	30,595	27,395			23,410
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET					
lemp_a1	2.45	2.36			2.46
lemp_c1	2.45	2.36			2.46
lemp_f1	2.45	2.36			2.46
lemp_g1	2.45	2.36			2.46
lemp_a2	3.46	3.34			3.48
lemp_c2	3.46	3.34			3.48
lemp_f2	3.46	3.34			3.48
lemp_g2	3.46	3.34			3.48
lemp_a3	3.96	3.82			3.98
lemp_c3	3.96	3.82			3.98
lemp_f3	3.96	3.82			3.98
lemp_g3	3.96	3.82			3.98
lemp_a4	3.96	3.82			3.98
lemp_c4	3.96	3.82			3.98
lemp_f4	3.96	3.82			3.98
lemp_g4	3.96	3.82			3.98
lemp_a5	3.96	3.82			3.98
lemp_c5	3.96	3.82			3.98
lemp_f5	3.96	3.82			3.98
lemp_g5	3.96	3.82			3.98
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET					
Asub1nl	280,668	323,183			338,821
Csub1nl	38,294	80,559			108,525
Fsub1nl	143,999	185,909			190,736
Gsub1nl	88,874	129,259			160,149
Asub2nl	246,920	238,966			323,635
Csub2nl	251,557	243,493			202,789
Fsub2nl	372,523	364,383			381,425
Gsub2nl	651,112	642,454			708,745
Asub3nl	38,312	34,829			38,474
Csub3nl	58,580	55,121			64,656
Fsub3nl	45,591	42,165			41,770
Gsub3nl	82,701	79,421			94,853
asub4nl	59,412	111,057			142,735
Csub4nl	-	52,126			58,871
fsub4nl	140,930	192,786			221,250
gsub4nl	155,226	208,036			276,289
asub5nl	207,710	80,928			108,740
Csub5nl	127,072	-			13,350
fsub5nl	202,232	75,634			89,679
gsub5nl	227,392	100,888			121,575
TOTAL SALES IN EACH SEGMENT AFTER LSET					
tseg1nl	551,836	718,910			798,232
tseg2nl	1,522,111	1,489,297			1,616,594
tseg3nl	225,183	211,536			239,753
tseg4nl	355,569	564,006			699,144
tseg5nl	764,407	257,450			333,344
tsumnl	3,419,106	3,241,199			3,687,067
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1l	235,862	68,788			81,395
lostsales2l	60,591	93,405			168,605
lostsales3l	(3,490)	10,157			24,702
lostsales4l	245,437	37,000			(34,971)
lostsales5l	(492,769)	14,188			(28,538)
lostsuml	45,631	223,538			211,193
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET					
CSlsetseg1	1,956,776,536	2,583,941,462			3,688,823,052
CSlsetseg2	9,775,095,373	9,488,336,592			12,670,921,562

QUARTER	1	1	2	2	3
CSlsetseg3	1,774,127,928	1,663,123,783			2,005,454,187
CSlsetseg4	2,461,054,622	3,872,337,371			4,599,124,626
CSlsetseg5	3,929,880,053	1,796,474,730			2,781,321,765
Cslsetsum	19,896,934,512	19,404,213,938			25,745,645,191
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET					
PSlsetseg1	1,150,315,407	1,484,439,170			2,101,456,314
PSlsetseg2	5,795,188,730	5,651,146,093			7,631,675,119
PSlsetseg3	940,983,770	885,751,002			1,114,945,356
PSlsetseg4	1,552,581,104	2,286,542,865			2,675,447,294
PSlsetseg5	5,286,326,205	1,119,164,634			1,584,393,531
Pslsetsum	14,725,395,217	11,427,043,764			15,107,917,612
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSlsetseg1	3,107,091,942	4,068,380,632			5,790,279,366
TSlsetseg2	15,570,284,103	15,139,482,685			20,302,596,681
TSlsetseg3	2,715,111,698	2,548,874,785			3,120,399,542
TSlsetseg4	4,013,635,727	6,158,880,236			7,274,571,920
TSlsetseg5	9,216,206,258	2,915,639,364			4,365,715,295
Tslsetsum	34,622,329,729	30,831,257,702			40,853,562,804
dwllset	111,935,440	3,973,835,375			4,391,487,234
surpluslset	61,690,587,541	57,899,515,515			71,308,719,054
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM					
LSET	140.26	150.85			138.59
ABATEMENT CONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840			840
Abate2	1680	1680			1680
Abate3	2200	2200			2200
Abate4	2200	2200			2200
Abate5	1680	1680			1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER					
max emis1	7.5	7.5			7.5
max emis2	7.5	7.5			7.5
max emis3	7.5	7.5			7.5
max emis4	7.5	7.5			7.5
max emis5	7.5	7.5			7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES					
cur_emis1	4.2	4.2			4.2
cur_emis2	4.2	4.2			4.2
cur_emis3	5.5	5.5			5.5
cur_emis4	5.5	5.5			5.5
cur_emis5	4.2	4.2			4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET					
taxrevlsetseg1	189,414,541	255,907,230			272,353,105
taxrevlsetseg2	738,864,716	749,728,611			780,044,006
taxrevlsetseg3	125,086,895	121,860,944			132,384,791
taxrevlsetseg4	197,514,395	324,910,287			386,048,193
taxrevlsetseg5	424,619,410	148,310,439			184,063,431
taxrevlsetsum	1,675,499,956	1,600,717,510			1,754,893,527
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET					
taxa1	343.24	355.97			341.20
taxc1	343.24	355.97			341.20
taxf1	343.24	355.97			341.20
taxg1	343.24	355.97			341.20
taxa2	485.42	503.41			482.52
taxc2	485.42	503.41			482.52

QUARTER	1	1	2	2	3
taxf2	485.42	503.41			482.52
taxg2	485.42	503.41			482.52
taxa3	555.49	576.08			552.17
taxc3	555.49	576.08			552.17
taxf3	555.49	576.08			552.17
taxg3	555.49	576.08			552.17
taxa4	555.49	576.08			552.17
taxc4	555.49	576.08			552.17
taxf4	555.49	576.08			552.17
taxg4	555.49	576.08			552.17
taxa5	555.49	576.08			552.17
taxc5	555.49	576.08			552.17
taxf5	555.49	576.08			552.17
taxg5	555.49	576.08			552.17
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	2,266,706,423	13,151,444,430			13,425,336,776
pollution reduction 2	11,100,266,605	11,720,155,131			7,257,667,768
pollution reduction 3	4,243,875,748	4,023,497,025			3,767,967,531
pollution reduction 4	678,381,090	10,489,528,451			13,555,940,683
pollution reduction 5	21,710,770,135	615,374,963			1,993,087,249
Total reduction	40	40			40.00000001
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM					
PMET	0.00730	0.00770			0.01685
FIRST ORDER CONDITIONS UNDER LSET					
foc1p	1.74461E-07	-7.67121E-05			2.51165E-05
foc2p	-2.30349E-11	2.67594E-08			2.74314E-05
foc3p	1.22213E-10	-8.27072E-08			-0.000194859
foc4p	1.70436E-07	-0.000121588			5.14572E-05
foc5p	1.45703E-07	-0.000102793			2.57038E-05
foc6p	-1.10845E-11	2.47148E-08			2.87995E-05
foc7p	1.42222E-10	-1.02759E-07			-0.000203092
foc8p	1.0698E-07	-0.000181574			5.25625E-05
foc9p	1.74793E-07	-7.79882E-05			2.52983E-05
foc10p	-2.2274E-11	2.27006E-08			2.76264E-05
foc11p	1.56774E-10	-9.54775E-08			-0.000196523
foc12p	1.67715E-07	-0.000127394			5.15867E-05
foc13p	1.77498E-07	-7.77082E-05			2.59692E-05
foc14p	-1.90778E-11	1.7845E-08			2.81835E-05
foc15p	1.13118E-10	-7.92969E-08			-0.000202464
foc16p	1.60849E-07	-0.000137798			5.18655E-05
foc17p	-6.05495E-07	0.00036229			-0.000205289
foc18p	-4.30977E-07	0.000525715			-0.000196794
foc19p	-6.00192E-07	0.000376368			-0.000205931
foc20p	-5.895E-07	0.00039794			-0.000209197
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET					
p1a1	11,978.35	12,010.94			11,884.36
p1c1	11,978.35	12,010.94			11,884.36
p1f1	11,978.35	12,010.94			11,884.36
p1g1	11,978.35	12,010.94			11,884.36
p2a2	15,686.68	15,699.34			16,153.29
p2c2	15,686.68	15,699.34			16,153.29
p2f2	15,686.68	15,699.34			16,153.29
p2g2	15,686.68	15,699.34			16,153.29
p3a3	19,437.55	19,454.93			18,912.13
p3c3	19,437.55	19,454.93			18,912.13
p3f3	19,437.55	19,454.93			18,912.13
p3g3	19,437.55	19,454.93			18,912.13
p4a4	15,245.16	15,107.47			14,602.68
p4c4	15,245.16	15,107.47			14,602.68

QUARTER	1	1	2	2	3
p4f4	15,245.16	15,107.47			14,602.68
p4g4	15,245.16	15,107.47			14,602.68
p5a5	26,699.40	26,849.52			21,332.51
p5c5	26699.39549	26849.51761			21332.50998
p5f5	26699.39549	26849.51761			21332.50998
p5g5	26699.39549	26849.51761			21332.50998
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST					
dp/dgas1	9,104	13,067			25,526
dp/dgas2	18,179	18,821			14,847
dp/dgas3	20,064	21,022			83,718
dp/dgas4	43,280	21,559			7,566
dp/dgas5	99,451	17,794			122,576
sum of dpdgas	190,079	92,265			254,233
MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,761	11,795			11,783
VMT2	11,761	11,758			11,598
VMT3	11,739	11,738			11,806
VMT4	11,822	11,742			11,355
VMT5	11,822	11,742			11,355
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT					
tpma1	0.02596	0.02225			0.02355
tpmc1	0.02596	0.02225			0.02355
tpmf1	0.02596	0.02225			0.02355
tpmg1	0.02596	0.02225			0.02355
tpma2	0.02598	0.02622			0.04366
tpmc2	0.02598	0.02622			0.04366
tpmf2	0.02598	0.02622			0.04366
tpmg2	0.02598	0.02622			0.04366
tpma3	0.02830	0.02839			0.02104
tpmc3	0.02830	0.02839			0.02104
tpmf3	0.02830	0.02839			0.02104
tpmg3	0.02830	0.02839			0.02104
tpma4	0.01927	0.02803			0.07000
tpmc4	0.01927	0.02803			0.07000
tpmf4	0.01927	0.02803			0.07000
tpmg4	0.01927	0.02803			0.07000
tpma5	0.01927	0.02803			0.07000
tpmc5	0.01927	0.02803			0.07000
tpmf5	0.01927	0.02803			0.07000
tpmg5	0.01927	0.02803			0.07000
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET					
cstravelpmetseg1	5,905,062,673	5,957,799,374			6,763,283,358
cstravelpmetseg2	11,901,120,403	11,900,372,047			13,504,901,429
cstravelpmetseg3	1,663,464,384	1,661,574,729			2,034,751,158
cstravelpmetseg4	4,572,485,692	4,509,979,432			3,773,021,242
cstravelpmetseg5	2,073,204,251	2,035,340,319			2,070,387,149
cstravelpmetsum	26,115,337,403	26,065,065,901			28,146,344,335
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET					
epm_a1	3.55	2.89			1.40
epm_c1	3.55	2.89			1.40
epm_f1	3.55	2.89			1.40
epm_g1	3.55	2.89			1.40
epm_a2	3.56	3.40			2.59
epm_c2	3.56	3.40			2.59
epm_f2	3.56	3.40			2.59

QUARTER	1	1	2	2	3
epm_g2	3.56	3.40			2.59
epm_a3	3.87	3.69			1.25
epm_c3	3.87	3.69			1.25
epm_f3	3.87	3.69			1.25
epm_g3	3.87	3.69			1.25
epm_a4	2.64	3.64			4.15
epm_c4	2.64	3.64			4.15
epm_f4	2.64	3.64			4.15
epm_g4	2.64	3.64			4.15
epm_a5	2.64	3.64			4.15
epm_c5	2.64	3.64			4.15
epm_f5	2.64	3.64			4.15
epm_g5	2.64	3.64			4.15
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET					
Asub1n	345,576	330,042			238,436
Csub1n	98,534	81,857			-
Fsub1n	208,906	192,768			90,351
Gsub1n	153,782	136,118			59,764
Asub2n	241,787	239,717			138,321
Csub2n	247,237	243,341			-
Fsub2n	367,391	365,134			196,111
Gsub2n	645,979	643,205			523,432
Asub3n	32,914	34,056			10,266
Csub3n	53,548	54,847			34,504
Fsub3n	40,193	41,392			13,562
Gsub3n	77,303	78,648			66,645
asub4n	105,852	109,918			395,401
Csub4n	40,473	48,625			333,868
fsub4n	187,370	191,647			473,916
gsub4n	201,666	206,897			528,956
asub5n	66,383	79,917			119,756
Csub5n	-	6,523			27,330
fsub5n	60,904	74,622			100,694
gsub5n	86,065	99,876			132,590
TOTAL SALES IN EACH SEGMENT AFTER PMET					
tseg1n	806,798	740,785			388,550
tseg2n	1,502,394	1,491,397			857,864
tseg3n	203,959	208,943			124,977
tseg4n	535,361	557,088			1,732,142
tseg5n	213,352	260,939			380,370
tsumn	3,261,865	3,259,151			3,483,902
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET					
CSPMETseg1	2,929,853,017	2,701,220,692			1,714,799,638
CSPMETseg2	9,664,231,029	9,513,597,986			6,610,187,454
CSPMETseg3	1,604,895,946	1,639,271,454			924,463,311
CSPMETseg4	3,586,212,691	3,812,232,120			11,425,683,967
CSPMETseg5	1,307,958,040	1,826,971,273			1,937,109,540
CsPMETsum	19,093,150,722	19,493,293,525			22,612,243,910
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET					
PSpmetseg1	1,641,383,616	1,548,730,317			1,124,315,622
PSpmetseg2	5,738,844,410	5,664,774,024			4,640,769,944
PSpmetseg3	856,180,982	873,570,089			575,802,093
PSpmetseg4	2,128,072,152	2,261,937,170			6,052,186,373
PSpmetseg5	841,780,749	1,112,778,958			1,198,619,686
Pspmetsum	11,206,261,910	11,461,790,557			13,591,693,717
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSPMETseg1	4,571,236,633	4,249,951,009			2,839,115,259
TSPMETseg2	15,403,075,439	15,178,372,010			11,250,957,398
TSPMETseg3	2,461,076,928	2,512,841,543			1,500,265,404
TSPMETseg4	5,714,284,843	6,074,169,290			17,477,870,339

QUARTER	1	1	2	2	3
TSPMETseg5	2,149,738,789	2,939,750,231			3,135,729,226
TSPMETsum	30,299,412,631	30,955,084,082			36,203,937,627
dwlpmet	4,480,281,984	3,896,085,011			8,853,952,014
pmetsurplus	57,322,240,997	57,977,265,880			66,846,254,274
pmetsurplus10	65,489,659,663	66,591,308,950			89,310,005,080
TAX REVENUE IN EACH SEGMENT UNDER PMET					
taxrevpmetseg1	246,322,504	194,401,483			107,809,757
taxrevpmetseg2	413,628,774	409,981,562			434,428,799
taxrevpmetseg3	67,759,458	69,625,924			31,048,521
taxrevpmetseg4	121,957,733	183,362,728			1,376,723,261
taxrevpmetseg5	57,822,494	99,744,200			545,961,973
taxrevpmetsum	907,490,963	957,115,897			2,495,972,312
pmetrev10	9,074,909,629	9,571,158,967			24,959,723,118
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1	(19,100)	46,913			491,077
lostsales2	80,308	91,305			927,335
lostsales3	17,734	12,750			139,478
lostsales4	65,645	43,918			(1,067,969)
lostsales5	58,286	10,699			(75,564)
lostsum	202,872	205,586			414,358
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET					
taxa1p	236.35	290.74			601.08
taxc1p	236.35	290.74			601.08
taxf1p	236.35	290.74			601.08
taxg1p	236.35	290.74			601.08
taxa2p	472.31	493.45			648.31
taxc2p	472.31	493.45			648.31
taxf2p	472.31	493.45			648.31
taxg2p	472.31	493.45			648.31
taxa3p	567.82	596.79			1,761.67
taxc3p	567.82	596.79			1,761.67
taxf3p	567.82	596.79			1,761.67
taxg3p	567.82	596.79			1,761.67
taxa4p	833.96	604.36			529.61
taxc4p	833.96	604.36			529.61
taxf4p	833.96	604.36			529.61
taxg4p	833.96	604.36			529.61
taxa5p	833.96	604.36			529.61
taxc5p	833.96	604.36			529.61
taxf5p	833.96	604.36			529.61
taxg5p	833.96	604.36			529.61
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET					
pollution reduction 1p	7,696,230,252.82	10,233,224,798.78			(6,261,821,090.36)
pollution reduction 2p	9,692,094,749.01	11,846,807,649.78			(19,267,694,904.03)
pollution reduction 3p	3,759,067,429.75	4,442,744,742.40			3,058,384,449.21
pollution reduction 4p	17,061,723,491.31	11,902,667,292.14			58,249,703,391.87
pollution reduction 5p	1,790,884,077.11	1,574,555,517.70			4,221,428,177.37
Total reductionp	40	40			40.00000002
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET					
Tsdiff	(4,368)	(78)			(4,462)

QUARTER	3	4	4	5	5
COEFFICIENTS OF DEMAND					
a P1/q1	-0.006731004	-0.00822518	-0.006047638	-0.006248882	-0.006286982
b p2/q1	-6.47704E-07	-9.96463E-09	1.74163E-17	-0.002562728	-0.001424261
c p3/q1	1.76279E-17	-1.01683E-08	-1E-08	9.25129E-17	-9.99199E-09
d p4/q1	-0.003635085	-0.002823772	-0.006047638	-1E-08	-0.003249262
f P1/q2	-6.47704E-07	-1E-08	-6.70702E-18	-0.002562728	-0.001424261
g p2/q2	-0.006082227	-0.013626627	-0.013626611	-0.010637707	-0.006935527
h p3/q2	-0.000958565	-1E-08	-1E-08	-0.003152756	-1E-08
i p4/q2	-0.004108008	-1E-08	-1E-08	-0.001193314	-1E-08
k P1/q3	-4.68667E-19	-1E-08	-1E-08	3.85359E-18	-1E-08
l p2/q3	-0.000958565	-1E-08	-1E-08	-0.003152756	-1E-08
m p3/q3	-0.044336516	-0.08257599	-0.083025752	-0.073852646	-0.066210222
n p4/q3	-1E-08	-0.000348284	-1E-08	-5.28327E-17	-1E-08
p P1/q4	-0.003635085	-0.002823772	-0.006047638	-1E-08	-0.003249262
q p2/q4	-0.004108008	-1E-08	-1E-08	-0.001193314	-1.01221E-08
r p3/q4	-1E-08	-0.000348284	-1E-08	-1.62552E-16	-1E-08
s p4/q4	-0.004108008	-0.024909795	-0.021496481	-0.020881701	-0.021744782
u P1/q5	-0.000287556	-0.002830966	-1E-08	-0.006248882	-0.006286982
v p2/q5	-0.006082227	-0.000934412	-0.000934516	-1E-08	-0.006935527
w p3/q5	-0.010900588	-0.006764861	-0.0070412	-1E-08	-0.002984646
x p4/q5	-0.001167425	-1E-08	-0.001842798	-0.005952209	-0.005823892
y p5/q5	-0.063009926	-0.210170245	-0.210842239	-0.148863764	-0.090798885
e p5/q1	-0.000287556	-0.002830966	-0.00000001	-0.006248882	-0.006286982
j p5/q2	-0.006082227	-0.000934412	-0.000934516	-0.00000001	-0.006935527
o p5/q3	-0.010900588	-0.006764861	-0.0070412	-0.00000001	-0.002984646
t p5/q4	-0.001167425	-0.00000001	-0.001842798	-0.005952209	-0.005823892
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.006731004	-0.00822518	-0.006047638	-0.006248882	-0.006286982
bb	-6.47704E-07	-9.96463E-09	-0.00000001	-0.002562728	-0.001424261
cc	-0.00000001	-1.01683E-08	-1E-08	-0.00000001	-9.99199E-09
dd	-0.003635085	-0.002823772	-0.006047638	-1E-08	-0.003249262
ee	-0.000287556	-0.002830966	-0.00000001	-0.006248882	-0.006286982
ff	-6.47704E-07	-1E-08	-6.70702E-18	-0.002562728	-0.001424261
gg	-0.006082227	-0.013626627	-0.013626611	-0.010637707	-0.006935527
hh	-0.000958565	-1E-08	-1E-08	-0.003152756	-1E-08
ii	-0.004108008	-1E-08	-1E-08	-0.001193314	-1E-08
jj	-0.006082227	-0.000934412	-0.000934516	-0.00000001	-0.006935527
kk	-4.68667E-19	-1E-08	-1E-08	-0.00000001	-1E-08
ll	-0.000958565	-1E-08	-1E-08	-0.003152756	-1E-08
mm	-0.044336516	-0.08257599	-0.083025752	-0.073852646	-0.066210222
nn	-1E-08	-0.000348284	-1E-08	-5.28327E-17	-1E-08
oo	-0.010900588	-0.006764861	-0.0070412	-0.00000001	-0.002984646
pp	-0.003635085	-0.002823772	-0.006047638	-1E-08	-0.003249262
qq	-0.004108008	-1E-08	-1E-08	-0.001193314	-1.01221E-08
rr	-1E-08	-0.000348284	-1E-08	-1.62552E-16	-1E-08
ss	-0.004108008	-0.024909795	-0.021496481	-0.020881701	-0.021744782
tt	-0.001167425	-0.00000001	-0.001842798	-0.005952209	-0.005823892
uu	-0.000287556	-0.002830966	-1E-08	-0.006248882	-0.006286982
vv	-0.006082227	-0.000934412	-0.000934516	-1E-08	-0.006935527
ww	-0.010900588	-0.006764861	-0.0070412	-1E-08	-0.002984646
xx	-0.001167425	-1E-08	-0.001842798	-0.005952209	-0.005823892
yy	-0.063009926	-0.210170245	-0.210842239	-0.148863764	-0.090798885
KNOWN PRICE BEFORE TAXES					
P1	11,534	11,163	11,163	11,487	11,487
P2	15,769	16,243	16,243	15,746	15,746
P3	17,858	16,850	16,850	17,927	17,927
P4	14,304	14,174	14,174	14,044	14,044
P5	22,584	30,185	30,185	28,041	28,041

QUARTER	3	4	4	5	5
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	359,326	315,377	315,377	336,769	336,769
Csub1	128,651	85,255	85,255	85,031	85,031
Fsub1	211,244	153,583	153,583	169,238	169,238
Gsub1	180,406	148,809	148,809	180,062	180,062
Asub2	365,529	305,455	305,455	323,708	323,708
Csub2	243,589	231,420	231,420	245,399	245,399
Fsub2	424,418	306,549	306,549	355,644	355,644
Gsub2	751,663	512,975	512,975	636,437	636,437
Asub3	44,666	47,875	47,875	48,106	48,106
Csub3	70,706	54,576	54,576	51,453	51,453
Fsub3	48,051	42,193	42,193	39,112	39,112
Gsub3	101,032	83,997	83,997	77,682	77,682
asub4	135,222	111,484	111,484	108,388	108,388
Csub4	52,631	57,752	57,752	55,791	55,791
fsub4	212,169	182,598	182,598	210,264	210,264
gsub4	264,151	182,337	182,337	219,400	219,400
asub5	101,272	92,695	92,695	88,574	88,574
Csub5	5,577	14,082	14,082	14,366	14,366
fsub5	82,402	77,381	77,381	91,591	91,591
gsub5	115,555	93,193	93,193	118,393	118,393
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	879,627	703,024	703,024	771,100	771,100
tseg2	1,785,199	1,356,399	1,356,399	1,561,188	1,561,188
tseg3	264,455	228,641	228,641	216,353	216,353
tseg4	664,173	534,171	534,171	593,843	593,843
tseg5	304,806	277,351	277,351	312,924	312,924
tsum	3,898,260	3,099,586	3,099,586	3,455,408	3,455,408
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	(1.95)	(1.93)	(2.63)	(2.38)	(2.37)
Elasiticity21	0.00	0.00	0.00	0.79	0.67
Elasiticity31	0.00	0.00	0.00	0.00	0.00
Elasiticity41	2.14	0.28	0.94	0.00	0.43
Elasiticity51	0.02	0.07	0.00	0.24	0.40
Elasiticity12	0.00	0.00	0.00	0.28	0.24
Elasiticity22	(1.45)	(0.88)	(0.88)	(0.95)	(1.45)
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	1.32	0.00	0.00	0.05	0.00
Elasiticity52	0.20	0.01	0.01	0.00	0.20
Elasiticity13	0.00	0.00	0.00	0.00	0.00
Elasiticity23	0.21	0.00	0.00	0.29	0.00
Elasiticity33	(1.52)	(0.89)	(0.89)	(1.12)	(1.25)
Elasiticity43	0.00	0.01	0.00	0.00	0.00
Elasiticity53	0.33	0.05	0.05	0.00	0.06
Elasiticity14	2.28	0.29	0.97	0.00	0.46
Elasiticity24	3.90	0.00	0.00	0.14	0.00
Elasiticity34	0.00	0.01	0.00	0.00	0.00
Elasiticity44	(5.24)	(1.07)	(1.23)	(1.13)	(1.09)
Elasiticity54	0.15	0.00	0.02	0.09	0.14
Elasiticity15	0.03	0.07	0.00	0.25	0.40
Elasiticity25	0.82	0.02	0.02	0.00	0.55
Elasiticity35	0.23	0.02	0.02	0.00	0.03
Elasiticity45	0.21	0.00	0.02	0.09	0.13
Elasiticity55	(1.18)	(0.52)	(0.52)	(0.60)	(0.99)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					
MCasub1	8,585	8,000	8,590	8,000	8,000
MCcsub1	10,466	10,266	10,306	10,238	10,332
MCfsub1	9,304	9,174	9,139	8,955	8,666

QUARTER	3	4	4	5	5
MCgsub1	9,304	9,174	9,174	8,000	8,000
MCasub2	12,327	11,998	11,998	11,149	12,397
MCcsub2	13,961	13,078	13,078	12,682	13,815
MCfsub2	11,766	11,998	11,998	11,149	12,397
MCgsub2	9,304	9,174	9,174	8,000	10,246
MCasub3	14,422	12,203	12,195	13,352	14,475
MCcsub3	14,422	12,203	12,195	13,352	14,475
MCfsub3	14,422	12,749	12,773	13,916	15,062
MCgsub3	11,393	9,174	9,174	10,181	12,427
MCasub4	10,804	10,486	9,695	10,871	10,080
MCcsub4	12,594	12,471	12,386	12,501	12,471
MCfsub4	10,804	9,174	9,174	8,687	8,391
MCgsub4	9,304	9,174	9,174	8,000	8,000
MCasub5	13,248	9,229	9,842	12,112	14,865
MCcsub5	19,891	26,412	26,523	25,038	24,019
MCfsub5	14,003	12,942	12,977	12,112	14,865
MCgsub5	9,304	9,174	9,174	8,000	10,246
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.00028755€	-0.002830966	-0.00000001	-0.006248882	-0.006286982
j	-0.006082227	-0.000934412	-0.000934516	-0.00000001	-0.006935527
o	-0.010900588	-0.006764861	-0.0070412[illegible]	-0.00000001	-0.00298464
t	-0.001167425	-0.00000001	-0.001842798	-0.005952209	-0.005823892
y	-0.06300992€	-0.210170245	-0.210842239	-0.148863764	-0.09079888
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	2,948	3,163	2,574	3,487	3,487
XMCcsub1	1,068	897	858	1,249	1,155
XMCfsub1	2,230	1,989	2,024	2,532	2,821
XMCgsub1	2,230	1,989	1,989	3,487	3,487
XMCasub2	3,442	4,245	4,245	4,596	3,349
XMCcsub2	1,808	3,165	3,165	3,064	1,931
XMCfsub2	4,003	4,245	4,245	4,596	3,349
XMCgsub2	6,465	7,069	7,069	7,746	5,500
XMCasub3	3,436	4,647	4,656	4,575	3,452
XMCcsub3	3,436	4,647	4,656	4,575	3,452
XMCfsub3	3,436	4,101	4,078	4,011	2,865
XMCgsub3	6,465	7,676	7,676	7,746	5,500
XMCasub4	3,500	3,688	4,479	3,173	3,963
XMCcsub4	1,710	1,703	1,788	1,543	1,573
XMCfsub4	3,500	5,000	5,000	5,357	5,652
XMCgsub4	5,000	5,000	5,000	6,044	6,044
XMCasub5	9,335	20,955	20,343	15,930	13,177
XMCcsub5	2,693	3,773	3,662	3,003	4,022
XMCfsub5	8,581	17,243	17,208	15,930	13,177
XMCgsub5	13,280	21,011	21,011	20,041	17,796
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	19,958	19,239	18,646	22,262	22,455
constant2	31,463	34,985	34,985	35,720	29,842
constant3	34,617	37,793	37,786	38,827	33,186
constant4	27,919	29,545	30,420	30,170	31,285
constant5	56,558	93,280	92,524	82,977	76,234
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	5,775,123,880	4,514,476,010	4,121,769,526	6,491,101,600	6,606,513,613
TSseg2	22,266,150,595	19,667,625,461	19,667,625,855	24,395,900,627	17,252,639,148
TSseg3	3,430,705,015	3,688,051,519	3,687,173,285	3,474,983,764	2,533,611,332
TSseg4	7,148,070,974	6,439,592,262	6,766,220,270	7,670,476,985	8,151,007,180
TSseg5	8,379,910,846	14,037,666,063	13,871,772,609	13,881,301,441	12,078,958,016
Tssum	46,999,961,310	48,347,411,315	48,114,561,545	55,913,764,417	46,622,729,289
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	3,704,946,236	2,838,833,074	2,630,052,428	4,154,241,489	4,228,840,683

QUARTER	3	4	4	5	5
CSseg2	14,008,795,693	12,711,030,611	12,711,030,731	15,591,844,050	11,003,417,632
CSseg3	2,215,976,016	2,394,164,089	2,393,415,663	2,260,920,240	1,650,640,867
CSseg4	4,521,490,151	4,105,349,311	4,338,950,677	4,788,166,663	5,119,207,500
CSseg5	5,177,864,269	8,749,776,405	8,644,916,640	8,595,436,031	7,540,360,001
Cssum	29,629,072,366	30,799,153,490	30,718,366,139	35,390,608,474	29,542,466,682
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	2,070,177,644	1,675,642,936	1,491,717,098	2,336,860,110	2,377,672,931
PSseg2	8,257,354,902	6,956,594,850	6,956,595,124	8,804,056,577	6,249,221,516
PSseg3	1,214,728,999	1,293,887,430	1,293,757,622	1,214,063,524	882,970,465
PSseg4	2,626,580,823	2,334,242,951	2,427,269,593	2,882,310,322	3,031,799,679
PSseg5	3,202,046,577	5,287,889,658	5,226,855,969	5,285,865,410	4,538,598,015
Pssum	17,370,888,944	17,548,257,826	17,396,195,406	20,523,155,943	17,080,262,607
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	6,872,085,938	5,492,375,000	5,492,375,000	6,024,218,750	6,024,218,750
CStravseg2	13,946,867,188	10,596,867,188	10,596,867,188	12,196,781,250	12,196,781,250
CStravseg3	2,066,054,688	1,786,257,813	1,786,257,813	1,690,257,813	1,690,257,813
CStravseg4	5,188,851,563	4,173,210,938	4,173,210,938	4,639,398,438	4,639,398,438
CStravseg5	2,381,296,875	2,166,804,688	2,166,804,688	2,444,718,750	2,444,718,750
Cstravsum	30,455,156,250	24,215,515,625	24,215,515,625	26,995,375,000	26,995,375,000
FIRST ORDER CONDITIONS UNDER LSET					
foc1l	9.51832E-10	-2.76009E-05	2.55634E-09	-3.91754E-05	2.1771E-05
foc2l	4.83283E-10	-2.00937E-05	3.6582E-07	-5.54025E-05	0.000102694
foc3l	1.07775E-10	0.000135508	3.66674E-09	-6.33996E-05	0.000111651
foc4l	3.48622E-09	4.94877E-05	4.49208E-08	-6.33995E-05	-1.64772E-06
foc5l	1.22225E-09	-2.75847E-05	2.55066E-09	-3.91755E-05	2.18116E-05
foc6l	5.87079E-10	-2.00886E-05	3.65821E-07	-5.54025E-05	0.000102871
foc7l	1.09821E-10	0.000135482	3.65962E-09	-6.33997E-05	0.000111648
foc8l	3.42038E-09	4.94881E-05	4.49118E-08	-6.33995E-05	-1.65257E-06
foc9l	7.33316E-10	-2.76114E-05	2.5488E-09	-3.91754E-05	2.18541E-05
foc10l	3.98586E-10	-2.01008E-05	3.65822E-07	-5.54023E-05	0.000103026
foc11l	1.03228E-10	0.00013553	3.6506E-09	-6.33996E-05	0.000111705
foc12l	3.54001E-09	4.94854E-05	4.49074E-08	-6.33995E-05	-1.66827E-06
foc13l	-4.03496E-10	-2.77189E-05	2.55117E-09	-3.91754E-05	2.18163E-05
foc14l	-5.10454E-11	-2.01151E-05	3.65814E-07	-5.54024E-05	0.000102839
foc15l	1.1164E-10	0.000135633	3.66629E-09	-6.33997E-05	0.000111394
foc16l	3.81479E-09	4.94756E-05	4.49202E-08	-6.33995E-05	-1.67038E-06
foc17l	-1.96269E-09	-1.48072E-05	-3.64089E-08	-6.33993E-05	0.000105788
foc18l	-2.88787E-09	-1.48333E-05	-3.67727E-08	-6.33996E-05	0.000105965
foc19l	-1.22054E-09	-1.48234E-05	-3.64016E-08	-6.33995E-05	0.000106122
foc20l	2.76214E-09	-1.47959E-05	-3.64016E-08	-6.33996E-05	0.000105921
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	12,088	11,748	11,757	12,079	12,044
p1c1l	12,088	11,748	11,757	12,079	12,044
p1f1l	12,088	11,748	11,757	12,079	12,044
p1g1l	12,088	11,748	11,757	12,079	12,044
p2a2l	16,563	17,062	17,075	16,572	16,522
p2c2l	16,563	17,062	17,075	16,572	16,522
p2f2l	16,563	17,062	17,075	16,572	16,522
p2g2l	16,563	17,062	17,075	16,572	16,522
p3a3l	18,769	17,758	17,773	18,878	18,820
p3c3l	18,769	17,758	17,773	18,878	18,820
p3f3l	18,769	17,758	17,773	18,878	18,820
p3g3l	18,769	17,758	17,773	18,878	18,820
p4a4l	15,199	15,104	15,119	14,998	14,941
p4c4l	15,199	15,104	15,119	14,998	14,941
p4f4l	15,199	15,104	15,119	14,998	14,941
p4g4l	15,199	15,104	15,119	14,998	14,941
p5a5l	23,008	33,888	30,962	37,428	27,710
p5c5l	23,008	33,888	30,962	37,428	27,710
p5f5l	23,008	33,888	30,962	37,428	27,710

QUARTER	3	4	4	5	5
p5g5l	23,008	33,888	30,962	37,428	27,710
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET					
lemp_a1	2.38	2.33	2.29	2.28	2.43
lemp_c1	2.38	2.33	2.29	2.28	2.43
lemp_f1	2.38	2.33	2.29	2.28	2.43
lemp_g1	2.38	2.33	2.29	2.28	2.43
lemp_a2	3.37	3.29	3.24	3.23	3.44
lemp_c2	3.37	3.29	3.24	3.23	3.44
lemp_f2	3.37	3.29	3.24	3.23	3.44
lemp_g2	3.37	3.29	3.24	3.23	3.44
lemp_a3	3.85	3.77	3.71	3.70	3.93
lemp_c3	3.85	3.77	3.71	3.70	3.93
lemp_f3	3.85	3.77	3.71	3.70	3.93
lemp_g3	3.85	3.77	3.71	3.70	3.93
lemp_a4	3.85	3.77	3.71	3.70	3.93
lemp_c4	3.85	3.77	3.71	3.70	3.93
lemp_f4	3.85	3.77	3.71	3.70	3.93
lemp_g4	3.85	3.77	3.71	3.70	3.93
lemp_a5	3.85	3.77	3.71	3.70	3.93
lemp_c5	3.85	3.77	3.71	3.70	3.93
lemp_f5	3.85	3.77	3.71	3.70	3.93
lemp_g5	3.85	3.77	3.71	3.70	3.93
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET					
Asub1nl	307,310	295,973	296,695	251,777	336,031
Csub1nl	75,353	65,912	66,732	-	84,127
Fsub1nl	160,473	134,072	134,734	82,922	167,123
Gsub1nl	135,232	128,648	128,522	93,623	177,808
Asub2nl	299,970	289,636	290,375	329,177	310,607
Csub2nl	176,823	215,741	216,480	250,699	231,967
Fsub2nl	359,553	290,685	291,424	361,089	342,270
Gsub2nl	693,723	496,797	497,537	642,113	623,446
Asub3nl	42,314	44,091	45,205	44,654	45,384
Csub3nl	68,458	50,752	51,866	48,004	48,725
Fsub3nl	45,708	38,429	39,542	35,657	36,383
Gsub3nl	98,830	80,433	81,549	74,228	74,973
asub4nl	192,717	104,369	105,876	79,549	101,996
Csub4nl	112,498	50,654	52,112	27,109	49,535
fsub4nl	268,478	175,451	176,987	181,464	204,102
gsub4nl	312,591	175,479	177,387	190,649	213,319
asub5nl	95,506	105,082	90,823	148,318	74,114
Csub5nl	-	26,539	12,282	74,149	-
fsub5nl	76,464	89,777	75,516	151,331	77,137
gsub5nl	108,887	105,507	91,232	178,134	103,932
TOTAL SALES IN EACH SEGMENT AFTER LSET					
tseg1nl	678,368	624,606	626,683	428,322	765,089
tseg2nl	1,530,070	1,292,858	1,295,816	1,583,078	1,508,289
tseg3nl	255,310	213,705	218,161	202,544	205,465
tseg4nl	886,284	505,953	512,363	478,771	568,953
tseg5nl	280,857	326,904	269,853	551,934	255,183
tsumnl	3,630,888	2,964,027	2,922,876	3,244,648	3,302,979
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1l	201,259	78,418	76,341	342,778	6,011
lostsales2l	255,129	63,541	60,583	(21,890)	52,899
lostsales3l	9,145	14,936	10,480	13,809	10,888
lostsales4l	(222,111)	28,218	21,808	115,072	24,890
lostsales5l	23,949	(49,553)	7,498	(239,010)	57,741
lostsuml	267,372	135,559	176,710	210,760	152,429
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET					
CSlsetseg1	2,669,229,705	2,339,669,107	2,158,467,987	2,180,696,544	3,982,786,781
CSlsetseg2	11,399,397,777	11,585,806,219	11,603,880,852	15,156,301,106	10,045,437,412

QUARTER	3	4	4	5	5
CSlsetseg3	2,023,036,495	2,140,744,707	2,183,047,194	2,020,314,522	1,475,801,682
CSlsetseg4	5,636,858,146	3,653,329,752	3,919,895,253	3,631,929,963	4,649,457,532
CSlsetseg5	4,711,450,751	9,707,698,814	8,306,386,056	12,570,214,235	6,191,331,342
Cslsetsum	26,439,972,874	29,427,248,599	28,171,677,342	35,559,456,369	26,344,814,750
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET					
PSlsetseg1	1,543,060,871	1,432,569,064	1,262,065,207	1,353,046,179	2,257,354,999
PSlsetseg2	6,963,738,388	6,399,088,476	6,408,128,930	8,576,255,617	5,758,498,441
PSlsetseg3	1,117,542,986	1,160,362,484	1,181,766,009	1,093,406,639	795,044,631
PSlsetseg4	3,150,219,255	2,105,688,907	2,215,574,579	2,305,515,739	2,798,727,638
PSlsetseg5	2,791,954,433	6,896,124,169	4,998,532,007	13,089,884,227	3,472,288,061
Pslsetsum	15,566,515,933	17,993,833,101	16,066,066,731	26,418,108,402	15,081,913,771
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSlsetseg1	4,212,290,575	3,772,238,171	3,420,533,194	3,533,742,723	6,240,141,781
TSlsetseg2	18,363,136,165	17,984,894,695	18,012,009,782	23,732,556,723	15,803,935,852
TSlsetseg3	3,140,579,481	3,301,107,191	3,364,813,203	3,113,721,161	2,270,846,313
TSlsetseg4	8,787,077,401	5,759,018,659	6,135,469,832	5,937,445,702	7,448,185,171
TSlsetseg5	7,503,405,184	16,603,822,984	13,304,918,063	25,660,098,462	9,663,619,404
Tslsetsum	42,006,488,806	47,421,081,700	44,237,744,074	61,977,564,771	41,426,728,521
dwllset	4,993,472,504	926,329,616	3,876,817,471	(6,063,800,355)	5,196,000,768
surpluslset	72,461,645,056	71,636,597,325	68,453,259,699	88,972,939,771	68,422,103,521
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM					
LSET	148.34	154.79	159.76	160.97	142.31
ABATEMENT CONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES					
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET					
taxrevlsetseg1	239,462,782	225,223,859	229,575,740	157,500,776	264,523,638
taxrevlsetseg2	763,834,107	659,286,488	671,330,086	823,245,558	737,483,646
taxrevlsetseg3	145,851,732	124,708,010	129,338,384	120,531,938	114,963,860
taxrevlsetseg4	506,311,234	295,250,151	303,757,538	284,912,589	318,347,031
taxrevlsetseg5	160,446,154	190,765,800	159,983,826	328,450,994	142,783,062
taxrevlsetsum	1,815,906,009	1,495,234,309	1,493,985,575	1,714,641,855	1,578,101,237
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET					
taxa1	353.00	360.59	366.33	367.72	345.74
taxc1	353.00	360.59	366.33	367.72	345.74
taxf1	353.00	360.59	366.33	367.72	345.74
taxg1	353.00	360.59	366.33	367.72	345.74
taxa2	499.22	509.94	518.08	520.03	488.95
taxc2	499.22	509.94	518.08	520.03	488.95

QUARTER	3	4	4	5	5
taxf2	499.22	509.94	518.08	520.03	488.95
taxg2	499.22	509.94	518.08	520.03	488.95
taxa3	571.27	583.55	592.86	595.09	559.53
taxc3	571.27	583.55	592.86	595.09	559.53
taxf3	571.27	583.55	592.86	595.09	559.53
taxg3	571.27	583.55	592.86	595.09	559.53
taxa4	571.27	583.55	592.86	595.09	559.53
taxc4	571.27	583.55	592.86	595.09	559.53
taxf4	571.27	583.55	592.86	595.09	559.53
taxg4	571.27	583.55	592.86	595.09	559.53
taxa5	571.27	583.55	592.86	595.09	559.53
taxc5	571.27	583.55	592.86	595.09	559.53
taxf5	571.27	583.55	592.86	595.09	559.53
taxg5	571.27	583.55	592.86	595.09	559.53
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	6,848,827,382	10,914,220,594	11,318,036,774	(3,727,938,641)	16,016,526,916
pollution reduction 2	5,223,000,435	11,532,397,291	12,485,597,121	19,282,611,674	11,734,871,252
pollution reduction 3	4,832,448,826	4,078,014,807	4,432,376,524	4,051,022,477	3,605,038,943
pollution reduction 4	22,868,026,348	9,826,279,647	10,476,940,148	7,597,478,375	10,109,001,884
pollution reduction 5	227,697,009	3,649,087,666	1,287,049,434	12,796,844,196	(1,465,438,839)
Total reduction	40	40.00000001	40	40.00001808	40.00000016
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM					
PMET	0.00658	0.00697	0.00488	0.00824	0.00592
FIRST ORDER CONDITIONS UNDER LSET					
foc1p	-6.34719E-06	-2.76597E-05	-7.79336E-06	1.40231E-07	2.253E-05
foc2p	-1.3059E-05	-2.50509E-05	-4.19949E-05	4.61556E-07	0.000123826
foc3p	-7.9414E-06	0.000118583	-0.000127907	4.05238E-07	0.000131971
foc4p	0.000306032	4.96926E-05	-1.80458E-05	1.99121E-07	1.15092E-05
foc5p	-6.31103E-06	-2.76277E-05	-7.79327E-06	1.40225E-07	2.26187E-05
foc6p	-1.30443E-05	-2.50243E-05	-4.19629E-05	4.61563E-07	0.000124004
foc7p	-7.94141E-06	0.000118642	-0.000127906	4.05231E-07	0.000131972
foc8p	0.000306053	4.96943E-05	-1.80421E-05	1.99133E-07	1.14566E-05
foc9p	-6.34742E-06	-2.7669E-05	-7.7934E-06	1.40226E-07	2.26137E-05
foc10p	-1.30591E-05	-2.50511E-05	-4.19949E-05	4.6157E-07	0.000124159
foc11p	-7.9414E-06	0.000118593	-0.000127907	4.05228E-07	0.000132027
foc12p	0.000306032	4.96935E-05	-1.80457E-05	1.99131E-07	1.14882E-05
foc13p	-6.34854E-06	-2.77773E-05	-7.79336E-06	1.40228E-07	2.25755E-05
foc14p	-1.30595E-05	-2.50616E-05	-4.1995E-05	4.61555E-07	0.00012397
foc15p	-7.94139E-06	0.000118698	-0.000127907	4.05226E-07	0.000131713
foc16p	0.000306032	4.96816E-05	-1.80459E-05	1.99127E-07	1.1486E-05
foc17p	8.08182E-05	9.45212E-07	-1.50219E-05	3.52882E-05	0.000129298
foc18p	-7.79454E-05	7.29402E-07	-2.71915E-05	3.54234E-05	0.000126497
foc19p	8.0819E-05	9.50995E-07	-1.50219E-05	3.52857E-05	0.000129634
foc20p	8.0823E-05	9.59106E-07	-1.50222E-05	3.52872E-05	0.00012943
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET					
p1a1	11,716.61	11,317.10	11,325.06	11,643.66	11,679.31
p1c1	11,716.61	11,317.10	11,325.06	11,643.66	11,679.31
p1f1	11,716.61	11,317.10	11,325.06	11,643.66	11,679.31
p1g1	11,716.61	11,317.10	11,325.06	11,643.66	11,679.31
p2a2	16,046.54	16,567.25	16,570.07	16,243.26	16,075.50
p2c2	16,046.54	16,567.25	16,570.07	16,243.26	16,075.50
p2f2	16,046.54	16,567.25	16,570.07	16,243.26	16,075.50
p2g2	16,046.54	16,567.25	16,570.07	16,243.26	16,075.50
p3a3	18,208.08	17,219.99	17,249.62	18,366.89	18,298.75
p3c3	18,208.08	17,219.99	17,249.62	18,366.89	18,298.75
p3f3	18,208.08	17,219.99	17,249.62	18,366.89	18,298.75
p3g3	18,208.08	17,219.99	17,249.62	18,366.89	18,298.75
p4a4	14,636.05	14,561.20	14,534.89	14,262.50	14,347.02
p4c4	14,636.05	14,561.20	14,534.89	14,262.50	14,347.02

QUARTER	3	4	4	5	5
p4f4	14,636.05	14,561.20	14,534.89	14,262.50	14,347.02
p4g4	14,636.05	14,561.20	14,534.89	14,262.50	14,347.02
p5a5	23,026.24	29,951.28	30,599.00	26,927.17	28,438.66
p5c5	23026.24408	29951.28373	30599.0005	26927.17133	28438.659
p5f5	23026.24408	29951.28373	30599.0005	26927.17133	28438.659
p5g5	23026.24408	29951.28373	30599.0005	26927.17133	28438.659
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST					
dp/dgas1	18,761	10,138	16,103	9,369	19,891
dp/dgas2	20,030	24,388	35,441	50,776	31,596
dp/dgas3	23,864	28,326	46,733	29,794	29,794
dp/dgas4	23,635	27,687	34,420	7,202	19,412
dp/dgas5	3,983	160,201	23,118	149,953	3,987
sum of dpdgas	90,274	250,740	155,815	247,093	104,680
MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,842	11,778	11,853	11,749	11,854
VMT2	11,783	11,798	11,860	11,848	11,837
VMT3	11,773	11,786	11,860	11,773	11,807
VMT4	11,772	11,783	11,837	11,537	11,761
VMT5	11,772	11,783	11,837	11,537	11,761
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT					
tpma1	0.01717	0.02404	0.01596	0.02719	0.01581
tpmc1	0.01717	0.02404	0.01596	0.02719	0.01581
tpmf1	0.01717	0.02404	0.01596	0.02719	0.01581
tpmg1	0.01717	0.02404	0.01596	0.02719	0.01581
tpma2	0.02350	0.02192	0.01522	0.01652	0.01774
tpmc2	0.02350	0.02192	0.01522	0.01652	0.01774
tpmf2	0.02350	0.02192	0.01522	0.01652	0.01774
tpmg2	0.02350	0.02192	0.01522	0.01652	0.01774
tpma3	0.02464	0.02327	0.01516	0.02467	0.02090
tpmc3	0.02464	0.02327	0.01516	0.02467	0.02090
tpmf3	0.02464	0.02327	0.01516	0.02467	0.02090
tpmg3	0.02464	0.02327	0.01516	0.02467	0.02090
tpma4	0.02476	0.02354	0.01767	0.05019	0.02589
tpmc4	0.02476	0.02354	0.01767	0.05019	0.02589
tpmf4	0.02476	0.02354	0.01767	0.05019	0.02589
tpmg4	0.02476	0.02354	0.01767	0.05019	0.02589
tpma5	0.02476	0.02354	0.01767	0.05019	0.02589
tpmc5	0.02476	0.02354	0.01767	0.05019	0.02589
tpmf5	0.02476	0.02354	0.01767	0.05019	0.02589
tpmg5	0.02476	0.02354	0.01767	0.05019	0.02589
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET					
cstravelpmetseg1	6,725,423,426	5,299,957,683	5,365,012,324	5,765,204,067	5,887,191,441
cstravelpmetseg2	13,516,587,939	10,259,256,101	10,362,158,205	11,914,758,269	11,894,108,549
cstravelpmetseg3	1,994,424,897	1,726,017,655	1,747,267,631	1,629,854,947	1,640,279,151
cstravelpmetseg4	4,945,831,059	4,034,358,691	4,068,149,983	4,293,291,334	4,466,908,894
cstravelpmetseg5	2,286,821,306	2,093,585,931	2,109,005,078	2,285,922,031	2,345,355,973
cstravelpmetsum	29,469,088,626	23,413,176,061	23,651,593,220	25,889,030,647	26,233,844,009
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET					
epm_a1	2.61	3.45	3.27	3.30	2.67
epm_c1	2.61	3.45	3.27	3.30	2.67
epm_f1	2.61	3.45	3.27	3.30	2.67
epm_g1	2.61	3.45	3.27	3.30	2.67
epm_a2	3.57	3.14	3.12	2.00	3.00
epm_c2	3.57	3.14	3.12	2.00	3.00
epm_f2	3.57	3.14	3.12	2.00	3.00

QUARTER	3	4	4	5	5
epm_g2	3.57	3.14	3.12	2.00	3.00
epm_a3	3.74	3.34	3.10	2.99	3.53
epm_c3	3.74	3.34	3.10	2.99	3.53
epm_f3	3.74	3.34	3.10	2.99	3.53
epm_g3	3.74	3.34	3.10	2.99	3.53
epm_a4	3.76	3.38	3.62	6.09	4.38
epm_c4	3.76	3.38	3.62	6.09	4.38
epm_f4	3.76	3.38	3.62	6.09	4.38
epm_g4	3.76	3.38	3.62	6.09	4.38
epm_a5	3.76	3.38	3.62	6.09	4.38
epm_c5	3.76	3.38	3.62	6.09	4.38
epm_f5	3.76	3.38	3.62	6.09	4.38
epm_g5	3.76	3.38	3.62	6.09	4.38
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET					
Asub1n	315,837	308,185	307,278	344,305	326,338
Csub1n	87,987	77,923	77,355	96,368	74,961
Fsub1n	169,000	146,284	145,318	175,450	157,429
Gsub1n	143,760	140,860	139,105	186,150	168,114
Asub2n	301,493	290,043	289,679	291,678	291,344
Csub2n	181,973	216,109	215,762	212,146	213,324
Fsub2n	361,077	291,092	290,729	323,591	323,007
Gsub2n	695,247	497,204	496,842	604,615	604,184
Asub3n	39,761	45,085	44,556	45,497	44,229
Csub3n	65,415	51,700	51,189	48,892	47,603
Fsub3n	43,155	39,422	38,894	36,499	35,229
Gsub3n	96,277	81,427	80,900	75,070	73,819
asub4n	179,563	101,875	102,522	106,098	99,902
Csub4n	91,608	48,184	48,719	54,689	47,558
fsub4n	255,324	172,958	173,633	208,012	202,008
gsub4n	299,437	172,985	174,034	217,197	211,225
asub5n	105,145	88,602	91,897	78,402	91,247
Csub5n	11,313	10,621	13,684	825	16,405
fsub5n	86,102	73,297	76,590	81,415	94,271
gsub5n	118,525	89,028	92,306	108,218	121,065
TOTAL SALES IN EACH SEGMENT AFTER PMET					
tseg1n	716,584	673,252	669,056	802,273	726,843
tseg2n	1,539,790	1,294,449	1,293,012	1,432,029	1,431,859
tseg3n	244,608	217,634	215,538	205,958	200,881
tseg4n	825,932	496,001	498,908	585,996	560,693
tseg5n	321,086	261,548	274,476	268,860	322,988
tsumn	3,647,999	2,942,884	2,950,990	3,295,115	3,243,264
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET					
CSPMETseg1	2,837,308,269	2,584,834,300	2,362,913,609	4,157,091,024	3,801,913,888
CSPMETseg2	11,506,955,522	11,574,565,081	11,556,863,246	13,345,175,832	9,454,574,574
CSPMETseg3	1,934,979,125	2,166,922,256	2,136,839,009	2,031,297,551	1,432,722,844
CSPMETseg4	5,243,878,779	3,554,396,367	3,810,860,595	4,554,875,599	4,607,474,395
CSPMETseg5	5,367,518,630	7,788,581,386	8,442,401,840	6,523,169,349	7,702,012,890
CsPMETsum	26,890,640,324	27,669,299,391	28,309,878,298	30,611,609,355	26,998,698,591
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET					
PSpmetseg1	1,622,784,451	1,555,375,881	1,364,248,745	2,335,713,847	2,166,083,218
PSpmetseg2	7,009,822,247	6,393,526,337	6,384,654,184	7,672,734,617	5,462,074,269
PSpmetseg3	1,073,885,525	1,173,479,894	1,158,678,878	1,098,868,834	773,493,222
PSpmetseg4	2,967,016,630	2,056,171,834	2,161,146,423	2,764,423,341	2,777,418,233
PSpmetseg5	3,279,104,961	4,799,593,639	5,123,674,153	4,320,438,002	4,630,896,839
Pspmetsum	15,952,613,814	15,978,147,585	16,192,402,382	18,192,178,641	15,809,965,782
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSPMETseg1	4,460,092,719	4,140,210,181	3,727,162,354	6,492,804,871	5,967,997,106
TSPMETseg2	18,516,777,769	17,968,091,419	17,941,517,429	21,017,910,449	14,916,648,843
TSPMETseg3	3,008,864,650	3,340,402,150	3,295,517,887	3,130,166,385	2,206,216,066
TSPMETseg4	8,210,895,409	5,610,568,201	5,972,007,018	7,319,298,940	7,384,892,629

QUARTER	3	4	4	5	5
TSPMETseg5	8,646,623,591	12,588,175,025	13,566,075,993	10,843,607,351	12,332,909,729
TSPMETsum	42,843,254,138	43,647,446,976	44,502,280,680	48,803,787,996	42,808,664,373
dwlpmet	4,168,147,159	4,732,416,360	3,633,435,236	7,116,475,598	3,839,671,586
pmetsurplus	73,286,970,401	67,830,510,580	68,696,641,934	75,792,663,819	69,778,432,703
pmetsurplus10	82,058,619,128	74,759,498,468	73,581,554,230	85,691,270,405	76,401,751,590
TAX REVENUE IN EACH SEGMENT UNDER PMET					
taxrevpmetseg1	145,689,166	190,624,582	126,577,238	256,281,979	136,190,528
taxrevpmetseg2	400,336,707	299,010,182	208,353,427	257,567,242	271,550,002
taxrevpmetseg3	70,945,684	59,696,916	38,761,828	59,825,095	49,574,290
taxrevpmetseg4	240,688,185	137,585,584	104,343,284	339,306,006	170,757,216
taxrevpmetseg5	116,967,894	82,970,279	64,732,256	186,864,855	107,852,285
taxrevpmetsum	974,627,636	769,887,543	542,768,033	1,099,845,176	735,924,321
pmetrev10	9,746,276,363	7,698,875,431	5,427,680,329	10,998,451,763	7,359,243,208
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1	163,043	29,772	33,968	(31,173)	44,257
lostsales2	245,409	61,950	63,387	129,159	129,329
lostsales3	19,847	11,007	13,103	10,395	15,472
lostsales4	(161,759)	38,170	35,263	7,847	33,150
lostsales5	(16,280)	15,803	2,875	44,064	(10,064)
lostsum	250,261	156,702	148,596	160,293	212,144
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET					
taxa1p	322.11	243.71	257.03	254.73	314.40
taxc1p	322.11	243.71	257.03	254.73	314.40
taxf1p	322.11	243.71	257.03	254.73	314.40
taxg1p	322.11	243.71	257.03	254.73	314.40
taxa2p	470.69	534.57	539.26	838.63	560.39
taxc2p	470.69	534.57	539.26	838.63	560.39
taxf2p	470.69	534.57	539.26	838.63	560.39
taxg2p	470.69	534.57	539.26	838.63	560.39
taxa3p	587.93	659.26	708.62	735.13	622.73
taxc3p	587.93	659.26	708.62	735.13	622.73
taxf3p	587.93	659.26	708.62	735.13	622.73
taxg3p	587.93	659.26	708.62	735.13	622.73
taxa4p	585.10	651.78	608.14	361.42	502.65
taxc4p	585.10	651.78	608.14	361.42	502.65
taxf4p	585.10	651.78	608.14	361.42	502.65
taxg4p	585.10	651.78	608.14	361.42	502.65
taxa5p	585.10	651.78	608.14	361.42	502.65
taxc5p	585.10	651.78	608.14	361.42	502.65
taxf5p	585.10	651.78	608.14	361.42	502.65
taxg5p	585.10	651.78	608.14	361.42	502.65
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET					
pollution reduction 1p	7,530,509,731.63	5,421,227,327.64	6,458,558,962.90	10,584,537,831.61	11,860,141,507.09
pollution reduction 2p	3,127,011,212.89	14,791,403,658.09	14,883,419,085.61	33,071,370,031.75	16,234,667,074.19
pollution reduction 3p	4,891,810,859.50	5,540,363,422.66	5,974,584,691.93	6,087,546,853.49	4,507,321,017.95
pollution reduction 4p	21,835,481,673.06	12,093,047,514.96	10,717,341,629.58	(2,667,042,436.23)	7,347,254,575.08
pollution reduction 5p	2,615,169,622.97	2,153,958,076.65	1,966,099,121.43	(7,076,412,375.35)	50,615,832.34
Total reductionp	39.99998311	40	40.00000349	39.99999991	40.00000001
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET					
Tsdiff	(825)	(3,806)	(243)	(13,180)	(1,356)

QUARTER	6	6	7	7	8
COEFFICIENTS OF DEMAND					
a P1/q1	-0.005765072	-0.005608046	-0.006713784	-0.004197422	-0.003650588
b p2/q1	-0.001598274	-0.001197988	-0.001639959	-0.000703348	-0.001148452
c p3/q1	-0.001415561	0	-1E-08	-1E-08	-0.003650588
d p4/q1	-0.003521941	-0.005608046	-0.005103102	-0.004197422	-0.001707101
f P1/q2	-0.001598274	-0.001197988	-0.001639959	-0.000703348	-0.001148452
g p2/q2	-0.003318641	-0.003774427	-0.010146831	-0.008359874	-0.008671704
h p3/q2	-1E-08	-4.09128E-17	1.09814E-16	-1E-08	-1E-08
i p4/q2	-0.003318641	-0.001929888	-2.26491E-17	-1E-08	-0.006871001
k P1/q3	-0.001415561	8.07454E-18	-1E-08	-1E-08	-0.003650588
l p2/q3	-1E-08	-2.15284E-17	-4.15323E-18	-1E-08	-1E-08
m p3/q3	-0.053902229	-0.045736496	-0.107159487	-0.085792906	-0.083864555
n p4/q3	-1E-08	-0.004304001	-1E-08	-0.003797242	-1E-08
p P1/q4	-0.003521941	-0.005608046	-0.005103102	-0.004197422	-0.001707101
q p2/q4	-0.003318641	-0.001929888	1.32285E-18	-1E-08	-0.006871001
r p3/q4	-1E-08	-0.004304001	-1E-08	-0.003797242	-1E-08
s p4/q4	-0.008016524	-0.012878761	-0.017161781	-0.012115779	-0.007596565
u P1/q5	-0.003956799	-0.001831468	-0.002249522	-1E-08	-1E-08
v p2/q5	-0.00138067	-1E-08	-0.010146831	-0.008359874	-1E-08
w p3/q5	-1E-08	8.03523E-17	-0.009403464	-0.004101375	-0.025777507
x p4/q5	-1E-08	-1E-08	-0.017161781	-0.012115779	-1E-08
y p5/q5	-0.027647736	-0.047692425	-0.032448857	-0.029352631	-0.108087998
e p5/q1	-0.003956799	-0.001831468	-0.002249522	-1E-08	-0.00000001
j p5/q2	-0.00138067	-0.00000001	-0.010146831	-0.008359874	-1E-08
o p5/q3	-0.00000001	0	-0.009403464	-0.004101375	-0.025777507
t p5/q4	-0.00000001	-0.00000001	-0.017161781	-0.012115779	-0.00000001
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.005765072	-0.005608046	-0.006713784	-0.004197422	-0.003650588
bb	-0.001598274	-0.001197988	-0.001639959	-0.000703348	-0.001148452
cc	-0.001415561	-0.00000001	-1E-08	-1E-08	-0.003650588
dd	-0.003521941	-0.005608046	-0.005103102	-0.004197422	-0.001707101
ee	-0.003956799	-0.001831468	-0.002249522	-1E-08	-0.00000001
ff	-0.001598274	-0.001197988	-0.001639959	-0.000703348	-0.001148452
gg	-0.003318641	-0.003774427	-0.010146831	-0.008359874	-0.008671704
hh	-1E-08	-4.09128E-17	-0.00000001	-1E-08	-1E-08
ii	-0.003318641	-0.001929888	-2.26491E-17	-1E-08	-0.006871001
jj	-0.00138067	-0.00000001	-0.010146831	-0.008359874	-1E-08
kk	-0.001415561	-0.00000001	-1E-08	-1E-08	-0.003650588
ll	-1E-08	-2.15284E-17	-4.15323E-18	-1E-08	-1E-08
mm	-0.053902229	-0.045736496	-0.107159487	-0.085792906	-0.083864555
nn	-1E-08	-0.004304001	-1E-08	-0.003797242	-1E-08
oo	-0.00000001	-0.00000001	-0.009403464	-0.004101375	-0.025777507
pp	-0.003521941	-0.005608046	-0.005103102	-0.004197422	-0.001707101
qq	-0.003318641	-0.001929888	-0.00000001	-1E-08	-0.006871001
rr	-1E-08	-0.004304001	-1E-08	-0.003797242	-1E-08
ss	-0.008016524	-0.012878761	-0.017161781	-0.012115779	-0.007596565
tt	-0.00000001	-0.00000001	-0.017161781	-0.012115779	-0.00000001
uu	-0.003956799	-0.001831468	-0.002249522	-1E-08	-1E-08
vv	-0.00138067	-1E-08	-0.010146831	-0.008359874	-1E-08
ww	-1E-08	-0.00000001	-0.009403464	-0.004101375	-0.025777507
xx	-1E-08	-1E-08	-0.017161781	-0.012115779	-1E-08
yy	-0.027647736	-0.047692425	-0.032448857	-0.029352631	-0.108087998
KNOWN PRICE BEFORE TAXES					
P1	12,131	12,131	11,747	11,747	11,655
P2	16,123	16,123	16,065	16,065	15,723
P3	18,404	18,404	18,128	18,128	19,151
P4	14,603	14,603	14,746	14,746	15,051
P5	27,445	27,445	25,316	25,316	23,923

QUARTER	6	6	7	7	8
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	376,397	376,397	338,148	338,148	304,592
Csub1	82,658	82,658	77,491	77,491	73,562
Fsub1	170,484	170,484	178,772	178,772	151,362
Gsub1	195,366	195,366	190,532	190,532	185,158
Asub2	364,097	364,097	376,375	376,375	317,133
Csub2	254,159	254,159	215,406	215,406	226,938
Fsub2	388,505	388,505	344,341	344,341	293,130
Gsub2	745,505	745,505	653,796	653,796	507,707
Asub3	43,228	43,228	42,358	42,358	48,100
Csub3	51,088	51,088	50,377	50,377	43,229
Fsub3	59,782	59,782	67,142	67,142	67,090
Gsub3	87,547	87,547	84,772	84,772	68,000
asub4	133,626	133,626	123,469	123,469	102,108
Csub4	51,941	51,941	41,299	41,299	37,752
fsub4	214,292	214,292	194,261	194,261	157,810
gsub4	230,441	230,441	224,881	224,881	187,211
asub5	108,382	108,382	102,833	102,833	106,831
Csub5	12,376	12,376	11,642	11,642	20,969
fsub5	94,954	94,954	79,332	79,332	77,027
gsub5	115,452	115,452	111,395	111,395	114,206
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	824,905	824,905	784,943	784,943	714,674
tseg2	1,752,266	1,752,266	1,589,918	1,589,918	1,344,908
tseg3	241,645	241,645	244,649	244,649	226,419
tseg4	630,300	630,300	583,910	583,910	484,881
tseg5	331,164	331,164	305,202	305,202	319,033
tsum	3,780,280	3,780,280	3,508,622	3,508,622	3,089,915
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	(2.55)	(2.62)	(2.23)	(3.57)	(4.47)
Elasiticity21	1.63	1.11	0.49	0.41	0.80
Elasiticity31	0.10	0.00	0.00	0.00	0.32
Elasiticity41	1.35	1.37	0.83	1.55	1.30
Elasiticity51	0.83	0.23	0.33	0.00	0.00
Elasiticity12	0.58	0.39	0.18	0.15	0.31
Elasiticity22	(2.77)	(2.44)	(1.00)	(1.21)	(1.35)
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	1.04	0.33	0.00	0.00	1.17
Elasiticity52	0.24	0.00	0.49	0.54	0.00
Elasiticity13	0.23	0.00	0.00	0.00	0.61
Elasiticity23	0.00	0.00	0.00	0.00	0.00
Elasiticity33	(1.41)	(1.67)	(0.69)	(0.86)	(1.01)
Elasiticity43	0.00	0.44	0.00	0.22	0.00
Elasiticity53	0.00	0.00	0.28	0.17	0.30
Elasiticity14	1.47	1.49	0.89	1.66	1.48
Elasiticity24	3.19	1.02	0.00	0.00	3.38
Elasiticity34	0.00	0.21	0.00	0.11	0.00
Elasiticity44	(2.89)	(1.80)	(1.47)	(2.08)	(4.09)
Elasiticity54	0.00	0.00	1.34	1.48	0.00
Elasiticity15	0.91	0.25	0.40	0.00	0.00
Elasiticity25	0.73	0.00	1.62	1.79	0.00
Elasiticity35	0.00	0.00	0.16	0.10	0.17
Elasiticity45	0.00	0.00	1.49	1.65	0.00
Elasiticity55	(3.00)	(1.74)	(2.56)	(2.83)	(0.69)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					
MCasub1	8,414	8,631	8,000	9,547	9,826
MCcsub1	10,942	11,047	10,639	11,100	10,902
MCfsub1	9,307	9,328	8,815	9,943	10,249

QUARTER	6	6	7	7	8
MCgsub1	8,414	8,631	8,000	9,547	9,826
MCasub2	13,714	14,033	10,655	11,829	11,925
MCcsub2	14,957	14,963	13,636	14,115	13,413
MCfsub2	13,714	14,033	11,478	12,404	11,925
MCgsub2	12,406	12,623	8,000	9,547	9,826
MCasub3	15,537	15,848	12,624	13,605	11,249
MCcsub3	15,537	15,848	12,624	13,605	14,715
MCfsub3	14,934	14,742	10,192	11,309	10,987
MCgsub3	13,404	13,404	8,000	9,547	9,826
MCasub4	11,003	9,887	9,137	10,424	11,580
MCcsub4	13,057	12,765	13,440	13,587	13,081
MCfsub4	11,003	9,887	9,137	10,424	11,580
MCgsub4	9,603	8,733	8,000	9,547	9,826
MCasub5	22,445	21,575	14,882	17,482	11,135
MCcsub5	26,416	26,695	21,398	22,469	20,542
MCfsub5	23,606	22,602	14,882	17,482	13,863
MCgsub5	22,445	21,575	9,983	13,510	9,826
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.0039567[illegible]	-0.001831468	-0.002249522	-1E-08	-0.00000001
j	-0.00138067	-0.00000001	-0.010146831	-0.008359874	-1E-08
o	-0.00000001	0	-0.009403464	-0.004101375	-0.025777507
t	-0.00000001	-0.00000001	-0.017161781	-0.012115779	-0.00000001
y	-0.02764773[illegible]	-0.047692425	-0.032448857	-0.029352631	-0.108087998
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	3,718	3,500	3,747	2,200	1,829
XMCcsub1	1,189	1,084	1,108	647	753
XMCfsub1	2,824	2,803	2,932	1,804	1,406
XMCgsub1	3,718	3,500	3,747	2,200	1,829
XMCasub2	2,410	2,090	5,410	4,237	3,799
XMCcsub2	1,167	1,160	2,429	1,950	2,310
XMCfsub2	2,410	2,090	4,587	3,662	3,799
XMCgsub2	3,718	3,500	8,065	6,518	5,897
XMCasub3	2,867	2,556	5,504	4,523	7,902
XMCcsub3	2,867	2,556	5,504	4,523	4,436
XMCfsub3	3,469	3,662	7,936	6,819	8,164
XMCgsub3	5,000	5,000	10,128	8,581	9,325
XMCasub4	3,600	4,715	5,609	4,322	3,471
XMCcsub4	1,546	1,838	1,306	1,159	1,971
XMCfsub4	3,600	4,715	5,609	4,322	3,471
XMCgsub4	5,000	5,869	6,746	5,199	5,225
XMCasub5	5,000	5,869	10,434	7,834	12,788
XMCcsub5	1,029	750	3,919	2,847	3,381
XMCfsub5	3,838	4,843	10,434	7,834	10,060
XMCgsub5	5,000	5,869	15,333	11,806	14,097
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	23,560	22,998	23,291	18,611	17,463
constant2	25,806	24,942	36,582	32,460	31,538
constant3	32,597	32,169	47,215	42,586	48,973
constant4	28,376	31,768	34,011	29,742	29,196
constant5	42,284	44,749	65,440	55,644	64,243
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	7,419,143,284	7,050,571,286	7,121,476,113	4,229,457,248	3,239,167,312
TSseg2	13,364,830,199	12,203,315,923	25,722,203,774	20,570,445,104	16,471,351,500
TSseg3	2,630,377,610	2,560,843,413	5,459,873,729	4,596,575,002	5,129,792,737
TSseg4	6,825,527,840	8,498,133,788	8,977,525,174	6,968,324,538	5,384,078,087
TSseg5	3,953,482,366	4,648,282,207	9,777,264,061	7,403,469,914	10,253,622,685
Tssum	34,193,361,300	34,961,146,616	57,058,342,852	43,768,271,806	40,478,012,320
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	4,713,724,693	4,481,942,688	4,530,554,238	2,693,895,121	2,075,359,424

QUARTER	6	6	7	7	8
CSseg2	8,483,188,767	7,726,124,669	16,309,965,229	13,033,401,745	10,634,884,014
CSseg3	1,714,827,646	1,663,098,430	3,557,983,151	2,991,833,182	3,376,065,985
CSseg4	4,340,633,128	5,409,647,286	5,624,335,565	4,378,165,602	3,429,156,000
CSseg5	2,457,107,869	2,865,367,567	6,122,858,160	4,628,071,794	6,431,734,161
Cssum	21,709,482,103	22,146,180,640	36,145,696,343	27,725,367,445	25,947,199,584
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	2,705,418,591	2,568,628,598	2,590,921,875	1,535,562,126	1,163,807,887
PSseg2	4,881,641,432	4,477,191,253	9,412,238,545	7,537,043,358	5,836,467,486
PSseg3	915,549,964	897,744,983	1,901,890,579	1,604,741,820	1,753,726,752
PSseg4	2,484,894,712	3,088,486,502	3,353,189,609	2,590,158,936	1,954,922,087
PSseg5	1,496,374,497	1,782,914,639	3,654,405,901	2,775,398,119	3,821,888,524
Pssum	12,483,879,197	12,814,965,976	20,912,646,509	16,042,904,360	14,530,812,736
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	6,444,570,313	6,444,570,313	6,132,367,188	6,132,367,188	5,583,390,625
CStravseg2	13,689,578,125	13,689,578,125	12,421,234,375	12,421,234,375	10,507,093,750
CStravseg3	1,887,851,563	1,887,851,563	1,911,320,313	1,911,320,313	1,768,898,438
CStravseg4	4,924,218,750	4,924,218,750	4,561,796,875	4,561,796,875	3,788,132,813
CStravseg5	2,587,218,750	2,587,218,750	2,384,390,625	2,384,390,625	2,492,445,313
Cstravsum	29,533,437,500	29,533,437,500	27,411,109,375	27,411,109,375	24,139,960,938
FIRST ORDER CONDITIONS UNDER LSET					
foc1l	5.2187E-05	7.21911E-12	5.84896E-05	-3.83125E-11	2.85751E-09
foc2l	3.0495E-05	-2.21605E-11	-1.03503E-05	-2.04636E-12	4.5494E-09
foc3l	4.53409E-08	-8.86757E-12	0.000247641	6.07088E-11	6.89247E-06
foc4l	-2.21622E-06	3.91167E-11	-6.95884E-07	-2.95586E-12	5.27984E-09
foc5l	5.21936E-05	8.29914E-12	5.09832E-05	-3.46745E-11	2.86108E-09
foc6l	3.04991E-05	-2.10321E-11	-9.11924E-06	-7.50333E-12	4.54387E-09
foc7l	4.45758E-08	-5.22959E-12	0.000216307	6.25278E-11	6.89273E-06
foc8l	-2.21662E-06	4.20641E-11	-6.96003E-07	-6.59384E-12	5.28886E-09
foc9l	5.21776E-05	6.08225E-12	5.57659E-05	-3.94695E-11	2.86289E-09
foc10l	3.04895E-05	-1.97066E-11	-9.56947E-06	-6.70752E-12	4.54022E-09
foc11l	4.43971E-08	-5.22959E-12	0.000237427	6.21867E-11	6.89188E-06
foc12l	-2.21519E-06	4.15706E-11	-6.95866E-07	-2.95586E-12	5.30158E-09
foc13l	5.21747E-05	8.27072E-12	6.14005E-05	-4.03374E-11	2.86158E-09
foc14l	3.04879E-05	-2.68264E-11	-1.03983E-05	-2.04636E-12	4.53527E-09
foc15l	4.50548E-08	-1.06866E-11	0.00026146	5.66587E-11	6.89278E-06
foc16l	-2.21478E-06	4.17267E-11	-6.95708E-07	-2.44427E-12	5.30755E-09
foc17l	-0.000121383	-9.09495E-11	-0.00012215	8.43556E-11	2.36872E-07
foc18l	-0.000121432	-1.59162E-12	-0.000105705	7.34417E-11	2.36694E-07
foc19l	-0.000121314	-1.05501E-10	-0.000114196	7.66249E-11	2.37218E-07
foc20l	-0.000121293	-5.82077E-11	-0.00012569	9.59517E-11	2.36607E-07
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	12,709	12,693	12,317	12,350	12,144
p1c1l	12,709	12,693	12,317	12,350	12,144
p1f1l	12,709	12,693	12,317	12,350	12,144
p1g1l	12,709	12,693	12,317	12,350	12,144
p2a2l	16,942	16,919	16,874	16,920	16,419
p2c2l	16,942	16,919	16,874	16,920	16,419
p2f2l	16,942	16,919	16,874	16,920	16,419
p2g2l	16,942	16,919	16,874	16,920	16,419
p3a3l	19,343	19,318	19,050	19,102	19,944
p3c3l	19,343	19,318	19,050	19,102	19,944
p3f3l	19,343	19,318	19,050	19,102	19,944
p3g3l	19,343	19,318	19,050	19,102	19,944
p4a4l	15,550	15,524	15,665	15,717	15,846
p4c4l	15,550	15,524	15,665	15,717	15,846
p4f4l	15,550	15,524	15,665	15,717	15,846
p4g4l	15,550	15,524	15,665	15,717	15,846
p5a5l	30,394	27,984	26,064	26,178	37,788
p5c5l	30,394	27,984	26,064	26,178	37,788
p5f5l	30,394	27,984	26,064	26,178	37,788

QUARTER	6	6	7	7	8
p5g5l	30,394	27,984	26,064	26,178	37,788
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET					
lemp_a1	2.31	2.38	2.36	2.24	2.74
lemp_c1	2.31	2.38	2.36	2.24	2.74
lemp_f1	2.31	2.38	2.36	2.24	2.74
lemp_g1	2.31	2.38	2.36	2.24	2.74
lemp_a2	3.27	3.36	3.34	3.16	3.88
lemp_c2	3.27	3.36	3.34	3.16	3.88
lemp_f2	3.27	3.36	3.34	3.16	3.88
lemp_g2	3.27	3.36	3.34	3.16	3.88
lemp_a3	3.74	3.84	3.83	3.62	4.43
lemp_c3	3.74	3.84	3.83	3.62	4.43
lemp_f3	3.74	3.84	3.83	3.62	4.43
lemp_g3	3.74	3.84	3.83	3.62	4.43
lemp_a4	3.74	3.84	3.83	3.62	4.43
lemp_c4	3.74	3.84	3.83	3.62	4.43
lemp_f4	3.74	3.84	3.83	3.62	4.43
lemp_g4	3.74	3.84	3.83	3.62	4.43
lemp_a5	3.74	3.84	3.83	3.62	4.43
lemp_c5	3.74	3.84	3.83	3.62	4.43
lemp_f5	3.74	3.84	3.83	3.62	4.43
lemp_g5	3.74	3.84	3.83	3.62	4.43
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET					
Asub1nl	294,384	373,482	393,791	130,309	330,363
Csub1nl	-	78,888	90,752	36,759	98,665
Fsub1nl	89,273	168,282	208,861	94,215	176,741
Gsub1nl	114,744	193,917	248,187	12,680	210,378
Asub2nl	257,678	316,799	277,317	471,087	324,195
Csub2nl	145,092	205,406	169,790	205,488	233,564
Fsub2nl	282,333	340,933	277,297	361,447	299,460
Gsub2nl	640,364	698,351	551,556	728,630	513,464
Asub3nl	41,051	39,019	34,070	37,542	4,848
Csub3nl	48,782	46,641	46,119	47,802	-
Fsub3nl	57,615	55,655	61,260	63,958	23,810
Gsub3nl	85,341	83,437	76,258	80,331	24,775
asub4nl	184,368	125,629	23,343	279,644	63,534
Csub4nl	104,080	44,628	-	47,827	-
fsub4nl	264,274	205,807	129,564	239,949	120,428
gsub4nl	279,542	221,435	121,951	354,116	150,173
asub5nl	189,961	96,032	172,939	-	236,247
Csub5nl	94,070	-	35,628	-	150,376
fsub5nl	176,071	82,384	121,707	43,920	206,484
gsub5nl	196,559	102,927	183,876	25,253	243,605
TOTAL SALES IN EACH SEGMENT AFTER LSET					
tseg1nl	498,401	814,569	941,590	273,963	816,146
tseg2nl	1,325,468	1,561,489	1,275,960	1,766,652	1,370,684
tseg3nl	232,789	224,753	217,706	229,632	53,434
tseg4nl	832,264	597,499	274,858	921,536	334,135
tseg5nl	656,661	281,343	514,150	69,173	836,712
tsumnl	3,545,583	3,479,654	3,224,264	3,260,956	3,411,111
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1l	326,504	10,336	(156,647)	510,980	(101,472)
lostsales2l	426,798	190,777	313,958	(176,734)	(25,776)
lostsales3l	8,856	16,892	26,943	15,017	172,985
lostsales4l	(201,964)	32,801	309,052	(337,626)	150,746
lostsales5l	(325,497)	49,821	(208,948)	236,029	(517,679)
lostsuml	234,697	300,626	284,358	247,666	(321,196)
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET					
CSlsetseg1	2,704,015,735	4,197,012,642	5,166,213,239	857,583,558	2,170,563,155
CSlsetseg2	5,874,443,305	6,263,666,557	12,573,377,718	13,726,863,260	10,361,901,620

QUARTER	6	6	7	7	8
CSlsetseg3	1,542,625,080	1,444,150,581	3,065,747,054	2,696,322,334	775,565,561
CSlsetseg4	5,337,294,579	4,852,898,691	2,521,243,071	6,462,328,424	2,230,266,906
CSlsetseg5	3,903,719,067	2,358,455,909	10,122,460,749	1,019,150,708	11,067,850,330
Cslsetsum	19,362,097,766	19,116,184,380	33,449,041,831	24,762,248,283	26,606,147,571
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET					
PSlsetseg1	1,698,591,022	2,424,525,837	2,986,430,414	467,888,831	1,210,212,512
PSlsetseg2	3,572,876,916	3,738,018,814	7,383,255,603	8,104,166,510	5,701,821,495
PSlsetseg3	828,859,241	788,079,336	1,650,431,859	1,456,203,080	453,067,196
PSlsetseg4	2,982,326,713	2,811,038,763	1,616,864,010	3,916,987,869	1,357,381,524
PSlsetseg5	3,869,169,928	1,396,406,788	5,826,823,068	617,742,606	19,811,425,371
Pslsetsum	12,951,823,821	11,158,069,538	19,463,804,954	14,562,988,897	28,533,908,098
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSlsetseg1	4,402,606,757	6,621,538,478	8,152,643,653	1,325,472,389	3,380,775,668
TSlsetseg2	9,447,320,221	10,001,685,371	19,956,633,321	21,831,029,770	16,063,723,114
TSlsetseg3	2,371,484,321	2,232,229,917	4,716,178,913	4,152,525,414	1,228,632,756
TSlsetseg4	8,319,621,292	7,663,937,455	4,138,107,081	10,379,316,293	3,587,648,431
TSlsetseg5	7,772,888,995	3,754,862,697	15,949,283,817	1,636,893,314	30,879,275,701
Tslsetsum	32,313,921,587	30,274,253,918	52,912,846,785	39,325,237,180	55,140,055,669
dwllset	1,879,439,713	4,686,892,698	4,145,496,067	4,443,034,626	(14,662,043,349)
surpluslset	61,847,359,087	59,807,691,418	80,323,956,160	66,736,346,555	79,280,016,607
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM					
LSET	157.44	148.88	150.19	167.77	111.86
ABATEMENT CONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES					
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET					
taxrevlsetseg1	181,246,965	288,058,509	334,440,991	102,847,153	250,174,384
taxrevlsetseg2	681,672,817	780,920,262	640,928,212	937,922,307	594,192,360
taxrevlsetseg3	137,001,744	128,626,035	125,141,066	139,509,988	26,507,149
taxrevlsetseg4	489,806,491	341,949,317	157,992,652	559,866,637	165,755,659
taxrevlsetseg5	386,459,926	161,012,748	295,542,052	42,025,209	415,071,263
taxrevlsetsum	1,876,187,943	1,700,566,871	1,554,044,973	1,782,171,295	1,451,700,815
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET					
taxa1	363.66	353.63	355.19	375.41	306.53
taxc1	363.66	353.63	355.19	375.41	306.53
taxf1	363.66	353.63	355.19	375.41	306.53
taxg1	363.66	353.63	355.19	375.41	306.53
taxa2	514.29	500.11	502.31	530.90	433.50
taxc2	514.29	500.11	502.31	530.90	433.50

QUARTER	6	6	7	7	8
taxf2	514.29	500.11	502.31	530.90	433.50
taxg2	514.29	500.11	502.31	530.90	433.50
taxa3	588.52	572.30	574.82	607.54	496.07
taxc3	588.52	572.30	574.82	607.54	496.07
taxf3	588.52	572.30	574.82	607.54	496.07
taxg3	588.52	572.30	574.82	607.54	496.07
taxa4	588.52	572.30	574.82	607.54	496.07
taxc4	588.52	572.30	574.82	607.54	496.07
taxf4	588.52	572.30	574.82	607.54	496.07
taxg4	588.52	572.30	574.82	607.54	496.07
taxa5	588.52	572.30	574.82	607.54	496.07
taxc5	588.52	572.30	574.82	607.54	496.07
taxf5	588.52	572.30	574.82	607.54	496.07
taxg5	588.52	572.30	574.82	607.54	496.07
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	(1,625,038,700)	17,426,407,947	26,937,632,350	(13,783,258,289)	18,313,856,062
pollution reduction 2	(2,055,687,418)	8,199,214,403	665,586,011	28,952,890,873	6,359,374,537
pollution reduction 3	4,709,071,973	4,060,504,775	3,723,233,010	4,816,846,449	(3,468,644,513)
pollution reduction 4	22,442,810,466	11,085,339,713	(1,900,236,001)	28,879,799,516	653,052,629
pollution reduction 5	16,528,843,664	(771,466,838)	10,573,784,921	(8,866,278,549)	18,142,361,280
Total reduction	39.99999998	40	40.00000029	40	40
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM					
PMET	0.00783	0.00476	0.00580	0.00678	0.01967
FIRST ORDER CONDITIONS UNDER LSET					
foc1p	-1.12371E-06	-6.14047E-06	5.74667E-05	9.12836E-05	2.25795E-06
foc2p	-6.49236E-07	-2.76029E-05	-1.05709E-05	0.000178448	2.81987E-06
foc3p	1.6796E-10	-1.05581E-05	0.000239573	0.000102631	-1.65979E-07
foc4p	1.21984E-07	-2.42123E-05	-6.57605E-07	0.000178721	6.84576E-05
foc5p	-7.42326E-07	-6.14031E-06	4.49418E-05	9.12836E-05	2.25759E-06
foc6p	-4.26349E-07	-2.76027E-05	-8.33737E-06	0.000178448	2.81974E-06
foc7p	5.45824E-10	-1.05583E-05	0.000187396	0.000102631	7.42051E-07
foc8p	8.79998E-08	-2.42122E-05	-6.57405E-07	0.000178721	6.84576E-05
foc9p	-1.13298E-06	-6.14022E-06	5.47657E-05	9.12837E-05	2.25796E-06
foc10p	-6.54627E-07	-2.76027E-05	-9.77989E-06	0.000178448	2.81977E-06
foc11p	3.57336E-10	-1.05579E-05	0.000229499	0.000102631	-1.66591E-07
foc12p	1.22816E-07	-2.42124E-05	-6.57383E-07	0.000178721	6.84575E-05
foc13p	-1.13588E-06	-6.1404E-06	6.03702E-05	9.12836E-05	2.25798E-06
foc14p	-6.56114E-07	-2.76026E-05	-1.06201E-05	0.000178448	2.8198E-06
foc15p	-3.8369E-10	-1.05579E-05	0.000253355	0.000102631	-1.65621E-07
foc16p	1.23017E-07	-2.42125E-05	-6.57441E-07	0.000178721	6.84575E-05
foc17p	8.55383E-06	-1.19395E-05	-0.000127544	0.00031913	-0.000457302
foc18p	5.67408E-06	-1.36336E-05	-9.9495E-05	0.000318994	-0.000491124
foc19p	8.62367E-06	-1.19394E-05	-0.000119558	0.00031913	-0.000457302
foc20p	8.64414E-06	-1.19395E-05	-0.000131079	0.00031913	-0.000457302
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET					
p1a1	12,269.52	12,313.64	11,859.48	11,932.14	12,014.86
p1c1	12,269.52	12,313.64	11,859.48	11,932.14	12,014.86
p1f1	12,269.52	12,313.64	11,859.48	11,932.14	12,014.86
p1g1	12,269.52	12,313.64	11,859.48	11,932.14	12,014.86
p2a2	16,377.37	16,400.04	16,498.60	16,397.61	16,075.37
p2c2	16,377.37	16,400.04	16,498.60	16,397.61	16,075.37
p2f2	16,377.37	16,400.04	16,498.60	16,397.61	16,075.37
p2g2	16,377.37	16,400.04	16,498.60	16,397.61	16,075.37
p3a3	18,812.87	18,722.34	18,789.79	18,536.03	19,385.08
p3c3	18,812.87	18,722.34	18,789.79	18,536.03	19,385.08
p3f3	18,812.87	18,722.34	18,789.79	18,536.03	19,385.08
p3g3	18,812.87	18,722.34	18,789.79	18,536.03	19,385.08
p4a4	15,148.27	14,985.77	15,170.90	15,072.06	15,465.95
p4c4	15,148.27	14,985.77	15,170.90	15,072.06	15,465.95

QUARTER	6	6	7	7	8
p4f4	15,148.27	14,985.77	15,170.90	15,072.06	15,465.95
p4g4	15,148.27	14,985.77	15,170.90	15,072.06	15,465.95
p5a5	28,050.16	27,897.46	25,380.62	25,490.26	22,428.47
p5c5	28050.16197	27897.46197	25380.62438	25490.26355	22428.47492
p5f5	28050.16197	27897.46197	25380.62438	25490.26355	22428.47492
p5g5	28050.16197	27897.46197	25380.62438	25490.26355	22428.47492
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST					
dp/dgas1	8,558	24,181	6,977	16,265	21,987
dp/dgas2	14,068	27,438	52,286	26,028	10,286
dp/dgas3	27,249	27,249	94,517	30,655	3,552
dp/dgas4	47,021	37,848	39,476	19,933	10,973
dp/dgas5	3,944	3,944	140,471	48,166	161,102
sum of dpdgas	100,840	120,660	333,727	141,047	207,900
MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,744	11,882	11,756	11,828	11,747
VMT2	11,718	11,843	11,874	11,807	11,478
VMT3	11,768	11,819	11,893	11,797	10,983
VMT4	11,824	11,847	11,834	11,748	11,421
VMT5	11,824	11,847	11,834	11,748	11,421
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT					
tpma1	0.02773	0.01286	0.02643	0.01871	0.02741
tpmc1	0.02773	0.01286	0.02643	0.01871	0.02741
tpmf1	0.02773	0.01286	0.02643	0.01871	0.02741
tpmg1	0.02773	0.01286	0.02643	0.01871	0.02741
tpma2	0.03059	0.01707	0.01365	0.02092	0.05668
tpmc2	0.03059	0.01707	0.01365	0.02092	0.05668
tpmf2	0.03059	0.01707	0.01365	0.02092	0.05668
tpmg2	0.03059	0.01707	0.01365	0.02092	0.05668
tpma3	0.02515	0.01960	0.01162	0.02206	0.11038
tpmc3	0.02515	0.01960	0.01162	0.02206	0.11038
tpmf3	0.02515	0.01960	0.01162	0.02206	0.11038
tpmg3	0.02515	0.01960	0.01162	0.02206	0.11038
tpma4	0.01914	0.01663	0.01798	0.02735	0.06280
tpmc4	0.01914	0.01663	0.01798	0.02735	0.06280
tpmf4	0.01914	0.01663	0.01798	0.02735	0.06280
tpmg4	0.01914	0.01663	0.01798	0.02735	0.06280
tpma5	0.01914	0.01663	0.01798	0.02735	0.06280
tpmc5	0.01914	0.01663	0.01798	0.02735	0.06280
tpmf5	0.01914	0.01663	0.01798	0.02735	0.06280
tpmg5	0.01914	0.01663	0.01798	0.02735	0.06280
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET					
cstravelpmetseg1	6,137,985,466	6,317,787,670	5,804,188,305	6,056,884,971	5,433,613,118
cstravelpmetseg2	13,062,798,428	13,368,216,915	12,225,770,542	11,988,122,433	9,622,302,111
cstravelpmetseg3	1,822,534,032	1,834,733,937	1,882,504,520	1,851,251,630	1,443,200,567
cstravelpmetseg4	4,829,982,965	4,808,844,323	4,517,902,250	4,273,242,235	3,486,197,416
cstravelpmetseg5	2,520,511,144	2,523,716,264	2,268,512,656	2,355,725,900	2,321,810,769
cstravelpmetsum	28,373,812,034	28,853,299,108	26,698,878,273	26,525,227,169	22,307,123,982
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET					
epm_a1	3.54	2.70	4.56	2.76	1.39
epm_c1	3.54	2.70	4.56	2.76	1.39
epm_f1	3.54	2.70	4.56	2.76	1.39
epm_g1	3.54	2.70	4.56	2.76	1.39
epm_a2	3.90	3.59	2.35	3.09	2.88
epm_c2	3.90	3.59	2.35	3.09	2.88
epm_f2	3.90	3.59	2.35	3.09	2.88

QUARTER	6	6	7	7	8
epm_g2	3.90	3.59	2.35	3.09	2.88
epm_a3	3.21	4.12	2.00	3.25	5.61
epm_c3	3.21	4.12	2.00	3.25	5.61
epm_f3	3.21	4.12	2.00	3.25	5.61
epm_g3	3.21	4.12	2.00	3.25	5.61
epm_a4	2.44	3.50	3.10	4.04	3.19
epm_c4	2.44	3.50	3.10	4.04	3.19
epm_f4	2.44	3.50	3.10	4.04	3.19
epm_g4	2.44	3.50	3.10	4.04	3.19
epm_a5	2.44	3.50	3.10	4.04	3.19
epm_c5	2.44	3.50	3.10	4.04	3.19
epm_f5	2.44	3.50	3.10	4.04	3.19
epm_g5	2.44	3.50	3.10	4.04	3.19
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET					
Asub1n	407,307	376,829	423,915	149,402	241,260
Csub1n	94,109	80,162	104,140	44,156	9,954
Fsub1n	202,197	171,628	238,984	113,309	87,638
Gsub1n	227,667	197,263	278,311	31,773	121,276
Asub2n	361,587	321,222	252,869	462,472	313,933
Csub2n	235,917	210,026	166,413	204,220	223,365
Fsub2n	386,243	345,356	252,849	352,831	289,198
Gsub2n	744,274	702,774	527,109	720,015	503,202
Asub3n	37,367	39,742	31,129	37,399	55,771
Csub3n	45,593	47,280	44,790	47,500	50,579
Fsub3n	53,932	56,379	58,319	63,815	74,733
Gsub3n	81,657	84,161	73,317	80,188	75,698
asub4n	76,190	121,493	-	268,769	82,673
Csub4n	9,585	41,394	-	47,417	18,995
fsub4n	156,095	201,671	106,222	229,074	139,568
gsub4n	171,364	217,300	98,608	343,242	169,313
asub5n	93,840	104,896	184,177	6,363	84,807
Csub5n	18,292	12,322	28,499	-	-
fsub5n	79,950	91,248	132,944	50,283	55,044
gsub5n	100,438	111,791	195,113	31,616	92,165
TOTAL SALES IN EACH SEGMENT AFTER PMET					
tseg1n	931,279	825,881	1,045,350	338,640	460,128
tseg2n	1,728,020	1,579,377	1,199,239	1,739,537	1,329,697
tseg3n	218,549	227,562	207,555	228,903	256,781
tseg4n	413,233	581,858	204,830	888,501	410,549
tseg5n	292,519	320,257	540,733	88,263	232,016
tsumn	3,583,600	3,534,935	3,197,708	3,283,844	2,689,170
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET					
CSPMETseg1	5,146,681,184	4,283,551,876	5,878,328,810	1,079,302,076	1,114,677,725
CSPMETseg2	7,774,677,119	6,375,597,422	11,614,352,641	13,497,395,694	9,892,985,222
CSPMETseg3	1,431,343,245	1,469,164,489	2,835,864,030	2,675,204,480	3,748,403,904
CSPMETseg4	2,547,019,749	4,699,276,129	1,856,756,197	6,274,988,744	2,676,903,696
CSPMETseg5	2,070,772,929	2,687,983,548	10,147,721,829	1,272,606,586	3,677,146,620
CsPMETsum	18,970,494,226	19,515,573,465	32,333,023,506	24,799,497,580	21,110,117,168
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET					
PSpmetseg1	2,951,399,646	2,471,189,188	3,372,201,722	591,211,387	681,994,852
PSpmetseg2	4,539,469,845	3,793,777,443	6,846,980,849	7,973,700,458	5,467,259,711
PSpmetseg3	772,880,419	800,661,561	1,532,647,528	1,445,896,704	1,940,525,486
PSpmetseg4	1,561,320,789	2,732,022,203	1,202,644,116	3,796,202,865	1,580,927,042
PSpmetseg5	1,210,883,753	1,666,419,792	6,063,120,163	784,261,729	2,430,828,739
Pspmetsum	11,035,954,452	11,464,070,188	19,017,594,378	14,591,273,142	12,101,535,831
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSPMETseg1	8,098,080,830	6,754,741,065	9,250,530,532	1,670,513,463	1,796,672,578
TSPMETseg2	12,314,146,964	10,169,374,865	18,461,333,489	21,471,096,152	15,360,244,933
TSPMETseg3	2,204,223,665	2,269,826,050	4,368,511,558	4,121,101,184	5,688,929,390
TSPMETseg4	4,108,340,538	7,431,298,332	3,059,400,314	10,071,191,609	4,257,830,738

QUARTER	6	6	7	7	8
TSPMETseg5	3,281,656,682	4,354,403,340	16,210,841,992	2,056,868,315	6,107,975,359
TSPMETsum	30,006,448,679	30,979,643,653	51,350,617,884	39,390,770,722	33,211,652,999
dwlpmet	4,252,285,820	4,006,326,462	5,729,521,356	4,409,728,547	7,438,955,413
pmetsurplus	59,474,512,980	60,488,257,654	78,739,930,871	66,769,652,634	57,179,017,844
pmetsurplus10	69,322,783,387	66,386,091,691	84,953,843,296	74,452,545,319	72,121,185,619
TAX REVENUE IN EACH SEGMENT UNDER PMET					
taxrevpmetseg1	303,285,182	126,153,643	324,814,001	74,936,001	148,183,988
taxrevpmetseg2	568,505,990	292,991,561	184,337,283	390,074,876	726,258,468
taxrevpmetseg3	64,680,604	52,714,826	28,686,622	59,555,606	311,282,186
taxrevpmetseg4	93,537,881	114,632,918	43,589,416	285,491,838	294,474,067
taxrevpmetseg5	64,242,610	68,821,945	109,007,392	43,596,422	180,042,156
taxrevpmetsum	1,094,252,267	655,314,893	690,434,714	853,654,743	1,660,240,864
pmetrev10	10,942,522,674	6,553,148,930	6,904,347,139	8,536,547,428	16,602,408,638
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1	(106,374)	(976)	(260,407)	446,303	254,546
lostsales2	24,246	172,889	390,679	(149,619)	15,211
lostsales3	23,096	14,083	37,094	15,746	(30,362)
lostsales4	217,067	48,442	379,080	(304,591)	74,332
lostsales5	38,645	10,907	(235,531)	216,939	87,017
lostsum	196,680	245,345	310,914	224,778	400,745
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET					
taxa1p	237.30	310.87	184.41	304.31	602.76
taxc1p	237.30	310.87	184.41	304.31	602.76
taxf1p	237.30	310.87	184.41	304.31	602.76
taxg1p	237.30	310.87	184.41	304.31	602.76
taxa2p	430.28	468.31	713.92	544.40	583.04
taxc2p	430.28	468.31	713.92	544.40	583.04
taxf2p	430.28	468.31	713.92	544.40	583.04
taxg2p	430.28	468.31	713.92	544.40	583.04
taxa3p	685.28	534.06	1,098.42	676.10	392.10
taxc3p	685.28	534.06	1,098.42	676.10	392.10
taxf3p	685.28	534.06	1,098.42	676.10	392.10
taxg3p	685.28	534.06	1,098.42	676.10	392.10
taxa4p	900.20	629.42	709.87	545.19	689.14
taxc4p	900.20	629.42	709.87	545.19	689.14
taxf4p	900.20	629.42	709.87	545.19	689.14
taxg4p	900.20	629.42	709.87	545.19	689.14
taxa5p	900.20	629.42	709.87	545.19	689.14
taxc5p	900.20	629.42	709.87	545.19	689.14
taxf5p	900.20	629.42	709.87	545.19	689.14
taxg5p	900.20	629.42	709.87	545.19	689.14
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET					
pollution reduction 1p	12,432,779,134.42	15,148,115,980.45	7,017,913,160.72	(11,661,986,873.16)	5,577,703,106.98
pollution reduction 2p	7,070,941,272.10	5,656,044,443.57	11,461,223,921.69	30,214,906,110.78	22,438,244,977.51
pollution reduction 3p	5,613,081,135.94	3,601,499,285.05	7,864,441,139.85	5,943,031,386.04	1,852,705,743.21
pollution reduction 4p	10,123,109,436.56	13,146,496,578.25	(3,091,527,641.22)	23,830,600,300.43	10,343,179,187.54
pollution reduction 5p	4,760,089,020.97	2,447,846,516.28	16,747,949,679.59	(8,326,570,953.98)	(211,836,271.88)
Total reductionp	40	40.0000028	40.00000026	39.99997997	39.99999674
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET					
Tsdiff	(2,373)	(681)	(1,584)	(33)	(22,101)

QUARTER	8	9	9	10	10
COEFFICIENTS OF DEMAND					
a P1/q1	-0.003253195	-0.011215637	-0.010700714	-0.004528246	-0.005156231
b p2/q1	-0.000404057	-1E-08	-0.0002242	-0.001763368	-0.00257799
c p3/q1	-0.001517706	-0.011215637	-0.010700714	-0.000161603	-2.085E-15
d p4/q1	-0.003253195	-0.000175103	-4.66688E-17	-0.000975378	-0.000564676
f P1/q2	-0.000404057	-1E-08	-0.0002242	-0.001763368	-0.00257799
g p2/q2	-0.009254024	-0.00718762	-0.007111243	-0.003840521	-0.003641721
h p3/q2	-0.009254024	-1E-08	0	-5.59239E-17	2.7962E-17
i p4/q2	-0.001463949	-1E-08	0	-0.003840521	-0.003641721
k P1/q3	-0.001517706	-0.011215637	-0.010700714	-0.000161603	2.22469E-18
l p2/q3	-0.009254024	-1E-08	6.06302E-18	0	4.48827E-16
m p3/q3	-0.011808999	-0.070094402	-0.073987408	-0.070309471	-0.068630051
n p4/q3	-0.010503924	-0.006161079	-0.003544872	-1E-08	-0.000733997
p P1/q4	-0.003253195	-0.000175103	-4.31387E-19	-0.000975378	-0.000564676
q p2/q4	-0.001463949	-1E-08	-8.98042E-18	-0.003840521	-0.003641721
r p3/q4	-0.010503924	-0.006161079	-0.003544872	-1E-08	-0.000733997
s p4/q4	-0.010503924	-0.023623952	-0.025961884	-0.008895918	-0.008267647
u P1/q5	-0.000715812	-0.001480533	-1E-08	-0.004528246	3.79117E-15
v p2/q5	-1E-08	-1E-08	-1E-08	-3.08581E-17	-3.14295E-16
w p3/q5	-0.011808999	-1E-08	-0.002988837	-4.10393E-17	-9.99998E-09
x p4/q5	-0.008534745	-0.007605861	-0.003631774	-0.005221433	-0.007621985
y p5/q5	-0.099281508	-0.036258225	-0.041842765	-0.120652068	-0.124185925
e p5/q1	-0.000715812	-0.001480533	-1E-08	-0.004528246	2.07929E-15
j p5/q2	-1E-08	-0.00000001	-0.00000001	-0.00000001	-0.00000001
o p5/q3	-0.011808999	-0.00000001	-0.002988837	0	-0.00000001
t p5/q4	-0.008534745	-0.007605861	-0.003631774	-0.005221433	-0.007621985
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.003253195	-0.011215637	-0.010700714	-0.004528246	-0.005156231
bb	-0.000404057	-1E-08	-0.0002242	-0.001763368	-0.00257799
cc	-0.001517706	-0.011215637	-0.010700714	-0.000161603	-2.085E-15
dd	-0.003253195	-0.000175103	-4.66688E-17	-0.000975378	-0.000564676
ee	-0.000715812	-0.001480533	-1E-08	-0.004528246	-0.00000001
ff	-0.000404057	-1E-08	-0.0002242	-0.001763368	-0.00257799
gg	-0.009254024	-0.00718762	-0.007111243	-0.003840521	-0.003641721
hh	-0.009254024	-1E-08	-0.00000001	-5.59239E-17	-0.00000001
ii	-0.001463949	-1E-08	-0.00000001	-0.003840521	-0.003641721
jj	-1E-08	-0.00000001	-0.00000001	-0.00000001	-0.00000001
kk	-0.001517706	-0.011215637	-0.010700714	-0.000161603	-0.00000001
ll	-0.009254024	-1E-08	-0.00000001	-0.00000001	-0.00000001
mm	-0.011808999	-0.070094402	-0.073987408	-0.070309471	-0.068630051
nn	-0.010503924	-0.006161079	-0.003544872	-1E-08	-0.000733997
oo	-0.011808999	-0.00000001	-0.002988837	-0.00000001	-0.00000001
pp	-0.003253195	-0.000175103	-4.31387E-19	-0.000975378	-0.000564676
qq	-0.001463949	-1E-08	-8.98042E-18	-0.003840521	-0.003641721
rr	-0.010503924	-0.006161079	-0.003544872	-1E-08	-0.000733997
ss	-0.010503924	-0.023623952	-0.025961884	-0.008895918	-0.008267647
tt	-0.008534745	-0.007605861	-0.003631774	-0.005221433	-0.007621985
uu	-0.000715812	-0.001480533	-1E-08	-0.004528246	-0.00000001
vv	-1E-08	-1E-08	-1E-08	-3.08581E-17	-3.14295E-16
ww	-0.011808999	-1E-08	-0.002988837	-4.10393E-17	-9.99998E-09
xx	-0.008534745	-0.007605861	-0.003631774	-0.005221433	-0.007621985
yy	-0.099281508	-0.036258225	-0.041842765	-0.120652068	-0.124185925
KNOWN PRICE BEFORE TAXES					
P1	11,655	11,738	11,738	11,297	11,297
P2	15,723	16,572	16,572	15,760	15,760
P3	19,151	20,204	20,204	18,353	18,353
P4	15,051	14,209	14,209	13,559	13,559
P5	23,923	26,188	26,188	28,426	28,426

QUARTER	8	9	9	10	10
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	304,592	278,030	278,030	340,952	340,952
Csub1	73,562	50,556	50,556	69,068	69,068
Fsub1	151,362	168,588	168,588	165,279	165,279
Gsub1	185,158	166,562	166,562	200,491	200,491
Asub2	317,133	304,095	304,095	356,553	356,553
Csub2	226,938	214,939	214,939	225,622	225,622
Fsub2	293,130	251,955	251,955	294,650	294,650
Gsub2	507,707	489,213	489,213	615,980	615,980
Asub3	48,100	44,302	44,302	47,383	47,383
Csub3	43,229	35,836	35,836	48,031	48,031
Fsub3	67,090	62,571	62,571	74,563	74,563
Gsub3	68,000	59,766	59,766	70,465	70,465
asub4	102,108	89,438	89,438	105,964	105,964
Csub4	37,752	40,736	40,736	47,594	47,594
fsub4	157,810	136,512	136,512	167,893	167,893
gsub4	187,211	171,028	171,028	205,314	205,314
asub5	106,831	72,376	72,376	100,120	100,120
Csub5	20,969	17,169	17,169	18,308	18,308
fsub5	77,027	67,085	67,085	72,831	72,831
gsub5	114,206	100,614	100,614	117,480	117,480
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	714,674	663,736	663,736	775,790	775,790
tseg2	1,344,908	1,260,202	1,260,202	1,492,805	1,492,805
tseg3	226,419	202,475	202,475	240,442	240,442
tseg4	484,881	437,714	437,714	526,765	526,765
tseg5	319,033	257,244	257,244	308,739	308,739
tsum	3,089,915	2,821,371	2,821,371	3,344,541	3,344,541
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	(5.01)	(1.58)	(1.65)	(3.22)	(2.82)
Elasiticity21	0.30	0.00	0.07	2.06	2.79
Elasiticity31	1.06	0.43	0.41	0.01	0.00
Elasiticity41	2.01	0.01	0.00	0.42	0.23
Elasiticity51	0.07	0.14	0.00	0.30	0.00
Elasiticity12	0.12	0.00	0.03	0.77	1.04
Elasiticity22	(1.26)	(1.83)	(1.85)	(2.75)	(2.90)
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.17	0.00	0.00	1.02	1.10
Elasiticity52	0.00	0.00	0.00	0.00	0.00
Elasiticity13	2.03	0.83	0.78	0.02	0.00
Elasiticity23	5.88	0.00	0.00	0.00	0.00
Elasiticity33	(7.16)	(1.42)	(1.35)	(1.09)	(1.11)
Elasiticity43	5.63	0.26	0.13	0.00	0.07
Elasiticity53	1.06	0.00	0.12	0.00	0.00
Elasiticity14	2.29	0.02	0.00	0.52	0.28
Elasiticity24	0.49	0.00	0.00	3.36	3.62
Elasiticity34	3.34	0.17	0.09	0.00	0.05
Elasiticity44	(2.96)	(1.37)	(1.25)	(2.89)	(3.11)
Elasiticity54	0.40	0.53	0.20	0.26	0.40
Elasiticity15	0.08	0.17	0.00	0.30	0.00
Elasiticity25	0.00	0.00	0.00	0.00	0.00
Elasiticity35	0.60	0.00	0.08	0.00	0.00
Elasiticity45	0.39	0.49	0.18	0.21	0.33
Elasiticity55	(0.76)	(2.81)	(2.43)	(0.76)	(0.74)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					
MCasub1	10,051	8,000	8,221	8,559	8,559
MCcsub1	11,119	10,736	10,765	10,450	10,333
MCfsub1	10,371	9,023	9,209	9,524	9,591

QUARTER	8	9	9	10	10
MCgsub1	10,051	9,023	9,209	8,559	8,559
MCasub2	12,074	14,399	14,360	13,386	13,201
MCcsub2	13,140	15,034	15,039	14,590	14,588
MCfsub2	12,099	14,775	14,756	13,700	13,657
MCgsub2	10,051	13,072	13,072	12,260	12,260
MCasub3	12,849	13,416	13,405	14,963	15,020
MCcsub3	15,783	16,864	16,806	14,963	15,020
MCfsub3	12,849	13,072	13,072	13,074	13,102
MCgsub3	10,051	13,072	13,072	13,353	13,353
MCasub4	11,110	11,233	11,476	10,393	10,396
MCcsub4	13,451	12,893	12,969	12,107	12,131
MCfsub4	11,110	10,067	10,208	10,393	10,396
MCgsub4	10,051	9,023	9,209	8,559	8,559
MCasub5	11,658	22,477	22,707	14,243	15,179
MCcsub5	20,955	25,187	25,221	25,654	25,788
MCfsub5	14,023	22,477	22,707	18,013	18,101
MCgsub5	10,051	21,002	21,188	12,260	12,260
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.000715812	-0.001480533	-1E-08	-0.004528246	2.07929E-15
j	-1E-08	-0.00000001	-0.00000001	0	2.77164E-15
o	-0.011808999	-0.00000001	-0.002988837	0	-0.00000001
t	-0.008534745	-0.007605861	-0.003631774	-0.005221433	-0.007621985
y	-0.099281508	-0.036258225	-0.041842765	-0.120652068	-0.124185925
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	1,603	3,738	3,518	2,737	2,737
XMCcsub1	536	1,003	974	846	963
XMCfsub1	1,284	2,716	2,530	1,773	1,706
XMCgsub1	1,603	2,716	2,530	2,737	2,737
XMCasub2	3,649	2,173	2,212	2,374	2,560
XMCcsub2	2,583	1,538	1,533	1,170	1,172
XMCfsub2	3,624	1,798	1,816	2,060	2,103
XMCgsub2	5,672	3,500	3,500	3,500	3,500
XMCasub3	6,302	6,788	6,799	3,390	3,333
XMCcsub3	3,368	3,340	3,398	3,390	3,333
XMCfsub3	6,302	7,132	7,132	5,280	5,251
XMCgsub3	9,100	7,132	7,132	5,000	5,000
XMCasub4	3,942	2,976	2,733	3,166	3,164
XMCcsub4	1,600	1,316	1,240	1,452	1,428
XMCfsub4	3,942	4,141	4,000	3,166	3,164
XMCgsub4	5,000	5,186	5,000	5,000	5,000
XMCasub5	12,265	3,711	3,481	14,184	13,248
XMCcsub5	2,968	1,001	967	2,773	2,639
XMCfsub5	9,900	3,711	3,481	10,414	10,326
XMCgsub5	13,872	5,186	5,000	16,166	16,166
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	16,673	21,911	21,290	19,393	19,443
constant2	31,263	25,630	25,682	24,884	25,115
constant3	44,216	44,537	44,608	35,384	35,242
constant4	29,540	27,869	27,224	26,347	26,318
constant5	62,921	39,827	39,147	71,940	70,782
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	2,812,070,002	5,376,149,041	5,045,038,622	4,974,033,301	4,990,440,081
TSseg2	16,135,404,436	8,863,745,078	8,912,371,138	10,683,703,566	10,934,951,043
TSseg3	4,327,860,912	3,756,371,407	3,766,068,755	3,116,913,743	3,092,213,338
TSseg4	5,533,492,239	4,761,728,338	4,544,761,722	5,330,821,455	5,321,480,290
TSseg5	9,940,033,575	2,810,774,683	2,671,850,936	10,845,635,294	10,564,404,697
Tssum	38,748,861,164	25,568,768,548	24,940,091,173	34,951,107,358	34,903,489,450
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	1,793,049,364	3,375,968,271	3,169,901,020	3,140,409,157	3,159,808,301

QUARTER	8	9	9	10	10
CSseg2	10,449,741,001	5,707,372,088	5,740,506,514	6,810,329,220	6,982,363,906
CSseg3	2,837,581,571	2,463,451,748	2,470,554,436	2,047,450,828	2,030,315,562
CSseg4	3,512,516,085	2,989,760,776	2,848,616,491	3,368,124,523	3,360,561,766
CSseg5	6,220,789,505	1,754,288,354	1,666,769,104	6,717,147,155	6,538,480,032
Cssum	24,813,677,526	16,290,841,237	15,896,347,565	22,083,460,883	22,071,529,567
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	1,019,020,638	2,000,180,770	1,875,137,602	1,833,624,145	1,830,631,781
PSseg2	5,685,663,435	3,156,372,990	3,171,864,625	3,873,374,346	3,952,587,137
PSseg3	1,490,279,341	1,292,919,659	1,295,514,319	1,069,462,915	1,061,897,776
PSseg4	2,020,976,154	1,771,967,563	1,696,145,231	1,962,696,931	1,960,918,524
PSseg5	3,719,244,070	1,056,486,330	1,005,081,832	4,128,488,139	4,025,924,665
Pssum	13,935,183,637	9,277,927,311	9,043,743,608	12,867,646,475	12,831,959,883
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	5,583,390,625	5,185,437,500	5,185,437,500	6,060,859,375	6,060,859,375
CStravseg2	10,507,093,750	9,845,328,125	9,845,328,125	11,662,539,063	11,662,539,063
CStravseg3	1,768,898,438	1,581,835,938	1,581,835,938	1,878,453,125	1,878,453,125
CStravseg4	3,788,132,813	3,419,640,625	3,419,640,625	4,115,351,563	4,115,351,563
CStravseg5	2,492,445,313	2,009,718,750	2,009,718,750	2,412,023,438	2,412,023,438
Cstravsum	24,139,960,938	22,041,960,938	22,041,960,938	26,129,226,563	26,129,226,563
FIRST ORDER CONDITIONS UNDER LSET					
foc1l	-9.82056E-07	-0.000438478	-4.05128E-12	-5.63703E-07	0.003889824
foc2l	-2.1349E-06	3.86029E-08	-7.54413E-13	1.69798E-06	0.022498826
foc3l	6.73843E-06	1.00684E-05	5.34504E-08	-3.65844E-10	2.07357E-06
foc4l	-1.79867E-06	-0.000719219	-3.96838E-08	-2.33193E-05	-0.033873617
foc5l	-9.79674E-07	-0.000438398	-4.20641E-12	-5.57899E-07	0.003846627
foc6l	-2.12818E-06	3.85156E-08	-6.36646E-12	1.6964E-06	0.022228272
foc7l	6.71806E-06	1.0065E-05	5.39176E-08	-3.80396E-10	1.85726E-06
foc8l	-1.79185E-06	-0.00071907	-3.99932E-08	-2.33108E-05	-0.03347495
foc9l	-9.77798E-07	-0.000438418	-5.81218E-12	-5.7138E-07	0.003953104
foc10l	-2.12322E-06	3.86465E-08	-4.3343E-12	1.70071E-06	0.022901951
foc11l	6.70181E-06	1.00661E-05	5.35635E-08	-2.67619E-10	2.39673E-06
foc12l	-1.78877E-06	-0.000719102	-3.97619E-08	-2.33336E-05	-0.034467958
foc13l	-9.81363E-07	-0.000438596	-5.58158E-12	-5.69823E-07	0.003953316
foc14l	-2.13411E-06	3.84296E-08	1.35324E-12	1.7005E-06	0.022906362
foc15l	6.73287E-06	1.00739E-05	5.23528E-08	-6.13227E-10	2.40419E-06
foc16l	-1.79443E-06	-0.000719431	-3.89548E-08	-2.33313E-05	-0.034474066
foc17l	9.9415E-06	0.000690672	3.69973E-08	2.447E-07	-0.06627567
foc18l	9.90937E-06	0.000690311	3.72593E-08	2.28525E-07	-0.06548026
foc19l	9.88855E-06	0.000690391	3.70665E-08	2.68254E-07	-0.067458881
foc20l	9.93418E-06	0.000691173	3.64143E-08	2.63539E-07	-0.06747143
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	12,306	12,314	12,392	11,891	11,890
p1c1l	12,306	12,314	12,392	11,891	11,890
p1f1l	12,306	12,314	12,392	11,891	11,890
p1g1l	12,306	12,314	12,392	11,891	11,890
p2a2l	16,649	17,396	17,506	16,604	16,602
p2c2l	16,649	17,396	17,506	16,604	16,602
p2f2l	16,649	17,396	17,506	16,604	16,602
p2g2l	16,649	17,396	17,506	16,604	16,602
p3a3l	20,207	21,124	21,249	19,308	19,307
p3c3l	20,207	21,124	21,249	19,308	19,307
p3f3l	20,207	21,124	21,249	19,308	19,307
p3g3l	20,207	21,124	21,249	19,308	19,307
p4a4l	16,110	15,148	15,274	14,521	14,519
p4c4l	16,110	15,148	15,274	14,521	14,519
p4f4l	16,110	15,148	15,274	14,521	14,519
p4g4l	16,110	15,148	15,274	14,521	14,519
p5a5l	23,158	30,371	26,768	32,773	27,590
p5c5l	23,158	30,371	26,768	32,773	27,590
p5f5l	23,158	30,371	26,768	32,773	27,590

QUARTER	8	9	9	10	10
p5g5l	23,158	30,371	26,768	32,773	27,590
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET					
lemp_a1	2.06	2.34	2.06	2.26	2.27
lemp_c1	2.06	2.34	2.06	2.26	2.27
lemp_f1	2.06	2.34	2.06	2.26	2.27
lemp_g1	2.06	2.34	2.06	2.26	2.27
lemp_a2	2.91	3.30	2.91	3.20	3.21
lemp_c2	2.91	3.30	2.91	3.20	3.21
lemp_f2	2.91	3.30	2.91	3.20	3.21
lemp_g2	2.91	3.30	2.91	3.20	3.21
lemp_a3	3.33	3.78	3.33	3.66	3.67
lemp_c3	3.33	3.78	3.33	3.66	3.67
lemp_f3	3.33	3.78	3.33	3.66	3.67
lemp_g3	3.33	3.78	3.33	3.66	3.67
lemp_a4	3.33	3.78	3.33	3.66	3.67
lemp_c4	3.33	3.78	3.33	3.66	3.67
lemp_f4	3.33	3.78	3.33	3.66	3.67
lemp_g4	3.33	3.78	3.33	3.66	3.67
lemp_a5	3.33	3.78	3.33	3.66	3.67
lemp_c5	3.33	3.78	3.33	3.66	3.67
lemp_f5	3.33	3.78	3.33	3.66	3.67
lemp_g5	3.33	3.78	3.33	3.66	3.67
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET					
Asub1nl	231,486	248,635	263,956	280,191	360,985
Csub1nl	-	21,299	36,580	7,406	87,312
Fsub1nl	78,498	139,120	154,417	105,097	187,039
Gsub1nl	111,558	136,771	152,111	140,288	222,298
Asub2nl	314,309	275,385	271,657	377,034	252,120
Csub2nl	223,564	187,016	183,290	247,597	124,320
Fsub2nl	289,390	223,170	219,443	312,726	185,938
Gsub2nl	504,470	460,035	456,313	634,144	507,347
Asub3nl	22,740	49,296	43,847	44,073	43,503
Csub3nl	18,596	40,756	35,327	44,700	44,140
Fsub3nl	42,907	67,591	62,150	71,354	70,767
Gsub3nl	42,888	64,970	59,492	67,293	66,709
asub4nl	142,124	48,563	81,691	58,842	138,776
Csub4nl	77,514	-	33,093	-	79,205
fsub4nl	197,060	95,675	128,780	121,887	202,699
gsub4nl	227,424	129,771	162,956	159,175	239,947
asub5nl	85,926	165,264	55,239	130,571	81,774
Csub5nl	-	109,991	-	48,777	-
fsub5nl	56,086	159,853	49,845	103,168	54,319
gsub5nl	93,248	193,469	83,381	147,912	99,064
TOTAL SALES IN EACH SEGMENT AFTER LSET					
tseg1nl	421,542	545,824	607,064	532,981	857,635
tseg2nl	1,331,733	1,145,606	1,130,703	1,571,501	1,069,725
tseg3nl	127,131	222,614	200,816	227,419	225,120
tseg4nl	644,121	274,009	406,519	339,904	660,627
tseg5nl	235,259	628,576	188,465	430,427	235,157
tsumnl	2,759,787	2,816,629	2,533,567	3,102,232	3,048,264
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1l	293,132	117,912	56,672	242,809	(81,845)
lostsales2l	13,175	114,596	129,499	(78,696)	423,080
lostsales3l	99,288	(20,139)	1,659	13,023	15,322
lostsales4l	(159,240)	163,705	31,195	186,861	(133,862)
lostsales5l	83,774	(371,332)	68,779	(121,688)	73,582
lostsuml	330,128	4,742	287,804	242,309	296,277
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET					
CSlsetseg1	920,279,285	2,619,173,590	2,700,967,199	1,999,203,037	3,238,831,884
CSlsetseg2	9,730,746,873	4,716,573,616	4,622,793,634	6,506,509,221	4,552,980,026

QUARTER	8	9	9	10	10
CSlsetseg3	1,526,140,335	2,606,137,402	2,345,349,194	1,827,973,048	1,793,631,109
CSlsetseg4	4,325,276,129	1,742,859,682	2,429,021,596	2,009,927,182	3,897,491,200
CSlsetseg5	4,677,287,740	2,972,081,459	1,166,498,780	8,429,175,586	5,078,473,303
Cslsetsum	21,179,730,361	14,656,825,750	13,264,630,403	20,772,788,074	18,561,407,522
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET					
PSlsetseg1	581,260,911	1,621,591,830	1,640,566,479	1,264,732,200	1,873,147,147
PSlsetseg2	5,330,043,007	2,675,589,837	2,627,603,432	3,725,006,867	2,737,959,218
PSlsetseg3	832,824,502	1,361,747,009	1,230,338,462	958,192,088	941,986,243
PSlsetseg4	2,428,455,796	1,152,217,327	1,490,279,453	1,286,674,671	2,235,219,778
PSlsetseg5	2,411,693,707	4,217,329,858	642,915,888	6,806,880,654	2,767,152,962
Pslsetsum	11,584,277,923	11,028,475,861	7,631,703,715	14,041,486,480	10,555,465,348
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSlsetseg1	1,501,540,196	4,240,765,420	4,341,533,678	3,263,935,237	5,111,979,031
TSlsetseg2	15,060,789,880	7,392,163,453	7,250,397,066	10,231,516,088	7,290,939,244
TSlsetseg3	2,358,964,837	3,967,884,411	3,575,687,657	2,786,165,136	2,735,617,352
TSlsetseg4	6,753,731,925	2,895,077,010	3,919,301,049	3,296,601,853	6,132,710,978
TSlsetseg5	7,088,981,446	7,189,411,317	1,809,414,669	15,236,056,239	7,845,626,265
Tslsetsum	32,764,008,284	25,685,301,611	20,896,334,119	34,814,274,554	29,116,872,870
dwllset	5,984,852,879	(116,533,063)	4,043,757,054	136,832,805	5,786,616,580
surpluslset	56,903,969,222	47,727,262,549	42,938,295,056	60,943,501,116	55,246,099,432
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM					
LSET	198.46	153.94	198.36	163.89	163.35
ABATEMENT CONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES					
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET					
taxrevlsetseg1	172,114,954	196,279,321	247,798,759	197,752,558	317,687,324
taxrevlsetseg2	768,971,624	582,602,488	652,722,263	824,593,855	560,382,593
taxrevlsetseg3	84,004,246	129,552,585	132,658,310	136,555,300	134,953,227
taxrevlsetseg4	425,615,534	159,462,643	268,545,405	204,097,756	396,028,031
taxrevlsetseg5	155,452,086	365,806,714	124,499,375	258,453,336	140,970,355
taxrevlsetsum	1,606,158,444	1,433,703,750	1,426,224,112	1,621,452,806	1,550,021,530
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET					
taxa1	408.30	359.60	408.19	371.03	370.42
taxc1	408.30	359.60	408.19	371.03	370.42
taxf1	408.30	359.60	408.19	371.03	370.42
taxg1	408.30	359.60	408.19	371.03	370.42
taxa2	577.42	508.55	577.27	524.72	523.86
taxc2	577.42	508.55	577.27	524.72	523.86

QUARTER	8	9	9	10	10
taxf2	577.42	508.55	577.27	524.72	523.86
taxg2	577.42	508.55	577.27	524.72	523.86
taxa3	660.77	581.96	660.60	600.46	599.47
taxc3	660.77	581.96	660.60	600.46	599.47
taxf3	660.77	581.96	660.60	600.46	599.47
taxg3	660.77	581.96	660.60	600.46	599.47
taxa4	660.77	581.96	660.60	600.46	599.47
taxc4	660.77	581.96	660.60	600.46	599.47
taxf4	660.77	581.96	660.60	600.46	599.47
taxg4	660.77	581.96	660.60	600.46	599.47
taxa5	660.77	581.96	660.60	600.46	599.47
taxc5	660.77	581.96	660.60	600.46	599.47
taxf5	660.77	581.96	660.60	600.46	599.47
taxg5	660.77	581.96	660.60	600.46	599.47
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	(769,275,398)	7,540,216,608	13,360,813,758	2,767,223,832	23,127,742,134
pollution reduction 2	20,101,733,626	7,786,646,711	12,371,815,681	21,941,865,156	(4,006,923,476)
pollution reduction 3	928,413,650	5,077,222,343	5,188,649,375	4,698,279,161	4,576,194,157
pollution reduction 4	20,598,916,064	1,725,573,761	9,835,523,278	3,004,607,734	17,720,927,991
pollution reduction 5	(859,787,937)	17,870,340,608	(756,802,093)	7,588,024,118	(1,417,931,744)
Total reduction	40	40.00000003	40	40	40.00000906
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM					
PMET	0.00619	0.00789	0.00706	0.01189	0.00523
FIRST ORDER CONDITIONS UNDER LSET					
foc1p	-7.31573E-05	2.13086E-05	6.58737E-07	-0.000233147	0.001639795
foc2p	-2.8876E-05	6.65769E-07	1.08064E-06	-0.000199947	0.011377965
foc3p	-0.000321659	-5.75316E-07	-0.000535121	-0.000226222	1.07662E-05
foc4p	-2.6772E-05	5.66437E-05	-4.69898E-06	-6.06665E-05	-0.016700965
foc5p	-7.25841E-05	1.71298E-05	6.58999E-07	-0.000233032	0.001570405
foc6p	-2.90209E-05	6.65638E-07	1.08062E-06	-0.000200031	0.011004504
foc7p	-0.000321185	-5.2846E-07	-0.000535148	-0.000226223	1.0463E-05
foc8p	-2.66074E-05	5.00775E-05	-4.68896E-06	-5.95384E-05	-0.016146841
foc9p	-7.31533E-05	2.13684E-05	6.58792E-07	-0.000233155	0.001703098
foc10p	-2.88649E-05	6.65816E-07	1.08064E-06	-0.000199944	0.011781075
foc11p	-0.000321692	-5.78043E-07	-0.000535118	-0.000226225	1.10929E-05
foc12p	-2.67623E-05	5.67604E-05	-4.69911E-06	-6.06815E-05	-0.017295199
foc13p	-7.31576E-05	2.11909E-05	6.59089E-07	-0.000233153	0.001703299
foc14p	-2.88757E-05	6.65856E-07	1.08065E-06	-0.000199944	0.011785328
foc15p	-0.000321664	-5.70464E-07	-0.000535122	-0.000226225	1.10989E-05
foc16p	-2.67681E-05	5.64319E-05	-4.69829E-06	-6.06789E-05	-0.017301122
foc17p	4.12003E-05	-0.000138732	8.28035E-06	-0.000110538	-0.033258265
foc18p	4.1387E-05	-0.000124415	8.18307E-06	-0.000162863	-0.032150435
foc19p	4.11497E-05	-0.000139013	8.28046E-06	-0.000110515	-0.034441353
foc20p	4.11941E-05	-0.000138231	8.27975E-06	-0.000110521	-0.034453612
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET					
p1a1	11,806.09	11,932.87	11,941.74	11,486.34	11,464.25
p1c1	11,806.09	11,932.87	11,941.74	11,486.34	11,464.25
p1f1	11,806.09	11,932.87	11,941.74	11,486.34	11,464.25
p1g1	11,806.09	11,932.87	11,941.74	11,486.34	11,464.25
p2a2	16,028.34	16,936.20	16,917.07	16,349.85	16,062.30
p2c2	16,028.34	16,936.20	16,917.07	16,349.85	16,062.30
p2f2	16,028.34	16,936.20	16,917.07	16,349.85	16,062.30
p2g2	16,028.34	16,936.20	16,917.07	16,349.85	16,062.30
p3a3	19,338.44	20,564.54	20,568.35	19,042.33	18,808.57
p3c3	19,338.44	20,564.54	20,568.35	19,042.33	18,808.57
p3f3	19,338.44	20,564.54	20,568.35	19,042.33	18,808.57
p3g3	19,338.44	20,564.54	20,568.35	19,042.33	18,808.57
p4a4	15,495.71	14,621.86	14,612.33	13,834.78	13,955.72
p4c4	15,495.71	14,621.86	14,612.33	13,834.78	13,955.72

QUARTER	8	9	9	10	10
p4f4	15,495.71	14,621.86	14,612.33	13,834.78	13,955.72
p4g4	15,495.71	14,621.86	14,612.33	13,834.78	13,955.72
p5a5	24,446.15	26,111.36	26,674.94	28,846.94	28,903.35
p5c5	24446.15132	26111.35881	26674.9357	28846.942	28903.34571
p5f5	24446.15132	26111.35881	26674.9357	28846.942	28903.34571
p5g5	24446.15132	26111.35881	26674.9357	28846.942	28903.34571
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST					
dp/dgas1	12,505	15,837	19,347	9,976	17,677
dp/dgas2	24,491	26,293	26,293	47,691	28,048
dp/dgas3	7,260	22,168	25,267	51,257	51,257
dp/dgas4	40,127	26,226	27,925	8,023	37,792
dp/dgas5	5,443	117,696	5,494	3,940	3,940
sum of dpdgas	89,826	208,220	104,327	120,887	138,713
MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,812	11,811	11,839	11,708	11,855
VMT2	11,810	11,793	11,804	11,811	11,837
VMT3	11,601	11,742	11,772	11,792	11,862
VMT4	11,830	11,763	11,783	11,474	11,839
VMT5	11,830	11,763	11,783	11,474	11,839
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT					
tpma1	0.02039	0.02045	0.01751	0.03164	0.01577
tpmc1	0.02039	0.02045	0.01751	0.03164	0.01577
tpmf1	0.02039	0.02045	0.01751	0.03164	0.01577
tpmg1	0.02039	0.02045	0.01751	0.03164	0.01577
tpma2	0.02060	0.02245	0.02124	0.02046	0.01771
tpmc2	0.02060	0.02245	0.02124	0.02046	0.01771
tpmf2	0.02060	0.02245	0.02124	0.02046	0.01771
tpmg2	0.02060	0.02245	0.02124	0.02046	0.01771
tpma3	0.04330	0.02798	0.02479	0.02259	0.01499
tpmc3	0.04330	0.02798	0.02479	0.02259	0.01499
tpmf3	0.04330	0.02798	0.02479	0.02259	0.01499
tpmg3	0.04330	0.02798	0.02479	0.02259	0.01499
tpma4	0.01842	0.02572	0.02358	0.05710	0.01746
tpmc4	0.01842	0.02572	0.02358	0.05710	0.01746
tpmf4	0.01842	0.02572	0.02358	0.05710	0.01746
tpmg4	0.01842	0.02572	0.02358	0.05710	0.01746
tpma5	0.01842	0.02572	0.02358	0.05710	0.01746
tpmc5	0.01842	0.02572	0.02358	0.05710	0.01746
tpmf5	0.01842	0.02572	0.02358	0.05710	0.01746
tpmg5	0.01842	0.02572	0.02358	0.05710	0.01746
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET					
cstravelpmetseg1	5,445,316,733	5,030,629,905	5,055,939,642	5,723,165,785	5,913,599,847
cstravelpmetseg2	10,157,302,434	9,544,216,435	9,558,537,751	11,461,647,240	11,384,830,113
cstravelpmetseg3	1,743,614,258	1,517,177,816	1,523,597,080	1,820,976,838	1,838,551,616
cstravelpmetseg4	3,661,616,274	3,291,749,046	3,307,744,071	3,626,018,763	4,015,615,776
cstravelpmetseg5	2,420,692,074	1,954,384,521	1,940,669,514	2,217,740,551	2,348,093,202
cstravelpmetsum	23,428,541,772	21,338,157,722	21,386,488,058	24,849,549,177	25,500,690,554
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET					
epm_a1	3.30	2.59	2.48	2.66	3.01
epm_c1	3.30	2.59	2.48	2.66	3.01
epm_f1	3.30	2.59	2.48	2.66	3.01
epm_g1	3.30	2.59	2.48	2.66	3.01
epm_a2	3.33	2.85	3.01	1.72	3.38
epm_c2	3.33	2.85	3.01	1.72	3.38
epm_f2	3.33	2.85	3.01	1.72	3.38

QUARTER	8	9	9	10	10
epm_g2	3.33	2.85	3.01	1.72	3.38
epm_a3	7.00	3.55	3.51	1.90	2.86
epm_c3	7.00	3.55	3.51	1.90	2.86
epm_f3	7.00	3.55	3.51	1.90	2.86
epm_g3	7.00	3.55	3.51	1.90	2.86
epm_a4	2.98	3.26	3.34	4.80	3.33
epm_c4	2.98	3.26	3.34	4.80	3.33
epm_f4	2.98	3.26	3.34	4.80	3.33
epm_g4	2.98	3.26	3.34	4.80	3.33
epm_a5	2.98	3.26	3.34	4.80	3.33
epm_c5	2.98	3.26	3.34	4.80	3.33
epm_f5	2.98	3.26	3.34	4.80	3.33
epm_g5	2.98	3.26	3.34	4.80	3.33
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET					
Asub1n	267,564	271,216	267,305	370,246	342,799
Csub1n	39,099	43,410	40,025	104,631	67,063
Fsub1n	114,576	161,701	157,766	195,152	168,853
Gsub1n	147,636	159,352	155,460	230,342	204,112
Asub2n	338,082	270,836	272,610	192,640	312,453
Csub2n	246,754	182,467	184,241	53,809	189,525
Fsub2n	313,163	218,621	220,397	128,332	246,271
Gsub2n	528,243	455,486	457,267	449,751	567,680
Asub3n	3,057	42,272	43,075	40,695	42,995
Csub3n	-	33,882	34,458	41,305	43,669
Fsub3n	23,223	60,567	61,378	67,976	70,259
Gsub3n	23,204	57,946	58,719	63,915	66,201
asub4n	126,230	84,882	79,893	154,887	94,308
Csub4n	57,600	35,472	30,968	102,147	31,325
fsub4n	181,165	131,995	126,982	217,932	158,230
gsub4n	211,529	166,091	161,158	255,220	195,479
asub5n	108,215	52,750	69,070	96,648	99,418
Csub5n	24,846	-	16,259	10,028	19,166
fsub5n	78,375	47,339	63,675	69,245	71,963
gsub5n	115,537	80,956	97,211	113,989	116,708
TOTAL SALES IN EACH SEGMENT AFTER PMET					
tseg1n	568,875	635,680	620,557	900,370	782,827
tseg2n	1,426,241	1,127,410	1,134,515	824,533	1,315,929
tseg3n	49,484	194,667	197,630	213,890	223,123
tseg4n	576,524	418,440	399,000	730,186	479,341
tseg5n	326,973	181,044	246,215	289,910	307,256
tsumn	2,948,098	2,557,241	2,597,917	2,958,889	3,108,476
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET					
CSPMETseg1	1,311,723,598	3,068,486,145	2,795,486,672	3,417,178,832	3,013,709,898
CSPMETseg2	10,504,458,712	4,567,930,125	4,655,467,757	3,116,162,171	5,629,539,382
CSPMETseg3	607,748,643	2,273,003,118	2,313,542,193	1,623,852,978	1,747,589,514
CSPMETseg4	3,835,265,865	2,630,500,504	2,384,738,413	4,400,925,996	2,804,861,426
CSPMETseg5	6,273,701,854	967,511,086	1,519,409,711	6,213,937,561	6,423,239,828
CsPMETsum	22,532,898,671	13,507,430,978	13,668,644,746	18,772,057,538	19,618,940,049
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET					
PSpmetseg1	774,804,991	1,846,971,565	1,687,689,805	1,965,278,782	1,762,796,205
PSpmetseg2	5,717,656,736	2,601,268,093	2,643,942,726	2,040,224,788	3,270,569,965
PSpmetseg3	370,476,126	1,194,767,169	1,214,696,797	856,146,425	918,932,746
PSpmetseg4	2,191,571,259	1,597,809,086	1,468,791,991	2,471,533,647	1,694,925,900
PSpmetseg5	3,708,929,941	655,237,606	921,561,134	3,951,609,913	3,941,280,696
Pspmetsum	12,763,439,054	7,896,053,519	7,936,682,455	11,284,793,555	11,588,505,512
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSPMETseg1	2,086,528,589	4,915,457,710	4,483,176,477	5,382,457,614	4,776,506,104
TSPMETseg2	16,222,115,447	7,169,198,218	7,299,410,484	5,156,386,959	8,900,109,347
TSPMETseg3	978,224,769	3,467,770,287	3,528,238,990	2,479,999,403	2,666,522,260
TSPMETseg4	6,026,837,124	4,228,309,590	3,853,530,404	6,872,459,644	4,499,787,326

QUARTER	8	9	9	10	10
TSPMETseg5	9,982,631,795	1,622,748,692	2,440,970,845	10,165,547,474	10,364,520,524
TSPMETsum	35,296,337,725	21,403,484,498	21,605,327,200	30,056,851,094	31,207,445,561
dwlpmet	3,501,626,969	4,197,741,453	3,372,280,855	4,843,194,628	3,723,332,073
pmetsurplus	59,387,195,132	43,412,988,033	43,609,771,256	56,237,139,293	57,309,383,939
pmetsurplus10	65,348,035,844	49,455,100,351	49,171,375,234	68,213,790,493	62,720,614,358
TAX REVENUE IN EACH SEGMENT UNDER PMET					
taxrevpmetseg1	136,984,504	153,582,004	128,621,356	333,540,301	146,362,249
taxrevpmetseg2	296,480,155	261,676,684	248,276,116	211,584,847	250,140,873
taxrevpmetseg3	24,856,673	63,955,881	57,679,059	56,973,361	39,670,517
taxrevpmetseg4	125,615,399	126,615,659	110,873,939	478,363,441	99,062,733
taxrevpmetseg5	78,378,903	65,515,585	72,505,528	250,277,073	66,011,452
taxrevpmetsum	662,315,635	671,345,813	617,955,998	1,330,739,022	601,247,824
pmetrev10	6,623,156,347	6,713,458,131	6,179,559,976	13,307,390,222	6,012,478,243
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1	145,799	28,056	43,179	(124,580)	(7,037)
lostsales2	(81,333)	132,792	125,687	668,272	176,876
lostsales3	176,935	7,808	4,845	26,552	17,319
lostsales4	(91,643)	19,274	38,714	(203,421)	47,424
lostsales5	(7,940)	76,200	11,029	18,829	1,483
lostsum	141,817	264,130	223,454	385,652	236,065
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET					
taxa1p	254.93	323.94	338.72	315.63	278.79
taxc1p	254.93	323.94	338.72	315.63	278.79
taxf1p	254.93	323.94	338.72	315.63	278.79
taxg1p	254.93	323.94	338.72	315.63	278.79
taxa2p	504.54	590.30	558.44	975.98	496.64
taxc2p	504.54	590.30	558.44	975.98	496.64
taxf2p	504.54	590.30	558.44	975.98	496.64
taxg2p	504.54	590.30	558.44	975.98	496.64
taxa3p	314.35	620.25	626.45	1,157.85	768.28
taxc3p	314.35	620.25	626.45	1,157.85	768.28
taxf3p	314.35	620.25	626.45	1,157.85	768.28
taxg3p	314.35	620.25	626.45	1,157.85	768.28
taxa4p	739.03	674.64	658.58	458.07	659.70
taxc4p	739.03	674.64	658.58	458.07	659.70
taxf4p	739.03	674.64	658.58	458.07	659.70
taxg4p	739.03	674.64	658.58	458.07	659.70
taxa5p	739.03	674.64	658.58	458.07	659.70
taxc5p	739.03	674.64	658.58	458.07	659.70
taxf5p	739.03	674.64	658.58	458.07	659.70
taxg5p	739.03	674.64	658.58	458.07	659.70
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET					
pollution reduction 1p	756,440,345.09	11,457,777,951.64	11,347,488,353.71	22,256,531,936.07	11,771,680,614.51
pollution reduction 2p	19,016,428,425.89	13,723,194,324.97	11,913,734,956.76	(1,671,160,100.19)	6,627,483,009.68
pollution reduction 3p	(4,998,109,295.63)	4,553,035,684.60	4,757,327,125.40	8,687,218,786.08	6,731,719,082.58
pollution reduction 4p	19,946,468,030.02	11,103,535,098.89	9,700,071,759.15	12,837,191,018.66	11,573,142,214.43
pollution reduction 5p	5,278,785,007.45	(837,543,401.74)	2,281,387,118.20	(2,109,757,637.96)	3,295,974,503.95
Total reductionp	40.00001251	39.99999966	40.00000931	40.000024	39.99999943
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET					
Tsdiff	(2,483)	(4,314)	(671)	(4,706)	(2,063)

QUARTER	11	11	12	12	13
COEFFICIENTS OF DEMAND					
a P1/q1	-0.002130505	-0.00212601	-0.008635981	-0.007931968	-0.003439588
b p2/q1	-0.000595299	-0.000756533	-0.004265385	-0.004211282	-1E-08
c p3/q1	-0.002130505	-1E-08	-0.005211359	-0.007931968	-0.000817207
d p4/q1	-0.002130505	-0.00212601	-0.001396467	-0.00072888	-1E-08
f P1/q2	-0.000595299	-0.000756533	-0.004265385	-0.004211282	-1E-08
g p2/q2	-0.010206045	-0.009836825	-0.004265385	-0.004211282	-0.006347236
h p3/q2	-1E-08	-1E-08	-0.003682516	-0.004211282	-0.002027482
i p4/q2	-0.003739894	-0.004492447	-0.004265385	-0.004211282	-0.005965912
k P1/q3	-0.002130505	-1E-08	-0.005211359	-0.007931968	-0.000817207
l p2/q3	-1E-08	-1E-08	-0.003682516	-0.004211282	-0.002027482
m p3/q3	-0.078963633	-0.062281999	-0.088846042	-0.093860283	-0.042435177
n p4/q3	-1E-08	-0.007676966	-0.005620787	-1E-08	-0.006792782
p P1/q4	-0.002130505	-0.00212601	-0.001396467	-0.00072888	-1E-08
q p2/q4	-0.003739894	-0.004492447	-0.004265385	-0.004211282	-0.005965912
r p3/q4	-1E-08	-0.007676966	-0.005620787	-1E-08	-0.006792782
s p4/q4	-0.010489326	-0.007676966	-0.008487555	-0.010189356	-0.006792782
u P1/q5	-1E-08	-0.000594878	-0.001652049	-0.002594632	-0.003439588
v p2/q5	-1E-08	-1E-08	-0.004081632	-0.004211282	-0.006347236
w p3/q5	-1E-08	-1E-08	-0.007917187	-0.008291402	-0.000250152
x p4/q5	-0.002845743	-1E-08	-0.007917187	-0.009232943	-0.006792782
y p5/q5	-0.035420545	-0.039382349	-0.007917187	-0.010082597	-0.006792782
e p5/q1	-0.00000001	-0.000594878	-0.001652049	-0.002594632	-0.003439588
j p5/q2	-1E-08	-1E-08	-0.004081632	-0.004211282	-0.006347236
o p5/q3	-0.00000001	-0.00000001	-0.007917187	-0.008291402	-0.000250152
t p5/q4	-0.002845743	-0.00000001	-0.007917187	-0.009232943	-0.006792782
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.002130505	-0.00212601	-0.008635981	-0.007931968	-0.003439588
bb	-0.000595299	-0.000756533	-0.004265385	-0.004211282	-1E-08
cc	-0.002130505	-1E-08	-0.005211359	-0.007931968	-0.000817207
dd	-0.002130505	-0.00212601	-0.001396467	-0.00072888	-1E-08
ee	-0.00000001	-0.000594878	-0.001652049	-0.002594632	-0.003439588
ff	-0.000595299	-0.000756533	-0.004265385	-0.004211282	-1E-08
gg	-0.010206045	-0.009836825	-0.004265385	-0.004211282	-0.006347236
hh	-1E-08	-1E-08	-0.003682516	-0.004211282	-0.002027482
ii	-0.003739894	-0.004492447	-0.004265385	-0.004211282	-0.005965912
jj	-1E-08	-1E-08	-0.004081632	-0.004211282	-0.006347236
kk	-0.002130505	-1E-08	-0.005211359	-0.007931968	-0.000817207
ll	-1E-08	-1E-08	-0.003682516	-0.004211282	-0.002027482
mm	-0.078963633	-0.062281999	-0.088846042	-0.093860283	-0.042435177
nn	-1E-08	-0.007676966	-0.005620787	-1E-08	-0.006792782
oo	-0.00000001	-0.00000001	-0.007917187	-0.008291402	-0.000250152
pp	-0.002130505	-0.00212601	-0.001396467	-0.00072888	-1E-08
qq	-0.003739894	-0.004492447	-0.004265385	-0.004211282	-0.005965912
rr	-1E-08	-0.007676966	-0.005620787	-1E-08	-0.006792782
ss	-0.010489326	-0.007676966	-0.008487555	-0.010189356	-0.006792782
tt	-0.002845743	-0.00000001	-0.007917187	-0.009232943	-0.006792782
uu	-1E-08	-0.000594878	-0.001652049	-0.002594632	-0.003439588
vv	-1E-08	-1E-08	-0.004081632	-0.004211282	-0.006347236
ww	-1E-08	-1E-08	-0.007917187	-0.008291402	-0.000250152
xx	-0.002845743	-1E-08	-0.007917187	-0.009232943	-0.006792782
yy	-0.035420545	-0.039382349	-0.007917187	-0.010082597	-0.006792782
KNOWN PRICE BEFORE TAXES					
P1	11,725	11,725	13,548	13,548	11,828
P2	16,631	16,631	16,725	16,725	17,799
P3	20,621	20,621	22,112	22,112	20,462
P4	15,384	15,384	14,394	14,394	16,150
P5	23,362	23,362	27,524	27,524	31,004

QUARTER	11	11	12	12	13
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	364,548	364,548	276,245	276,245	267,700
Csub1	69,817	69,817	59,560	59,560	56,644
Fsub1	188,904	188,904	158,917	158,917	166,464
Gsub1	197,882	197,882	159,493	159,493	175,133
Asub2	329,887	329,887	296,755	296,755	306,972
Csub2	188,374	188,374	211,477	211,477	204,165
Fsub2	261,875	261,875	246,277	246,277	271,186
Gsub2	524,061	524,061	480,433	480,433	509,372
Asub3	54,273	54,273	47,055	47,055	38,724
Csub3	47,448	47,448	45,403	45,403	54,144
Fsub3	69,684	69,684	72,294	72,294	76,858
Gsub3	73,565	73,565	56,916	56,916	61,248
asub4	120,260	120,260	93,512	93,512	88,429
Csub4	40,712	40,712	44,804	44,804	52,202
fsub4	193,441	193,441	168,301	168,301	152,379
gsub4	214,698	214,698	180,532	180,532	174,908
asub5	108,634	108,634	106,221	106,221	95,924
Csub5	13,918	13,918	18,299	18,299	14,790
fsub5	60,180	60,180	55,662	55,662	60,482
gsub5	124,564	124,564	110,280	110,280	98,309
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	821,151	821,151	654,215	654,215	665,941
tseg2	1,304,197	1,304,197	1,234,942	1,234,942	1,291,695
tseg3	244,970	244,970	221,668	221,668	230,974
tseg4	569,111	569,111	487,149	487,149	467,918
tseg5	307,296	307,296	290,462	290,462	269,505
tsum	3,246,725	3,246,725	2,888,436	2,888,436	2,926,033
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	(6.70)	(6.72)	(2.40)	(2.61)	(5.16)
Elasiticity21	0.55	0.73	2.96	3.22	0.00
Elasiticity31	0.32	0.00	0.23	0.36	0.17
Elasiticity41	1.79	2.44	0.42	0.20	0.00
Elasiticity51	0.00	0.20	1.02	1.36	6.85
Elasiticity12	0.25	0.33	1.27	1.38	0.00
Elasiticity22	(1.25)	(1.30)	(3.18)	(3.22)	(2.17)
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.41	0.70	1.37	1.14	1.73
Elasiticity52	0.00	0.00	2.69	2.21	3.53
Elasiticity13	0.61	0.00	0.42	0.65	0.29
Elasiticity23	0.00	0.00	0.73	0.80	0.58
Elasiticity33	(1.07)	(1.35)	(1.12)	(1.06)	(2.09)
Elasiticity43	0.00	1.01	0.48	0.00	1.65
Elasiticity53	0.00	0.00	1.40	1.09	0.12
Elasiticity14	1.96	2.68	0.53	0.25	0.00
Elasiticity24	1.02	1.74	4.05	3.37	5.26
Elasiticity34	0.00	0.58	0.34	0.00	1.03
Elasiticity44	(2.58)	(3.52)	(3.48)	(2.90)	(5.08)
Elasiticity54	0.31	0.00	6.66	5.08	9.75
Elasiticity15	0.00	0.27	1.13	1.51	6.46
Elasiticity25	0.00	0.00	6.96	5.71	9.72
Elasiticity35	0.00	0.00	0.86	0.67	0.07
Elasiticity45	0.38	0.00	5.84	4.45	8.82
Elasiticity55	(2.15)	(1.93)	(11.97)	(9.40)	(16.94)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					
MCasub1	10,384	10,384	9,350	9,394	10,542
MCcsub1	11,277	11,340	11,805	11,747	11,533
MCfsub1	10,610	10,682	10,424	10,412	10,975

QUARTER	11	11	12	12	13
MCgsub1	10,384	10,384	9,394	9,394	10,828
MCasub2	12,616	12,588	13,277	13,274	14,647
MCcsub2	14,522	14,550	15,138	15,129	15,998
MCfsub2	13,135	13,056	13,790	13,776	14,647
MCgsub2	10,384	10,384	12,571	12,571	12,799
MCasub3	15,548	16,307	14,037	13,379	17,345
MCcsub3	16,716	17,343	16,596	16,339	17,345
MCfsub3	14,704	14,784	12,571	12,571	15,462
MCgsub3	14,374	14,374	12,571	12,571	15,462
MCasub4	11,797	11,781	10,844	11,010	12,802
MCcsub4	14,058	13,706	12,629	12,835	14,105
MCfsub4	11,797	11,781	10,844	11,010	12,553
MCgsub4	10,384	10,384	9,394	9,394	10,828
MCasub5	19,180	18,875	23,889	23,219	26,865
MCcsub5	22,763	22,783	25,692	25,493	29,043
MCfsub5	20,700	20,900	23,889	23,338	27,240
MCgsub5	18,362	18,362	22,524	21,815	25,288
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.00000001	-0.000594878	-0.001652049	-0.002594632	-0.003439588
j	-1E-08	-1E-08	-0.004081632	-0.004211282	-0.006347236
o	-0.00000001	-0.00000001	-0.007917187	-0.008291402	-0.000250152
t	-0.002845743	-0.00000001	-0.007917187	-0.009232943	-0.006792782
y	-0.035420545	-0.039382349	-0.007917187	-0.010082597	-0.006792782
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	1,341	1,341	4,199	4,154	1,286
XMCcsub1	448	385	1,744	1,801	294
XMCfsub1	1,115	1,042	3,124	3,136	852
XMCgsub1	1,341	1,341	4,154	4,154	1,000
XMCasub2	4,015	4,043	3,448	3,451	3,152
XMCcsub2	2,108	2,081	1,587	1,596	1,801
XMCfsub2	3,496	3,575	2,935	2,950	3,152
XMCgsub2	6,247	6,247	4,154	4,154	5,000
XMCasub3	5,072	4,314	8,075	8,734	3,117
XMCcsub3	3,905	3,277	5,516	5,773	3,117
XMCfsub3	5,916	5,837	9,541	9,541	5,000
XMCgsub3	6,247	6,247	9,541	9,541	5,000
XMCasub4	3,587	3,603	3,551	3,385	3,348
XMCcsub4	1,326	1,678	1,766	1,559	2,046
XMCfsub4	3,587	3,603	3,551	3,385	3,597
XMCgsub4	5,000	5,000	5,000	5,000	5,323
XMCasub5	4,182	4,487	3,636	4,305	4,139
XMCcsub5	598	579	1,833	2,031	1,961
XMCfsub5	2,662	2,462	3,636	4,186	3,765
XMCgsub5	5,000	5,000	5,000	5,710	5,716
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	15,985	15,850	26,781	26,805	15,234
constant2	32,559	32,638	28,863	28,889	30,968
constant3	41,714	40,247	54,802	55,716	36,673
constant4	28,855	29,238	28,256	27,717	30,434
constant5	35,866	35,952	41,557	43,687	46,561
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	2,745,232,990	2,671,751,159	6,751,275,439	6,752,091,877	1,812,107,894
TSseg2	16,297,597,933	16,373,847,782	11,572,157,197	11,594,682,143	13,241,973,809
TSseg3	3,916,002,231	3,659,873,341	5,486,302,838	5,630,342,687	2,852,133,176
TSseg4	6,086,015,777	6,214,426,814	5,287,698,899	5,103,878,207	5,223,862,400
TSseg5	3,166,856,294	3,200,937,226	3,211,536,883	3,704,444,384	3,311,940,898
Tssum	32,211,705,225	32,120,836,323	32,308,971,255	32,785,439,299	26,442,018,177
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	1,749,158,510	1,693,699,783	4,328,491,915	4,336,425,139	1,134,203,977

QUARTER	11	11	12	12	13
CSseg2	10,386,588,850	10,438,200,669	7,494,687,647	7,510,929,158	8,505,271,999
CSseg3	2,583,601,748	2,403,926,299	3,623,071,506	3,724,472,967	1,872,091,061
CSseg4	3,833,276,731	3,942,370,246	3,376,280,564	3,245,164,902	3,341,930,072
CSseg5	1,921,239,053	1,934,511,896	2,038,005,358	2,347,296,775	2,096,235,211
Cssum	20,473,864,893	20,412,708,893	20,860,536,990	21,164,288,941	16,949,732,321
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	996,074,480	978,051,376	2,422,783,524	2,415,666,739	677,903,917
PSseg2	5,911,009,082	5,935,647,113	4,077,469,549	4,083,752,985	4,736,701,810
PSseg3	1,332,400,483	1,255,947,043	1,863,231,331	1,905,869,721	980,042,114
PSseg4	2,252,739,046	2,272,056,568	1,911,418,336	1,858,713,305	1,881,932,328
PSseg5	1,245,617,241	1,266,425,330	1,173,531,525	1,357,147,609	1,215,705,687
Pssum	11,737,840,332	11,708,127,430	11,448,434,265	11,621,150,358	9,492,285,856
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	6,415,242,188	6,415,242,188	5,111,054,688	5,111,054,688	5,202,664,063
CStravseg2	10,189,039,063	10,189,039,063	9,647,984,375	9,647,984,375	10,091,367,188
CStravseg3	1,913,828,125	1,913,828,125	1,731,781,250	1,731,781,250	1,804,484,375
CStravseg4	4,446,179,688	4,446,179,688	3,805,851,563	3,805,851,563	3,655,609,375
CStravseg5	2,400,750,000	2,400,750,000	2,269,234,375	2,269,234,375	2,105,507,813
Cstravsum	25,365,039,063	25,365,039,063	22,565,906,250	22,565,906,250	22,859,632,813
FIRST ORDER CONDITIONS UNDER LSET					
foc1l	-3.20556E-08	6.7317E-08	-8.59347E-06	3.42705E-05	5.14116E-05
foc2l	4.56304E-06	3.37336E-07	5.90497E-07	-1.50067E-10	-1.21728E-05
foc3l	-5.15963E-08	-1.96453E-07	1.97566E-05	8.56284E-07	0.001101939
foc4l	0.00022861	1.11318E-07	-1.59917E-07	1.78424E-05	-1.24798E-05
foc5l	-3.20843E-08	7.74118E-08	-8.71054E-06	3.26821E-05	5.03116E-05
foc6l	4.71299E-06	3.44647E-07	5.89157E-07	-4.64411E-10	-1.53483E-05
foc7l	-5.18724E-08	-2.01069E-07	2.00636E-05	1.23183E-06	0.001107759
foc8l	0.000228388	1.11267E-07	-1.54472E-07	1.73029E-05	-7.31158E-06
foc9l	-3.21313E-08	7.21938E-08	-8.88798E-06	4.45261E-05	4.11301E-05
foc10l	4.72687E-06	3.43393E-07	5.88004E-07	-2.84899E-10	-3.77543E-05
foc11l	-5.14937E-08	-2.00124E-07	2.04188E-05	2.9499E-06	0.001104005
foc12l	0.000228587	1.11847E-07	-1.25218E-07	2.44594E-05	3.32861E-05
foc13l	-3.20399E-08	5.93197E-08	-8.874E-06	4.46725E-05	3.76579E-05
foc14l	4.57472E-06	3.3501E-07	5.88715E-07	1.93268E-10	-4.58422E-05
foc15l	-5.22464E-08	-1.9509E-07	2.03603E-05	2.95656E-06	0.001098781
foc16l	0.000229048	1.13852E-07	-1.21326E-07	2.45377E-05	4.82128E-05
foc17l	4.1205E-05	-6.60416E-07	-1.08634E-07	0.000158019	-0.000183824
foc18l	4.09557E-05	-7.03984E-07	-1.01483E-07	0.000144795	-0.000176585
foc19l	4.05552E-05	-6.92741E-07	-7.33186E-08	0.00017513	-0.000118128
foc20l	4.03999E-05	-6.43428E-07	-7.10553E-08	0.000175743	-9.62287E-05
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	12,247	12,375	14,158	14,167	12,493
p1c1l	12,247	12,375	14,158	14,167	12,493
p1f1l	12,247	12,375	14,158	14,167	12,493
p1g1l	12,247	12,375	14,158	14,167	12,493
p2a2l	17,377	17,558	17,587	17,600	18,760
p2c2l	17,377	17,558	17,587	17,600	18,760
p2f2l	17,377	17,558	17,587	17,600	18,760
p2g2l	17,377	17,558	17,587	17,600	18,760
p3a3l	21,451	21,657	23,098	23,113	21,543
p3c3l	21,451	21,657	23,098	23,113	21,543
p3f3l	21,451	21,657	23,098	23,113	21,543
p3g3l	21,451	21,657	23,098	23,113	21,543
p4a4l	16,218	16,424	15,376	15,391	17,230
p4c4l	16,218	16,424	15,376	15,391	17,230
p4f4l	16,218	16,424	15,376	15,391	17,230
p4g4l	16,218	16,424	15,376	15,391	17,230
p5a5l	27,526	24,096	28,499	28,547	31,913
p5c5l	27,526	24,096	28,499	28,547	31,913
p5f5l	27,526	24,096	28,499	28,547	31,913

QUARTER	11	11	12	12	13
p5g5l	27,526	24,096	28,499	28,547	31,913
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET					
lemp_a1	2.59	2.08	2.21	2.18	2.00
lemp_c1	2.59	2.08	2.21	2.18	2.00
lemp_f1	2.59	2.08	2.21	2.18	2.00
lemp_g1	2.59	2.08	2.21	2.18	2.00
lemp_a2	3.66	2.94	3.13	3.08	2.83
lemp_c2	3.66	2.94	3.13	3.08	2.83
lemp_f2	3.66	2.94	3.13	3.08	2.83
lemp_g2	3.66	2.94	3.13	3.08	2.83
lemp_a3	4.19	3.36	3.58	3.53	3.24
lemp_c3	4.19	3.36	3.58	3.53	3.24
lemp_f3	4.19	3.36	3.58	3.53	3.24
lemp_g3	4.19	3.36	3.58	3.53	3.24
lemp_a4	4.19	3.36	3.58	3.53	3.24
lemp_c4	4.19	3.36	3.58	3.53	3.24
lemp_f4	4.19	3.36	3.58	3.53	3.24
lemp_g4	4.19	3.36	3.58	3.53	3.24
lemp_a5	4.19	3.36	3.58	3.53	3.24
lemp_c5	4.19	3.36	3.58	3.53	3.24
lemp_f5	4.19	3.36	3.58	3.53	3.24
lemp_g5	4.19	3.36	3.58	3.53	3.24
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET					
Asub1nl	346,172	300,065	293,450	245,857	222,286
Csub1nl	53,376	8,196	78,322	56,931	8,748
Fsub1nl	170,280	124,937	179,486	136,103	116,740
Gsub1nl	176,684	129,837	180,038	135,734	125,985
Asub2nl	326,992	311,681	226,629	298,648	321,548
Csub2nl	186,699	171,964	138,618	170,166	217,312
Fsub2nl	259,627	244,676	167,967	234,520	263,891
Gsub2nl	520,378	504,444	401,777	469,779	493,645
Asub3nl	52,117	50,274	46,308	40,011	40,802
Csub3nl	45,232	43,691	44,799	41,166	56,326
Fsub3nl	67,550	65,832	71,056	65,555	77,328
Gsub3nl	71,566	69,320	55,676	50,097	60,990
asub4nl	80,364	118,723	109,061	-	37,288
Csub4nl	-	37,106	66,707	-	-
fsub4nl	153,342	190,874	176,530	83,517	117,224
gsub4nl	176,368	215,990	188,752	94,223	148,220
asub5nl	199,534	94,809	93,662	183,832	91,578
Csub5nl	104,823	-	-	59,650	13,171
fsub5nl	150,755	46,042	55,467	129,578	62,434
gsub5nl	214,920	110,418	110,261	185,426	99,989
TOTAL SALES IN EACH SEGMENT AFTER LSET					
tseg1nl	746,512	563,035	731,297	574,625	473,758
tseg2nl	1,293,696	1,232,765	934,991	1,173,114	1,296,397
tseg3nl	236,465	229,117	217,839	196,830	235,446
tseg4nl	410,073	562,693	541,050	177,740	302,732
tseg5nl	670,032	251,269	259,390	558,487	267,171
tsumnl	3,356,778	2,838,879	2,684,567	2,680,795	2,575,503
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1l	74,639	258,116	(77,082)	79,590	192,183
lostsales2l	10,501	71,432	299,951	61,828	(4,702)
lostsales3l	8,505	15,853	3,829	24,838	(4,472)
lostsales4l	159,038	6,418	(53,901)	309,409	165,186
lostsales5l	(362,736)	56,027	31,072	(268,025)	2,334
lostsuml	(110,053)	407,846	203,869	207,641	350,530
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET					
CSlsetseg1	1,395,245,716	978,390,834	4,615,535,686	3,631,077,943	649,265,405
CSlsetseg2	9,820,154,330	9,295,246,479	5,271,518,035	6,621,983,857	7,913,057,517

QUARTER	11	11	12	12	13
CSlsetseg3	2,395,699,58(	2,129,599,50(	3,453,091,011	3,208,668,04(	1,781,143,353
CSlsetseg4	2,591,018,898	3,605,133,923	3,484,251,734	1,095,469,908	1,998,748,215
CSlsetseg5	2,793,900,24(	1,489,609,438	1,693,644,141	4,227,681,171	1,956,736,228
Cslsetsum	18,996,018,765	17,497,980,183	18,518,040,608	18,784,880,918	14,298,950,717
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET					
PSlsetseg1	820,346,760	620,667,683	2,568,029,348	2,027,264,89(	431,970,782
PSlsetseg2	5,643,470,738	5,377,179,574	2,965,150,953	3,692,868,87(	4,414,118,23(
PSlsetseg3	1,235,801,883	1,115,183,538	1,777,373,751	1,642,055,442	929,343,408
PSlsetseg4	1,631,645,282	2,107,180,602	1,942,033,102	709,261,685	1,251,512,24(
PSlsetseg5	4,459,816,74(	946,513,153	1,027,510,447	2,388,509,51(	1,091,725,133
Pslsetsum	13,791,081,412	10,166,724,55(	10,280,097,601	10,459,960,40(	8,118,669,811
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSlsetseg1	2,215,592,47(	1,599,058,517	7,183,565,034	5,658,342,833	1,081,236,187
TSlsetseg2	15,463,625,068	14,672,426,053	8,236,668,988	10,314,852,735	12,327,175,75(
TSlsetseg3	3,631,501,463	3,244,783,047	5,230,464,762	4,850,723,482	2,710,486,761
TSlsetseg4	4,222,664,18(	5,712,314,525	5,426,284,83(	1,804,731,593	3,250,260,464
TSlsetseg5	7,253,716,98(	2,436,122,591	2,721,154,588	6,616,190,681	3,048,461,361
Tslsetsum	32,787,100,177	27,664,704,733	28,798,138,208	29,244,841,325	22,417,620,528
dwllset	(575,394,952)	4,456,131,59(	3,510,833,047	3,540,597,974	4,024,397,64(
surpluslset	58,152,139,23(	53,029,743,79(	51,364,044,458	51,810,747,575	45,277,253,34(
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM					
LSET	125.30	194.45	171.56	176.71	209.15
ABATEMENT CONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES					
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET					
taxrevlsetseg1	242,188,320	227,548,667	277,611,976	221,386,299	198,575,622
taxrevlsetseg2	593,558,825	704,585,647	501,957,869	639,177,775	768,461,698
taxrevlsetseg3	124,152,458	149,853,548	133,829,753	122,724,167	159,709,805
taxrevlsetseg4	215,302,769	368,028,912	332,394,526	110,821,150	205,351,978
taxrevlsetseg5	351,790,517	164,342,214	159,356,409	348,217,877	181,230,358
taxrevlsetsum	1,526,992,89(	1,614,358,988	1,405,150,534	1,442,327,269	1,513,329,461
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET					
taxa1	324.43	404.15	379.62	385.27	419.15
taxc1	324.43	404.15	379.62	385.27	419.15
taxf1	324.43	404.15	379.62	385.27	419.15
taxg1	324.43	404.15	379.62	385.27	419.15
taxa2	458.81	571.55	536.86	544.86	592.77
taxc2	458.81	571.55	536.86	544.86	592.77

QUARTER	11	11	12	12	13
taxf2	458.81	571.55	536.86	544.86	592.77
taxg2	458.81	571.55	536.86	544.86	592.77
taxa3	525.04	654.05	614.35	623.50	678.33
taxc3	525.04	654.05	614.35	623.50	678.33
taxf3	525.04	654.05	614.35	623.50	678.33
taxg3	525.04	654.05	614.35	623.50	678.33
taxa4	525.04	654.05	614.35	623.50	678.33
taxc4	525.04	654.05	614.35	623.50	678.33
taxf4	525.04	654.05	614.35	623.50	678.33
taxg4	525.04	654.05	614.35	623.50	678.33
taxa5	525.04	654.05	614.35	623.50	678.33
taxc5	525.04	654.05	614.35	623.50	678.33
taxf5	525.04	654.05	614.35	623.50	678.33
taxg5	525.04	654.05	614.35	623.50	678.33
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	11,474,206,605	4,112,683,291	20,491,556,913	10,775,172,976	4,873,706,375
pollution reduction 2	7,941,573,969	15,819,865,296	134,902,557	13,270,600,445	21,434,170,368
pollution reduction 3	3,512,556,101	5,493,168,698	4,924,473,475	4,060,613,348	6,483,394,104
pollution reduction 4	2,628,474,862	14,271,204,698	13,752,822,215	(3,220,759,489)	4,233,771,402
pollution reduction 5	14,443,188,500	303,078,017	696,244,842	15,114,372,721	2,974,953,551
Total reduction	40.00000004	40	40	40	39.9999958
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM					
PMET	0.01393	0.00472	0.00933	0.01067	0.01070
FIRST ORDER CONDITIONS UNDER LSET					
foc1p	-2.34545E-06	6.81162E-06	-3.56093E-05	9.3697E-05	-4.2025E-05
foc2p	6.47198E-05	3.86068E-05	1.4992E-06	-2.82244E-06	-0.000455284
foc3p	-2.00224E-05	1.48691E-05	8.57899E-05	-2.41902E-06	0.001472904
foc4p	-0.000133295	2.04702E-05	-4.86261E-08	2.4233E-06	-0.000674248
foc5p	-2.3455E-06	7.99981E-06	-3.57741E-05	9.07567E-05	1.91764E-05
foc6p	6.95734E-05	3.85868E-05	1.50717E-06	-2.82253E-06	-0.000393195
foc7p	-2.00221E-05	1.48772E-05	8.60657E-05	-9.53477E-07	0.000740661
foc8p	-0.00011422	2.04609E-05	-2.69272E-08	1.95861E-06	-0.00067421
foc9p	-2.3455E-06	6.81652E-06	-3.59039E-05	0.000103949	-5.23096E-05
foc10p	6.48837E-05	3.8613E-05	1.49658E-06	-2.82193E-06	-0.000480874
foc11p	-2.00231E-05	1.48652E-05	8.64536E-05	-3.25346E-07	0.001474976
foc12p	-0.000133318	2.04711E-05	-1.38875E-08	9.03965E-06	-0.000628475
foc13p	-2.34553E-06	6.80375E-06	-3.58896E-05	0.00010409	-5.57821E-05
foc14p	6.47317E-05	3.86048E-05	1.49758E-06	-2.82187E-06	-0.000488971
foc15p	-2.00226E-05	1.48714E-05	8.63948E-05	-3.22601E-07	0.001469752
foc16p	-0.000132858	2.04727E-05	-9.84448E-09	9.11285E-06	-0.000613545
foc17p	-0.000451348	1.39408E-05	2.75378E-07	0.000211643	-0.001677347
foc18p	-0.00052348	2.41645E-05	3.02359E-07	0.000175364	-0.001472452
foc19p	-0.000451997	1.39084E-05	3.10797E-07	0.000228752	-0.001611656
foc20p	-0.000452152	1.39583E-05	3.12933E-07	0.000229358	-0.001589779
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET					
p1a1	11,862.55	11,892.58	13,712.01	13,748.40	11,923.01
p1c1	11,862.55	11,892.58	13,712.01	13,748.40	11,923.01
p1f1	11,862.55	11,892.58	13,712.01	13,748.40	11,923.01
p1g1	11,862.55	11,892.58	13,712.01	13,748.40	11,923.01
p2a2	16,912.53	16,951.17	17,227.34	17,090.22	18,374.90
p2c2	16,912.53	16,951.17	17,227.34	17,090.22	18,374.90
p2f2	16,912.53	16,951.17	17,227.34	17,090.22	18,374.90
p2g2	16,912.53	16,951.17	17,227.34	17,090.22	18,374.90
p3a3	21,759.50	20,953.47	22,343.66	22,465.63	20,896.96
p3c3	21,759.50	20,953.47	22,343.66	22,465.63	20,896.96
p3f3	21,759.50	20,953.47	22,343.66	22,465.63	20,896.96
p3g3	21,759.50	20,953.47	22,343.66	22,465.63	20,896.96
p4a4	15,978.48	15,807.38	14,935.60	14,749.79	16,682.90
p4c4	15,978.48	15,807.38	14,935.60	14,749.79	16,682.90

QUARTER	11	11	12	12	13
p4f4	15,978.48	15,807.38	14,935.60	14,749.79	16,682.90
p4g4	15,978.48	15,807.38	14,935.60	14,749.79	16,682.90
p5a5	23,233.77	23,884.41	28,056.62	27,954.65	31,338.69
p5c5	23233.76653	23884.41491	28056.62245	27954.64777	31338.68615
p5f5	23233.76653	23884.41491	28056.62245	27954.64777	31338.68615
p5g5	23233.76653	23884.41491	28056.62245	27954.64777	31338.68615
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST					
dp/dgas1	4,295	18,971	9,227	12,115	3,124
dp/dgas2	8,613	33,244	44,184	20,321	48,977
dp/dgas3	119,493	31,404	7,044	14,505	22,790
dp/dgas4	32,676	49,326	39,814	15,044	34,222
dp/dgas5	135,619	7,597	35,750	4,195	73,750
sum of dpdgas	300,696	140,542	136,019	66,180	182,864
MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,519	11,867	11,731	11,749	11,506
VMT2	11,520	11,858	11,826	11,726	11,823
VMT3	11,852	11,832	11,503	11,629	11,704
VMT4	11,718	11,866	11,791	11,636	11,758
VMT5	11,718	11,866	11,791	11,636	11,758
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT					
tpma1	0.05220	0.01446	0.02914	0.02720	0.05363
tpmc1	0.05220	0.01446	0.02914	0.02720	0.05363
tpmf1	0.05220	0.01446	0.02914	0.02720	0.05363
tpmg1	0.05220	0.01446	0.02914	0.02720	0.05363
tpma2	0.05213	0.01544	0.01883	0.02970	0.01916
tpmc2	0.05213	0.01544	0.01883	0.02970	0.01916
tpmf2	0.05213	0.01544	0.01883	0.02970	0.01916
tpmg2	0.05213	0.01544	0.01883	0.02970	0.01916
tpma3	0.01602	0.01818	0.05398	0.04023	0.03214
tpmc3	0.01602	0.01818	0.05398	0.04023	0.03214
tpmf3	0.01602	0.01818	0.05398	0.04023	0.03214
tpmg3	0.01602	0.01818	0.05398	0.04023	0.03214
tpma4	0.03063	0.01451	0.02270	0.03951	0.02623
tpmc4	0.03063	0.01451	0.02270	0.03951	0.02623
tpmf4	0.03063	0.01451	0.02270	0.03951	0.02623
tpmg4	0.03063	0.01451	0.02270	0.03951	0.02623
tpma5	0.03063	0.01451	0.02270	0.03951	0.02623
tpmc5	0.03063	0.01451	0.02270	0.03951	0.02623
tpmf5	0.03063	0.01451	0.02270	0.03951	0.02623
tpmg5	0.03063	0.01451	0.02270	0.03951	0.02623
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET					
cstravelpmetseg1	5,919,025,515	6,288,825,829	4,764,513,537	4,870,517,188	4,910,436,337
cstravelpmetseg2	9,408,189,005	9,954,330,264	9,565,590,964	9,345,795,610	9,853,732,510
cstravelpmetseg3	1,874,354,845	1,861,098,336	1,593,477,124	1,637,183,469	1,713,779,839
cstravelpmetseg4	4,279,504,507	4,365,767,955	3,608,599,688	3,657,311,400	3,547,859,649
cstravelpmetseg5	2,327,201,964	2,350,097,678	2,200,122,555	2,017,540,912	1,982,846,644
cstravelpmetsum	23,808,275,836	24,820,120,062	21,732,303,868	21,528,348,579	22,008,654,980
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET					
epm_a1	3.75	3.06	3.12	2.55	5.01
epm_c1	3.75	3.06	3.12	2.55	5.01
epm_f1	3.75	3.06	3.12	2.55	5.01
epm_g1	3.75	3.06	3.12	2.55	5.01
epm_a2	3.74	3.27	2.02	2.78	1.79
epm_c2	3.74	3.27	2.02	2.78	1.79
epm_f2	3.74	3.27	2.02	2.78	1.79

QUARTER	11	11	12	12	13
epm_g2	3.74	3.27	2.02	2.78	1.79
epm_a3	1.15	3.85	5.79	3.77	3.00
epm_c3	1.15	3.85	5.79	3.77	3.00
epm_f3	1.15	3.85	5.79	3.77	3.00
epm_g3	1.15	3.85	5.79	3.77	3.00
epm_a4	2.20	3.07	2.43	3.70	2.45
epm_c4	2.20	3.07	2.43	3.70	2.45
epm_f4	2.20	3.07	2.43	3.70	2.45
epm_g4	2.20	3.07	2.43	3.70	2.45
epm_a5	2.20	3.07	2.43	3.70	2.45
epm_c5	2.20	3.07	2.43	3.70	2.45
epm_f5	2.20	3.07	2.43	3.70	2.45
epm_g5	2.20	3.07	2.43	3.70	2.45
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET					
Asub1n	360,165	343,061	362,712	275,297	221,816
Csub1n	73,230	48,980	141,418	138,643	-
Fsub1n	184,274	167,932	248,748	165,543	116,269
Gsub1n	190,677	172,832	249,300	165,174	125,515
Asub2n	321,514	322,051	83,576	239,928	256,526
Csub2n	183,170	182,121	-	30,771	157,345
Fsub2n	254,150	255,047	24,915	175,800	198,869
Gsub2n	514,901	514,814	258,725	411,059	428,622
Asub3n	44,705	53,861	47,567	39,143	40,932
Csub3n	37,661	47,174	41,219	45,955	58,628
Fsub3n	60,138	69,418	72,314	64,687	77,458
Gsub3n	64,153	72,907	56,935	49,229	61,120
asub4n	94,133	93,951	193,775	11,150	51,662
Csub4n	7,522	13,176	1,864	106,964	-
fsub4n	167,111	166,102	261,245	94,666	131,598
gsub4n	190,137	191,218	273,467	105,373	162,595
asub5n	78,631	103,840	52,171	197,251	121,274
Csub5n	-	14,199	120,976	-	50,629
fsub5n	29,851	55,073	13,977	142,997	92,130
gsub5n	94,017	119,449	68,771	198,845	129,685
TOTAL SALES IN EACH SEGMENT AFTER PMET					
tseg1n	808,346	732,806	1,002,177	744,658	463,600
tseg2n	1,273,734	1,274,033	367,216	857,558	1,041,363
tseg3n	206,657	243,359	218,036	199,013	238,138
tseg4n	458,904	464,447	730,351	318,153	345,856
tseg5n	202,499	292,561	255,896	539,093	393,718
tsumn	2,950,141	3,007,206	2,573,675	2,658,475	2,482,674
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET					
CSPMETseg1	1,575,638,004	1,349,556,686	6,413,942,382	4,738,713,170	728,649,918
CSPMETseg2	9,678,633,630	9,665,670,761	1,983,628,846	4,800,432,708	6,068,523,988
CSPMETseg3	1,864,111,193	2,278,144,520	3,497,042,104	3,250,605,999	1,791,203,782
CSPMETseg4	2,724,898,212	2,952,789,238	4,534,098,612	1,968,313,817	2,222,824,722
CSPMETseg5	858,448,372	1,749,174,879	1,623,530,683	4,195,919,768	2,615,806,100
CsPMETsum	16,701,729,412	17,995,336,084	18,052,242,627	18,953,985,461	13,427,008,509
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET					
PSpmetseg1	906,948,299	807,671,420	3,476,860,463	2,502,149,452	476,330,051
PSpmetseg2	5,569,091,973	5,562,800,051	1,314,803,082	2,898,382,572	3,484,395,238
PSpmetseg3	970,225,967	1,189,626,312	1,812,179,586	1,648,179,297	932,328,154
PSpmetseg4	1,711,385,258	1,779,499,162	2,721,395,951	975,822,790	1,385,581,510
PSpmetseg5	649,778,812	1,150,461,155	710,915,718	2,494,672,803	1,467,676,006
Pspmetsum	9,807,430,309	10,490,058,100	10,036,154,800	10,519,206,912	7,746,310,959
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSPMETseg1	2,482,586,303	2,157,228,106	9,890,802,846	7,240,862,622	1,204,979,968
TSPMETseg2	15,247,725,603	15,228,470,812	3,298,431,928	7,698,815,279	9,552,919,225
TSPMETseg3	2,834,337,160	3,467,770,832	5,309,221,690	4,898,785,296	2,723,531,937
TSPMETseg4	4,436,283,470	4,732,288,400	7,255,494,563	2,944,136,607	3,608,406,232

QUARTER	11	11	12	12	13
TSPMETseg5	1,508,227,185	2,899,636,034	2,334,446,400	6,690,592,570	4,083,482,106
TSPMETsum	26,509,159,720	28,485,394,184	28,088,397,427	29,473,192,374	21,173,319,469
dwlpmet	5,795,070,108	3,663,210,757	4,230,753,466	3,239,178,130	5,331,334,360
pmetsurplus	51,781,674,180	53,822,664,628	50,644,124,039	52,112,167,419	43,970,316,629
pmetsurplus10	64,959,821,796	58,477,018,066	58,054,928,728	62,107,805,614	51,065,396,255
TAX REVENUE IN EACH SEGMENT UNDER PMET					
taxrevpmetseg1	486,066,267	125,710,687	342,619,309	237,998,400	286,082,681
taxrevpmetseg2	698,879,363	208,927,110	113,292,395	336,275,765	200,234,145
taxrevpmetseg3	39,229,013	52,359,022	135,376,700	93,113,369	89,571,182
taxrevpmetseg4	164,691,619	79,961,222	195,517,005	146,252,038	106,653,552
taxrevpmetseg5	75,372,362	50,192,341	36,617,334	296,986,894	105,800,621
taxrevpmetsum	1,464,238,624	517,150,382	823,422,743	1,110,626,466	788,342,181
pmetrev10	14,642,386,240	5,171,503,820	8,234,227,432	11,106,264,662	7,883,421,807
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1	12,805	88,345	(347,962)	(90,443)	202,341
lostsales2	30,463	30,164	867,726	377,384	250,332
lostsales3	38,313	1,611	3,632	22,655	(7,164)
lostsales4	110,207	104,664	(243,202)	168,996	122,062
lostsales5	104,797	14,735	34,566	(248,631)	(124,213)
lostsum	296,584	239,519	314,761	229,961	443,359
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET					
taxa1p	224.19	274.24	268.90	329.56	167.57
taxc1p	224.19	274.24	268.90	329.56	167.57
taxf1p	224.19	274.24	268.90	329.56	167.57
taxg1p	224.19	274.24	268.90	329.56	167.57
taxa2p	448.99	513.41	832.15	603.60	938.27
taxc2p	448.99	513.41	832.15	603.60	938.27
taxf2p	448.99	513.41	832.15	603.60	938.27
taxg2p	448.99	513.41	832.15	603.60	938.27
taxa3p	1,913.78	571.03	380.22	583.58	732.42
taxc3p	1,913.78	571.03	380.22	583.58	732.42
taxf3p	1,913.78	571.03	380.22	583.58	732.42
taxg3p	1,913.78	571.03	380.22	583.58	732.42
taxa4p	1,000.78	715.65	903.96	594.31	897.51
taxc4p	1,000.78	715.65	903.96	594.31	897.51
taxf4p	1,000.78	715.65	903.96	594.31	897.51
taxg4p	1,000.78	715.65	903.96	594.31	897.51
taxa5p	1,000.78	715.65	903.96	594.31	897.51
taxc5p	1,000.78	715.65	903.96	594.31	897.51
taxf5p	1,000.78	715.65	903.96	594.31	897.51
taxg5p	1,000.78	715.65	903.96	594.31	897.51
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET					
pollution reduction 1p	5,345,726,714.62	6,799,160,989.25	27,562,801,008.31	18,811,710,488.28	(11,385,911,298.44)
pollution reduction 2p	8,088,488,162.38	13,583,015,533.02	(24,621,869,784.87)	287,989,153.81	20,525,666,248.12
pollution reduction 3p	9,904,170,050.50	4,929,153,754.56	(208,178,963.23)	3,866,371,890.56	7,517,272,203.19
pollution reduction 4p	15,821,812,507.67	11,199,273,417.29	33,082,052,369.06	3,238,311,195.23	9,928,620,779.70
pollution reduction 5p	839,800,706.28	3,489,393,441.33	4,185,195,383.32	13,795,610,500.45	13,414,392,515.79
Total reductionp	39.99999814	39.99999714	40.00000001	39.99999323	40.00004045
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET					
Tsdiff	(6,370)	(793)	(720)	(301)	(1,307)

QUARTER	13	14	14	15
COEFFICIENTS OF DEMAND				
a P1/q1	-0.002394544	-0.008543543	-0.002299614	-0.005219805
b p2/q1	-0.001350255	-0.002711449	-0.000637523	-0.003716272
c p3/q1	2.0207E-17	-0.002559695	-1E-08	-3.2418E-15
d p4/q1	0.000666545	-1E-08	-0.000547079	-8.59775E-16
f P1/q2	-0.001350255	-0.002711449	-0.000637523	-0.003716272
g p2/q2	-0.00693528	-0.010956573	-0.008058129	-0.009822507
h p3/q2	0	-1E-08	-1E-08	-0.005559572
i p4/q2	-0.00693528	-0.003781547	-0.004280999	-0.006763616
k P1/q3	0.006123018	-0.002559695	-1E-08	1.006E-15
l p2/q3	9.12336E-18	-1E-08	-9.99999E-09	-0.005559572
m p3/q3	-0.100614511	-0.104308996	-0.069657216	-0.062727475
n p4/q3	-9.79813E-18	-1E-08	-0.007102546	2.09389E-17
p P1/q4	0.000666545	-1E-08	-0.000547079	-7.95691E-16
q p2/q4	-0.00693528	-0.003781547	-0.004280999	-0.006763616
r p3/q4	-2.91456E-17	-1E-08	-0.007102546	3.22296E-15
s p4/q4	-0.00693528	-0.029051748	-0.007102546	-0.006763616
u P1/q5	2.90665E-14	-1E-08	-1E-08	-0.005933306
v p2/q5	-0.001465412	-0.010956573	-0.005823506	-0.009822507
w p3/q5	3.07907E-14	-0.019932337	-0.014698499	-1E-08
x p4/q5	-0.00693528	-1E-08	-9.99999E-09	-0.006284333
y p5/q5	-0.075344056	-0.119551904	-0.120429696	-0.136254383
e p5/q1	2.14302E-14	-0.00000001	-0.00000001	-0.005933306
j p5/q2	-0.001465412	-0.010956573	-0.005823506	-0.009822507
o p5/q3	4.47939E-14	-0.019932337	-0.014698499	-0.00000001
t p5/q4	-0.00693528	-0.00000001	-9.99998E-09	-0.006284333
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR				
aa	-0.002394544	-0.008543543	-0.002299614	-0.005219805
bb	-0.001350255	-0.002711449	-0.000637523	-0.003716272
cc	-0.00000001	-0.002559695	-1E-08	-3.2418E-15
dd	-0.00000001	-1E-08	-0.000547079	-8.59775E-16
ee	-0.00000001	-0.00000001	-0.00000001	-0.005933306
ff	-0.001350255	-0.002711449	-0.000637523	-0.003716272
gg	-0.00693528	-0.010956573	-0.008058129	-0.009822507
hh	-0.00000001	-1E-08	-1E-08	-0.005559572
ii	-0.00693528	-0.003781547	-0.004280999	-0.006763616
jj	-0.001465412	-0.010956573	-0.005823506	-0.009822507
kk	-0.00000001	-0.002559695	-1E-08	-0.00000001
ll	-0.00000001	-1E-08	-9.99999E-09	-0.005559572
mm	-0.100614511	-0.104308996	-0.069657216	-0.062727475
nn	-9.79813E-18	-1E-08	-0.007102546	-0.00000001
oo	-0.00000001	-0.019932337	-0.014698499	-0.00000001
pp	-0.00000001	-1E-08	-0.000547079	-7.95691E-16
qq	-0.00693528	-0.003781547	-0.004280999	-0.006763616
rr	-2.91456E-17	-1E-08	-0.007102546	-0.00000001
ss	-0.00693528	-0.029051748	-0.007102546	-0.006763616
tt	-0.00693528	-0.00000001	-9.99998E-09	-0.006284333
uu	-0.00000001	-1E-08	-1E-08	-0.005933306
vv	-0.001465412	-0.010956573	-0.005823506	-0.009822507
ww	-0.00000001	-0.019932337	-0.014698499	-1E-08
xx	-0.00693528	-1E-08	-9.99999E-09	-0.006284333
yy	-0.075344056	-0.119551904	-0.120429696	-0.136254383
KNOWN PRICE BEFORE TAXES				
P1	11,828	11,755	11,755	12,012
P2	17,799	17,574	17,574	17,698
P3	20,462	20,273	20,273	19,303
P4	16,150	16,632	16,632	14,635
P5	31,004	30,327	30,327	27,971

QUARTER	13	14	14	15
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM				
Asub1	267,700	315,833	315,833	287,444
Csub1	56,644	73,941	73,941	64,568
Fsub1	166,464	185,928	185,928	162,328
Gsub1	175,133	211,790	211,790	184,974
Asub2	306,972	350,140	350,140	359,751
Csub2	204,165	250,924	250,924	206,715
Fsub2	271,186	344,845	344,845	338,773
Gsub2	509,372	634,612	634,612	505,608
Asub3	38,724	43,350	43,350	51,918
Csub3	54,144	67,637	67,637	65,613
Fsub3	76,858	89,408	89,408	82,234
Gsub3	61,248	90,699	90,699	91,917
asub4	88,429	100,713	100,713	109,354
Csub4	52,202	61,145	61,145	52,331
fsub4	152,379	200,431	200,431	194,841
gsub4	174,908	214,472	214,472	226,404
asub5	95,924	112,278	112,278	106,100
Csub5	14,790	16,109	16,109	15,334
fsub5	60,482	61,312	61,312	51,425
gsub5	98,309	113,432	113,432	90,594
TOTAL SALES IN EACH SEGMENT BEFORE TAXES				
tseg1	665,941	787,492	787,492	699,314
tseg2	1,291,695	1,580,521	1,580,521	1,410,847
tseg3	230,974	291,094	291,094	291,682
tseg4	467,918	576,761	576,761	582,930
tseg5	269,505	303,131	303,131	263,453
tsum	2,926,033	3,538,999	3,538,999	3,248,226
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j				
Elasiticity11	(7.42)	(1.75)	(6.49)	(3.29)
Elasiticity21	2.17	0.65	0.77	1.83
Elasiticity31	0.00	0.07	0.00	0.00
Elasiticity41	0.00	0.00	0.71	0.00
Elasiticity51	0.00	0.00	0.00	0.03
Elasiticity12	0.74	0.22	0.26	0.62
Elasiticity22	(1.99)	(1.01)	(1.38)	(1.28)
Elasiticity32	0.00	0.00	0.00	0.00
Elasiticity42	1.80	0.13	0.79	1.06
Elasiticity52	0.07	0.16	0.12	0.15
Elasiticity13	0.00	0.12	0.00	0.00
Elasiticity23	0.00	0.00	0.00	0.55
Elasiticity33	(0.88)	(0.67)	(1.00)	(1.06)
Elasiticity43	0.00	0.00	0.82	0.00
Elasiticity53	0.00	0.17	0.18	0.00
Elasiticity14	0.00	0.00	0.68	0.00
Elasiticity24	5.48	0.36	2.28	3.09
Elasiticity34	0.00	0.00	0.50	0.00
Elasiticity44	(4.98)	(0.99)	(4.06)	(3.71)
Elasiticity54	0.88	0.00	0.00	0.33
Elasiticity15	0.00	0.00	0.00	0.04
Elasiticity25	0.19	0.48	0.35	0.49
Elasiticity35	0.00	0.11	0.12	0.00
Elasiticity45	0.80	0.00	0.00	0.38
Elasiticity55	(1.53)	(0.84)	(0.83)	(0.78)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM				
MCasub1	10,828	8,000	10,755	9,108
MCcsub1	11,447	10,276	11,398	10,896
MCfsub1	11,156	9,010	11,007	9,870

QUARTER	13	14	14	15
MCgsub1	10,828	8,000	10,755	9,108
MCasub2	14,567	11,272	13,468	11,019
MCcsub2	15,933	14,221	15,154	14,557
MCfsub2	14,567	11,867	13,468	11,484
MCgsub2	12,698	8,000	10,755	9,108
MCasub3	18,198	12,701	14,884	14,037
MCcsub3	15,361	12,701	14,884	14,037
MCfsub3	13,747	9,240	11,711	12,253
MCgsub3	15,361	8,000	10,755	10,713
MCasub4	12,920	12,382	13,937	10,787
MCcsub4	14,303	13,906	14,603	12,784
MCfsub4	12,893	9,503	12,994	10,697
MCgsub4	10,828	8,000	11,632	9,108
MCasub5	22,706	12,196	14,121	9,108
MCcsub5	29,227	24,303	25,931	23,472
MCfsub5	24,988	17,433	19,616	16,298
MCgsub5	21,629	8,000	11,632	9,108
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM				
e	2.14302E-14	-0.00000001	-0.00000001	-0.00059306
j	-0.001465412	-0.010956573	-0.005823506	-0.009822507
o	4.47939E-14	-0.019932337	-0.01469849	-0.00000001
t	-0.00693528	-0.00000001	-9.99998E-09	-0.00628433
y	-0.075344056	-0.119551904	-0.120429696	-0.136254383
MARKUP FOR EACH FIRM BY SEGMENT				
XMCasub1	1,000	3,755	1,000	2,903
XMCcsub1	381	1,479	356	1,115
XMCfsub1	672	2,745	748	2,141
XMCgsub1	1,000	3,755	1,000	2,903
XMCasub2	3,232	6,302	4,106	6,679
XMCcsub2	1,866	3,353	2,420	3,141
XMCfsub2	3,232	5,707	4,106	6,214
XMCgsub2	5,101	9,574	6,819	8,590
XMCasub3	2,265	7,572	5,390	5,266
XMCcsub3	5,101	7,572	5,390	5,266
XMCfsub3	6,715	11,033	8,562	7,050
XMCgsub3	5,101	12,273	9,518	8,590
XMCasub4	3,230	4,250	2,694	3,848
XMCcsub4	1,848	2,726	2,029	1,851
XMCfsub4	3,257	7,129	3,638	3,938
XMCgsub4	5,323	8,632	5,000	5,527
XMCasub5	8,299	18,130	16,205	18,863
XMCcsub5	1,777	6,023	4,396	4,498
XMCfsub5	6,017	12,894	10,711	11,672
XMCgsub5	9,376	22,327	18,695	18,863
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT				
constant1	13,440	23,513	14,889	21,061
constant2	31,297	42,529	35,046	42,307
constant3	43,702	58,695	49,102	45,443
constant4	29,779	39,364	29,993	29,775
constant5	56,448	89,686	80,316	81,804
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES				
TSseg1	1,113,245,369	7,230,675,725	1,927,096,111	4,955,505,534
TSseg2	13,565,590,869	30,812,581,427	21,596,366,888	26,860,389,645
TSseg3	3,876,304,817	8,532,125,189	6,422,902,494	5,800,545,135
TSseg4	4,997,959,684	10,430,374,274	6,049,908,288	6,949,115,381
TSseg5	5,536,540,780	14,452,611,025	12,244,224,810	11,470,624,404
Tssum	29,089,641,519	71,458,367,640	48,240,498,591	56,036,180,098
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES				
CSseg1	536,946,816	4,629,899,227	1,234,034,081	3,164,284,739

QUARTER	13	14	14	15
CSseg2	8,717,348,933	19,720,686,967	13,807,813,098	17,359,770,771
CSseg3	2,683,841,215	5,592,147,578	4,195,954,203	3,812,310,492
CSseg4	3,188,538,752	6,555,680,126	3,853,051,145	4,413,003,715
CSseg5	3,428,589,747	8,996,803,642	7,576,578,084	7,091,221,407
Cssum	18,555,265,463	45,495,217,540	30,667,430,611	35,840,591,125
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES				
PSseg1	576,298,553	2,600,776,499	693,062,030	1,791,220,794
PSseg2	4,848,241,936	11,091,894,460	7,788,553,790	9,500,618,873
PSseg3	1,192,463,602	2,939,977,611	2,226,948,291	1,988,234,643
PSseg4	1,809,420,932	3,874,694,147	2,196,857,143	2,536,111,667
PSseg5	2,107,951,033	5,455,807,383	4,667,646,725	4,379,402,997
Pssum	10,534,376,056	25,963,150,100	17,573,067,979	20,195,588,973
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES				
CStravseg1	5,202,664,063	6,152,281,250	6,152,281,250	5,463,390,625
CStravseg2	10,091,367,188	12,347,820,313	12,347,820,313	11,022,242,188
CStravseg3	1,804,484,375	2,274,171,875	2,274,171,875	2,278,765,625
CStravseg4	3,655,609,375	4,505,945,313	4,505,945,313	4,554,140,625
CStravseg5	2,105,507,813	2,368,210,938	2,368,210,938	2,058,226,563
Cstravsum	22,859,632,813	27,648,429,688	27,648,429,688	25,376,765,625
FIRST ORDER CONDITIONS UNDER LSET				
foc1l	-6.92394E-09	-1.5017E-09	5.4921E-05	1.80254E-05
foc2l	1.16094E-09	1.36627E-05	-0.0001733	-0.000481604
foc3l	-1.01683E-08	-4.29453E-06	0.000218292	-1.09006E-05
foc4l	2.40607E-09	-3.42701E-05	0.000278866	4.59751E-05
foc5l	5.91854E-10	-1.84944E-09	5.47742E-05	1.61387E-05
foc6l	-2.54431E-09	1.36669E-05	-0.000172841	-0.000499564
foc7l	3.07841E-09	-4.29652E-06	0.000217779	-1.07998E-05
foc8l	-1.63641E-09	-3.42824E-05	0.000278173	4.63602E-05
foc9l	-7.31181E-09	-2.04379E-09	5.46082E-05	1.84934E-05
foc10l	1.46886E-09	1.36703E-05	-0.000172296	-0.000477089
foc11l	-5.48345E-10	-4.29802E-06	0.000217193	-1.09194E-05
foc12l	7.11674E-09	-3.42919E-05	0.000277369	4.58883E-05
foc13l	-2.11082E-09	-2.26626E-09	5.45702E-05	1.89602E-05
foc14l	-1.94444E-09	1.36726E-05	-0.000172161	-0.000472704
foc15l	-1.13209E-09	-4.29912E-06	0.000217035	-1.0939E-05
foc16l	2.48497E-09	-3.42985E-05	0.000277184	4.58033E-05
foc17l	-0.00018978	-1.61973E-06	0.000238183	0.000577303
foc18l	-0.000189864	-1.61757E-06	0.000237605	0.000598774
foc19l	-0.000188343	-1.61674E-06	0.000236837	0.000571939
foc20l	-0.000187731	-1.61616E-06	0.000236615	0.000566649
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET				
p1a1l	12,190	12,275	12,378	12,484
p1c1l	12,190	12,275	12,378	12,484
p1f1l	12,190	12,275	12,378	12,484
p1g1l	12,190	12,275	12,378	12,484
p2a2l	18,732	18,307	18,451	18,368
p2c2l	18,732	18,307	18,451	18,368
p2f2l	18,732	18,307	18,451	18,368
p2g2l	18,732	18,307	18,451	18,368
p3a3l	22,326	21,102	21,266	20,066
p3c3l	22,326	21,102	21,266	20,066
p3f3l	22,326	21,102	21,266	20,066
p3g3l	22,326	21,102	21,266	20,066
p4a4l	17,197	17,465	17,630	15,400
p4c4l	17,197	17,465	17,630	15,400
p4f4l	17,197	17,465	17,630	15,400
p4g4l	17,197	17,465	17,630	15,400
p5a5l	32,145	52,420	29,760	32,770
p5c5l	32,145	52,420	29,760	32,770
p5f5l	32,145	52,420	29,760	32,770

QUARTER	13	14	14	15
p5g5l	32,145	52,420	29,760	32,770
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET				
lemp_a1	2.07	2.61	2.18	2.83
lemp_c1	2.07	2.61	2.18	2.83
lemp_f1	2.07	2.61	2.18	2.83
lemp_g1	2.07	2.61	2.18	2.83
lemp_a2	2.92	3.69	3.08	4.00
lemp_c2	2.92	3.69	3.08	4.00
lemp_f2	2.92	3.69	3.08	4.00
lemp_g2	2.92	3.69	3.08	4.00
lemp_a3	3.34	4.22	3.52	4.57
lemp_c3	3.34	4.22	3.52	4.57
lemp_f3	3.34	4.22	3.52	4.57
lemp_g3	3.34	4.22	3.52	4.57
lemp_a4	3.34	4.22	3.52	4.57
lemp_c4	3.34	4.22	3.52	4.57
lemp_f4	3.34	4.22	3.52	4.57
lemp_g4	3.34	4.22	3.52	4.57
lemp_a5	3.34	4.22	3.52	4.57
lemp_c5	3.34	4.22	3.52	4.57
lemp_f5	3.34	4.22	3.52	4.57
lemp_g5	3.34	4.22	3.52	4.57
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET				
Asub1nl	246,892	393,448	255,986	390,487
Csub1nl	35,149	151,326	13,052	184,504
Fsub1nl	139,265	263,192	124,210	261,158
Gsub1nl	145,482	289,137	150,165	279,668
Asub2nl	101,368	99,391	361,949	177,511
Csub2nl	-	-	262,197	-
Fsub2nl	75,950	93,779	355,650	162,804
Gsub2nl	317,129	383,319	645,146	335,679
Asub3nl	42,983	-	47,396	65,049
Csub3nl	58,289	24,327	71,682	80,782
Fsub3nl	80,665	46,111	93,408	94,790
Gsub3nl	65,003	47,401	94,709	104,026
asub4nl	268,200	126,142	58,898	230,896
Csub4nl	230,996	86,617	19,802	196,864
fsub4nl	321,913	225,973	159,670	309,753
gsub4nl	340,964	240,017	173,692	335,514
asub5nl	81,158	318,619	96,201	141,457
Csub5nl	-	222,402	-	51,296
fsub5nl	46,422	267,644	45,263	86,672
gsub5nl	84,556	319,796	97,407	125,712
TOTAL SALES IN EACH SEGMENT AFTER LSET				
tseg1nl	566,789	1,097,103	543,413	1,115,817
tseg2nl	494,446	576,490	1,624,942	675,994
tseg3nl	246,941	117,840	307,195	344,646
tseg4nl	1,162,073	678,749	412,062	1,073,027
tseg5nl	212,135	1,128,461	238,871	405,136
tsumnl	2,682,384	3,598,643	3,126,483	3,614,620
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1l	99,152	(309,611)	244,079	(416,503)
lostsales2l	797,249	1,004,031	(44,421)	734,853
lostsales3l	(15,967)	173,254	(16,101)	(52,964)
lostsales4l	(694,155)	(101,988)	164,699	(490,097)
lostsales5l	57,370	(825,330)	64,260	(141,683)
lostsuml	243,649	(59,644)	412,516	(366,394)
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET				
CSlsetseg1	354,315,262	6,164,583,703	682,258,284	4,785,121,667
CSlsetseg2	3,106,261,772	6,981,835,650	13,483,390,406	8,091,546,707

QUARTER	13	14	14	15
CSlsetseg3	2,639,220,997	2,214,972,598	4,275,568,108	4,373,046,040
CSlsetseg4	7,310,519,033	7,431,918,345	2,546,996,728	7,712,760,337
CSlsetseg5	2,577,785,295	21,026,679,146	6,038,169,887	9,932,588,255
Cslsetsum	15,988,102,359	43,819,989,442	27,026,383,412	34,895,063,006
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET				
PSlsetseg1	243,919,121	3,373,296,609	423,102,078	2,575,037,004
PSlsetseg2	2,083,660,221	4,728,493,797	7,632,756,101	4,965,058,875
PSlsetseg3	1,403,350,664	1,249,444,153	2,264,416,288	2,261,300,628
PSlsetseg4	3,843,952,789	4,312,799,056	1,545,267,392	4,115,583,012
PSlsetseg5	1,708,371,284	41,461,508,875	3,431,161,298	7,836,710,186
Pslsetsum	9,283,254,079	55,125,542,490	15,296,703,157	21,753,689,706
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSlsetseg1	598,234,384	9,537,880,312	1,105,360,362	7,360,158,671
TSlsetseg2	5,189,921,992	11,710,329,447	21,116,146,507	13,056,605,583
TSlsetseg3	4,042,571,662	3,464,416,751	6,539,984,396	6,634,346,668
TSlsetseg4	11,154,471,822	11,744,717,401	4,092,264,120	11,828,343,349
TSlsetseg5	4,286,156,579	62,488,188,022	9,469,331,185	17,769,298,441
Tslsetsum	25,271,356,439	98,945,531,933	42,323,086,569	56,648,752,712
dwllset	3,818,285,080	(27,487,164,292)	5,917,412,022	(612,572,614)
surpluslset	48,130,989,251	126,593,961,620	69,971,516,257	82,025,518,337
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM				
LSET	196.74	123.62	177.11	105.14
ABATEMENT CONSTANT FROM ABATEMENT EQUATION				
Abate1	840	840	840	840
Abate2	1680	1680	1680	1680
Abate3	2200	2200	2200	2200
Abate4	2200	2200	2200	2200
Abate5	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER				
max emis1	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES				
cur_emis1	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET				
taxrevlsetseg1	230,411,048	353,535,473	209,602,480	331,602,586
taxrevlsetseg2	284,260,427	262,719,404	886,379,140	284,107,417
taxrevlsetseg3	162,459,953	61,453,930	191,757,864	165,756,296
taxrevlsetseg4	764,517,323	353,969,698	257,217,597	516,068,216
taxrevlsetseg5	139,561,843	588,496,264	149,108,597	194,848,826
taxrevlsetsum	1,581,210,595	1,620,174,770	1,694,065,678	1,492,383,342
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET				
taxa1	406.52	322.24	385.72	297.18
taxc1	406.52	322.24	385.72	297.18
taxf1	406.52	322.24	385.72	297.18
taxg1	406.52	322.24	385.72	297.18
taxa2	574.91	455.72	545.48	420.28
taxc2	574.91	455.72	545.48	420.28

QUARTER	13	14	14	15
taxf2	574.91	455.72	545.48	420.28
taxg2	574.91	455.72	545.48	420.28
taxa3	657.89	521.50	624.22	480.95
taxc3	657.89	521.50	624.22	480.95
taxf3	657.89	521.50	624.22	480.95
taxg3	657.89	521.50	624.22	480.95
taxa4	657.89	521.50	624.22	480.95
taxc4	657.89	521.50	624.22	480.95
taxf4	657.89	521.50	624.22	480.95
taxg4	657.89	521.50	624.22	480.95
taxa5	657.89	521.50	624.22	480.95
taxc5	657.89	521.50	624.22	480.95
taxf5	657.89	521.50	624.22	480.95
taxg5	657.89	521.50	624.22	480.95
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET				
pollution reduction 1	10,585,730,472	33,236,570,252	3,521,302,006	34,883,947,541
pollution reduction 2	(23,989,486,008)	(36,206,983,378)	23,601,485,144	(27,456,098,752)
pollution reduction 3	6,771,986,620	(2,346,057,677)	7,669,206,314	5,099,544,813
pollution reduction 4	46,724,607,693	12,884,905,325	5,816,083,830	23,681,735,735
pollution reduction 5	(92,838,777)	32,431,565,481	(608,077,306)	3,790,876,594
Total reduction	40	40	39.99999999	40.00000593
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM				
PMET	0.00555	0.01074	0.00392	0.00756
FIRST ORDER CONDITIONS UNDER LSET				
foc1p	0.0022548	1.38761E-07	5.05419E-05	3.02714E-05
foc2p	0.003555476	-1.65137E-06	-0.000377533	-5.61363E-05
foc3p	0.021865426	7.1175E-07	0.000339713	-2.31489E-06
foc4p	0.004755918	4.70597E-06	1.52774E-05	6.11278E-06
foc5p	0.002254792	1.38355E-07	4.86667E-05	2.51773E-05
foc6p	0.003555473	-1.64953E-06	-0.00036535	-0.000103221
foc7p	0.02186544	7.07196E-07	0.000336184	-2.10953E-06
foc8p	0.004755921	4.70831E-06	7.75085E-06	7.43905E-06
foc9p	0.002254797	1.38208E-07	5.02397E-05	3.07469E-05
foc10p	0.003555464	-1.64383E-06	-0.000376517	-5.16144E-05
foc11p	0.021865418	7.08215E-07	0.00033865	-2.33752E-06
foc12p	0.004755925	4.6842E-06	1.3789E-05	6.03146E-06
foc13p	0.002254801	1.37989E-07	5.59383E-05	3.12093E-05
foc14p	0.003555463	-1.64146E-06	-0.000376335	-4.72363E-05
foc15p	0.021865428	7.07096E-07	0.000335427	-2.36621E-06
foc16p	0.004755914	4.67768E-06	-0.119494521	5.94269E-06
foc17p	0.004525023	-3.2824E-07	0.000192284	2.70053E-05
foc18p	0.003989182	-3.33254E-07	0.0003025	6.81392E-05
foc19p	0.004526476	-3.25247E-07	0.00019091	2.15663E-05
foc20p	0.004527124	-3.24733E-07	0.000187254	1.63013E-05
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET				
p1a1	11,709.76	12,051.96	11,925.68	12,241.80
p1c1	11,709.76	12,051.96	11,925.68	12,241.80
p1f1	11,709.76	12,051.96	11,925.68	12,241.80
p1g1	11,709.76	12,051.96	11,925.68	12,241.80
p2a2	18,137.11	17,841.13	17,922.47	18,138.05
p2c2	18,137.11	17,841.13	17,922.47	18,138.05
p2f2	18,137.11	17,841.13	17,922.47	18,138.05
p2g2	18,137.11	17,841.13	17,922.47	18,138.05
p3a3	21,590.28	21,340.48	20,681.99	19,762.41
p3c3	21,590.28	21,340.48	20,681.99	19,762.41
p3f3	21,590.28	21,340.48	20,681.99	19,762.41
p3g3	21,590.28	21,340.48	20,681.99	19,762.41
p4a4	16,579.19	16,886.67	16,961.45	14,850.72
p4c4	16,579.19	16,886.67	16,961.45	14,850.72

QUARTER	13	14	14	15
p4f4	16,579.19	16,886.67	16,961.45	14,850.72
p4g4	16,579.19	16,886.67	16,961.45	14,850.72
p5a5	31,356.15	28,870.55	30,756.12	28,274.21
p5c5	31356.14863	28870.54916	30756.1173	28274.20604
p5f5	31356.14863	28870.54916	30756.1173	28274.20604
p5g5	31356.14863	28870.54916	30756.1173	28274.20604
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST				
dp/dgas1	17,250	26,271	22,980	23,750
dp/dgas2	31,479	10,686	50,034	42,912
dp/dgas3	22,790	135,363	55,506	36,241
dp/dgas4	43,016	7,680	35,070	8,128
dp/dgas5	55,326	161,947	3,721	5,762
sum of dpdgas	169,862	341,948	167,311	116,793
MILES TRAVELED IN EACH SEGMENT UNDER PMET				
VMT1	11,848	11,829	11,890	11,849
VMT2	11,841	11,621	11,894	11,841
VMT3	11,787	11,878	11,885	11,803
VMT4	11,845	11,489	11,856	11,583
VMT5	11,845	11,489	11,856	11,583
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT				
tpma1	0.01644	0.01853	0.01197	0.01635
tpmc1	0.01644	0.01853	0.01197	0.01635
tpmf1	0.01644	0.01853	0.01197	0.01635
tpmg1	0.01644	0.01853	0.01197	0.01635
tpma2	0.01721	0.04109	0.01147	0.01720
tpmc2	0.01721	0.04109	0.01147	0.01720
tpmf2	0.01721	0.04109	0.01147	0.01720
tpmg2	0.01721	0.04109	0.01147	0.01720
tpma3	0.02315	0.01321	0.01246	0.02142
tpmc3	0.02315	0.01321	0.01246	0.02142
tpmf3	0.02315	0.01321	0.01246	0.02142
tpmg3	0.02315	0.01321	0.01246	0.02142
tpma4	0.01685	0.05547	0.01568	0.04523
tpmc4	0.01685	0.05547	0.01568	0.04523
tpmf4	0.01685	0.05547	0.01568	0.04523
tpmg4	0.01685	0.05547	0.01568	0.04523
tpma5	0.01685	0.05547	0.01568	0.04523
tpmc5	0.01685	0.05547	0.01568	0.04523
tpmf5	0.01685	0.05547	0.01568	0.04523
tpmg5	0.01685	0.05547	0.01568	0.04523
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET				
cstravelpmetseg1	5,079,284,038	6,000,155,657	6,062,626,751	5,390,889,993
cstravelpmetseg2	9,985,391,675	11,564,496,398	12,140,985,392	10,672,527,768
cstravelpmetseg3	1,734,886,337	2,230,262,891	2,232,332,116	2,216,083,689
cstravelpmetseg4	3,427,289,291	4,148,313,556	4,409,096,431	4,443,057,670
cstravelpmetseg5	2,064,134,664	2,212,358,374	2,311,420,515	1,921,265,916
cstravelpmetsum	22,290,986,004	26,155,586,877	27,156,461,205	24,643,825,035
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET				
epm_a1	2.96	1.73	3.05	2.16
epm_c1	2.96	1.73	3.05	2.16
epm_f1	2.96	1.73	3.05	2.16
epm_g1	2.96	1.73	3.05	2.16
epm_a2	3.10	3.83	2.93	2.28
epm_c2	3.10	3.83	2.93	2.28
epm_f2	3.10	3.83	2.93	2.28

QUARTER	13	14	14	15
epm_g2	3.10	3.83	2.93	2.28
epm_a3	4.17	1.23	3.18	2.83
epm_c3	4.17	1.23	3.18	2.83
epm_f3	4.17	1.23	3.18	2.83
epm_g3	4.17	1.23	3.18	2.83
epm_a4	3.04	5.16	4.00	5.98
epm_c4	3.04	5.16	4.00	5.98
epm_f4	3.04	5.16	4.00	5.98
epm_g4	3.04	5.16	4.00	5.98
epm_a5	3.04	5.16	4.00	5.98
epm_c5	3.04	5.16	4.00	5.98
epm_f5	3.04	5.16	4.00	5.98
epm_g5	3.04	5.16	4.00	5.98
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET				
Asub1n	261,155	291,419	276,952	194,227
Csub1n	54,977	49,242	33,995	29,319
Fsub1n	153,528	161,163	145,176	64,898
Gsub1n	159,745	187,108	171,129	83,408
Asub2n	108,675	358,717	333,032	449,226
Csub2n	198	259,474	233,574	214,257
Fsub2n	83,257	353,105	326,733	434,520
Gsub2n	324,435	642,645	616,211	607,394
Asub3n	44,370	40,119	40,871	39,083
Csub3n	60,014	64,472	65,229	59,908
Fsub3n	82,051	86,231	86,883	68,825
Gsub3n	66,390	87,520	88,180	78,060
asub4n	260,462	93,701	85,429	-
Csub4n	228,849	54,157	46,084	24,792
fsub4n	314,174	193,532	186,200	78,857
gsub4n	333,225	207,576	200,253	104,618
asub5n	79,106	96,344	112,470	104,736
Csub5n	-	-	16,046	13,107
fsub5n	44,370	45,369	61,533	49,951
gsub5n	82,504	97,521	113,677	88,991
TOTAL SALES IN EACH SEGMENT AFTER PMET				
tseg1n	629,405	688,932	627,251	371,851
tseg2n	516,565	1,613,941	1,509,550	1,705,398
tseg3n	252,824	278,343	281,164	245,876
tseg4n	1,136,711	548,966	517,966	208,267
tseg5n	205,980	239,234	303,726	256,785
tsumn	2,741,485	3,369,417	3,239,657	2,788,177
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET				
CSPMETseg1	455,362,672	3,780,351,434	843,083,332	1,567,551,746
CSPMETseg2	3,258,916,534	19,567,746,256	12,491,678,370	19,979,633,192
CSPMETseg3	2,728,476,255	4,949,711,674	3,898,096,832	3,061,698,412
CSPMETseg4	7,090,199,025	6,052,799,567	3,232,467,910	1,515,876,103
CSPMETseg5	2,488,209,023	6,200,020,624	7,517,398,954	6,839,316,443
CsPMETsum	16,021,163,509	40,550,629,555	27,982,725,398	32,964,075,896
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET				
PSpmetseg1	292,316,420	2,181,259,820	503,523,536	918,986,511
PSpmetseg2	2,170,593,008	11,021,023,762	7,136,285,289	11,082,326,720
PSpmetseg3	1,448,087,332	2,616,761,248	2,075,540,807	1,599,123,427
PSpmetseg4	3,725,036,974	3,623,296,545	1,888,363,838	903,019,933
PSpmetseg5	1,620,149,449	4,058,762,163	4,640,838,856	4,279,744,519
Pspmetsum	9,256,183,182	23,501,103,538	16,244,552,326	18,783,201,110
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSPMETseg1	747,679,092	5,961,611,254	1,346,606,868	2,486,538,257
TSPMETseg2	5,429,509,542	30,588,770,018	19,627,963,659	31,061,959,912
TSPMETseg3	4,176,563,587	7,566,472,922	5,973,637,638	4,660,821,839
TSPMETseg4	10,815,235,999	9,676,096,113	5,120,831,748	2,418,896,035

QUARTER	13	14	14	15
TSPMETseg5	4,108,358,472	10,258,782,786	12,158,237,809	11,119,060,963
TSPMETsum	25,277,346,691	64,051,733,093	44,227,277,723	51,747,277,006
dwlpmet	3,759,333,109	7,497,569,669	4,037,323,721	4,328,140,232
pmetsurplus	48,189,941,222	91,609,227,658	71,851,604,558	77,084,805,492
pmetsurplus10	53,784,417,967	104,226,396,858	76,062,395,227	83,328,136,542
TAX REVENUE IN EACH SEGMENT UNDER PMET				
taxrevpmetseg1	122,596,216	151,035,204	89,240,640	72,042,559
taxrevpmetseg2	116,433,832	670,365,340	178,695,049	309,717,059
taxrevpmetseg3	68,973,902	43,685,063	41,638,602	62,162,067
taxrevpmetseg4	226,833,376	349,848,203	96,262,363	109,119,401
taxrevpmetseg5	86,771,201	186,973,880	62,028,977	140,662,364
taxrevpmetsum	621,608,527	1,401,907,689	467,865,630	693,703,450
pmetrev10	6,216,085,272	14,019,076,889	4,678,656,300	6,937,034,501
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1	36,536	98,560	160,241	327,463
lostsales2	775,130	(33,420)	70,971	(294,551)
lostsales3	(21,850)	12,751	9,930	45,806
lostsales4	(668,793)	27,795	58,795	374,663
lostsales5	63,525	63,897	(595)	6,668
lostsum	184,548	169,582	299,342	460,049
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET				
taxa1p	283.58	486.87	274.98	388.33
taxc1p	283.58	486.87	274.98	388.33
taxf1p	283.58	486.87	274.98	388.33
taxg1p	283.58	486.87	274.98	388.33
taxa2p	541.76	439.15	573.82	738.19
taxc2p	541.76	439.15	573.82	738.19
taxf2p	541.76	439.15	573.82	738.19
taxg2p	541.76	439.15	573.82	738.19
taxa3p	527.50	1,788.56	691.62	776.31
taxc3p	527.50	1,788.56	691.62	776.31
taxf3p	527.50	1,788.56	691.62	776.31
taxg3p	527.50	1,788.56	691.62	776.31
taxa4p	724.71	426.03	549.75	367.63
taxc4p	724.71	426.03	549.75	367.63
taxf4p	724.71	426.03	549.75	367.63
taxg4p	724.71	426.03	549.75	367.63
taxa5p	724.71	426.03	549.75	367.63
taxc5p	724.71	426.03	549.75	367.63
taxf5p	724.71	426.03	549.75	367.63
taxg5p	724.71	426.03	549.75	367.63
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET				
pollution reduction 1p	8,184,842,413.35	16,758,873,337.50	2,486,271,087.28	(3,757,359,645.66)
pollution reduction 2p	(23,628,684,765.46)	10,913,095,717.18	20,702,919,954.14	51,657,058,120.93
pollution reduction 3p	4,782,586,186.81	13,997,791,614.19	7,688,838,209.54	6,904,469,279.85
pollution reduction 4p	50,201,407,931.63	2,996,187,689.13	8,200,504,982.64	(9,682,629,955.24)
pollution reduction 5p	459,395,762.92	(4,665,948,357.11)	921,491,220.60	(5,121,536,799.26)
Total reductionp	39.99954753	40	40.00002545	40.000001
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET				
Tsdiff	(59)	(34,985)	(1,880)	(4,941)

QUARTER	15	16	16	17
COEFFICIENTS OF DEMAND				
a P1/q1	-0.007429514	-0.00283662	-0.004073444	-0.003086735
b p2/q1	-0.005207095	-0.001441627	-0.00025498	-1E-08
c p3/q1	0	-0.001148902	-0.000972825	-0.002318695
d p4/q1	-1.08527E-17	-1E-08	-1.00001E-08	-0.00080549
f P1/q2	-0.005207095	-0.001441627	-0.00025498	-1E-08
g p2/q2	-0.011281187	-0.008824105	-0.006901477	-0.007394887
h p3/q2	-0.006285201	-0.008824105	-0.000359944	5.43708E-17
i p4/q2	-0.007002408	-0.004725053	-1.24764E-07	-1E-08
k P1/q3	0	-0.001148902	-0.000972825	-0.002318695
l p2/q3	-0.006285201	-0.008824105	-0.000359944	5.19519E-17
m p3/q3	-0.070802021	-0.058446066	-0.037088336	-0.048961881
n p4/q3	-1.16222E-17	-0.001703677	-0.020195074	-0.001532433
p P1/q4	-1.18049E-17	-1E-08	-1.00001E-08	-0.00080549
q p2/q4	-0.007002408	-0.004725053	0.002152957	-1E-08
r p3/q4	3.31297E-18	-0.001703677	-0.020195074	-0.001532433
s p4/q4	-0.010577555	-0.013492175	-0.020195074	-0.029136599
u P1/q5	-1E-08	-0.000646332	-0.004073489	-0.001234532
v p2/q5	-0.009541238	-1E-08	-0.001669161	-1E-08
w p3/q5	9.59874E-17	-0.003516174	-5.48736E-05	-1.37274E-16
x p4/q5	-0.007654955	-1E-08	-9.99987E-09	8.91429E-17
y p5/q5	-0.147855748	-0.183070835	-0.034476107	-0.139281056
e p5/q1	-0.00000001	-0.000646332	-0.004073489	-0.001234532
j p5/q2	-0.009541238	-1E-08	-0.001669161	-1E-08
o p5/q3	0	-0.003516174	-5.48736E-05	0
t p5/q4	-0.007654955	-0.00000001	-9.99977E-09	0
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR				
aa	-0.007429514	-0.00283662	-0.004073444	-0.003086735
bb	-0.005207095	-0.001441627	-0.00025498	-1E-08
cc	-0.00000001	-0.001148902	-0.000972825	-0.002318695
dd	-1.08527E-17	-1E-08	-1.00001E-08	-0.00080549
ee	-0.00000001	-0.000646332	-0.004073489	-0.001234532
ff	-0.005207095	-0.001441627	-0.00025498	-1E-08
gg	-0.011281187	-0.008824105	-0.006901477	-0.007394887
hh	-0.006285201	-0.008824105	-0.000359944	-0.00000001
ii	-0.007002408	-0.004725053	-1.24764E-07	-1E-08
jj	-0.009541238	-1E-08	-0.001669161	-1E-08
kk	-0.00000001	-0.001148902	-0.000972825	-0.002318695
ll	-0.006285201	-0.008824105	-0.000359944	-0.00000001
mm	-0.070802021	-0.058446066	-0.037088336	-0.048961881
nn	-1.16222E-17	-0.001703677	-0.020195074	-0.001532433
oo	-0.00000001	-0.003516174	-5.48736E-05	-0.00000001
pp	-1.18049E-17	-1E-08	-1.00001E-08	-0.00080549
qq	-0.007002408	-0.004725053	-0.00000001	-1E-08
rr	-0.00000001	-0.001703677	-0.020195074	-0.001532433
ss	-0.010577555	-0.013492175	-0.020195074	-0.029136599
tt	-0.007654955	-0.00000001	-9.99977E-09	-0.00000001
uu	-1E-08	-0.000646332	-0.004073489	-0.001234532
vv	-0.009541238	-1E-08	-0.001669161	-1E-08
ww	-0.00000001	-0.003516174	-5.48736E-05	-1.37274E-16
xx	-0.007654955	-1E-08	-9.99987E-09	-0.00000001
yy	-0.147855748	-0.183070835	-0.034476107	-0.139281056
KNOWN PRICE BEFORE TAXES				
P1	12,012	13,163	13,163	12,771
P2	17,698	17,899	17,899	17,905
P3	19,303	22,295	22,295	24,901
P4	14,635	16,790	16,790	17,985
P5	27,971	31,129	31,129	25,238

QUARTER	15	16	16	17
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM				
Asub1	287,444	227,465	227,465	230,312
Csub1	64,568	64,198	64,198	67,774
Fsub1	162,328	127,456	127,456	161,025
Gsub1	184,974	160,602	160,602	180,436
Asub2	359,751	358,526	358,526	284,385
Csub2	206,715	239,858	239,858	251,870
Fsub2	338,773	366,082	366,082	331,907
Gsub2	505,608	450,583	450,583	471,662
Asub3	51,918	54,125	54,125	49,929
Csub3	65,613	81,836	81,836	80,651
Fsub3	82,234	87,167	87,167	72,630
Gsub3	91,917	96,263	96,263	87,929
asub4	109,354	95,065	95,065	89,762
Csub4	52,331	54,958	54,958	59,443
fsub4	194,841	170,914	170,914	180,626
gsub4	226,404	196,843	196,843	204,307
asub5	106,100	103,589	103,589	91,795
Csub5	15,334	15,900	15,900	14,634
fsub5	51,425	65,026	65,026	63,104
gsub5	90,594	102,991	102,991	76,200
TOTAL SALES IN EACH SEGMENT BEFORE TAXES				
tseg1	699,314	579,721	579,721	639,547
tseg2	1,410,847	1,415,049	1,415,049	1,339,824
tseg3	291,682	319,391	319,391	291,139
tseg4	582,930	517,780	517,780	534,138
tseg5	263,453	287,506	287,506	245,733
tsum	3,248,226	3,119,447	3,119,447	3,050,381
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j				
Elasiticity11	(2.31)	(8.00)	(5.57)	(6.47)
Elasiticity21	1.57	1.78	0.28	0.00
Elasiticity31	0.00	0.27	0.25	0.60
Elasiticity41	0.00	0.00	0.00	0.25
Elasiticity51	0.00	0.07	1.56	0.11
Elasiticity12	0.53	0.54	0.08	0.00
Elasiticity22	(1.11)	(1.43)	(1.83)	(1.81)
Elasiticity32	0.00	0.00	0.00	0.00
Elasiticity42	0.61	0.47	0.00	0.00
Elasiticity52	0.11	0.00	0.15	0.00
Elasiticity13	0.00	0.29	0.27	0.67
Elasiticity23	0.48	0.96	0.08	0.00
Elasiticity33	(0.93)	(1.19)	(1.88)	(1.75)
Elasiticity43	0.00	0.11	1.42	0.07
Elasiticity53	0.00	0.03	0.00	0.00
Elasiticity14	0.00	0.00	0.00	0.21
Elasiticity24	1.78	1.37	0.00	0.00
Elasiticity34	0.00	0.09	1.16	0.05
Elasiticity44	(2.37)	(2.40)	(1.61)	(1.16)
Elasiticity54	0.23	0.00	0.00	0.00
Elasiticity15	0.00	0.06	1.33	0.15
Elasiticity25	0.38	0.00	0.44	0.00
Elasiticity35	0.00	0.03	0.00	0.00
Elasiticity45	0.27	0.00	0.00	0.00
Elasiticity55	(0.72)	(0.59)	(3.14)	(0.74)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM				
MCasub1	8,000	11,790	11,588	11,771
MCcsub1	10,455	12,481	12,646	12,319
MCfsub1	9,038	12,057	12,126	11,897

QUARTER	15	16	16	17
MCgsub1	8,000	11,790	11,790	11,771
MCasub2	10,033	13,398	15,079	15,798
MCcsub2	14,103	14,640	16,093	16,032
MCfsub2	10,656	12,804	15,079	15,442
MCgsub2	8,000	11,790	14,399	14,405
MCasub3	13,357	15,168	17,995	21,806
MCcsub3	13,357	15,168	17,995	20,722
MCfsub3	11,344	13,286	15,329	20,722
MCgsub3	9,605	11,790	14,399	19,901
MCasub4	10,139	13,684	14,512	15,116
MCcsub4	12,514	14,744	14,512	16,086
MCfsub4	9,803	12,562	12,323	12,494
MCgsub4	8,000	11,790	11,790	11,771
MCasub5	8,000	11,790	26,004	12,171
MCcsub5	23,320	27,865	29,891	23,116
MCfsub5	15,627	18,801	27,721	16,252
MCgsub5	8,000	11,790	26,129	14,405
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM				
e	-0.00000001	-0.000646332	-0.004073489	-0.001234532
j	-0.009541238	-1E-08	-0.001669161	-1E-08
o	0	-0.003516174	-5.48736E-05	0
t	-0.007654955	-0.00000001	-9.99977E-09	0
y	-0.147855748	-0.183070835	-0.034476107	-0.139281056
MARKUP FOR EACH FIRM BY SEGMENT				
XMCasub1	4,012	1,374	1,575	1,000
XMCcsub1	1,557	682	517	452
XMCfsub1	2,974	1,106	1,037	874
XMCgsub1	4,012	1,374	1,374	1,000
XMCasub2	7,666	4,501	2,821	2,108
XMCcsub2	3,595	3,259	1,806	1,874
XMCfsub2	7,042	5,095	2,821	2,463
XMCgsub2	9,698	6,109	3,500	3,500
XMCasub3	5,946	7,126	4,299	3,095
XMCcsub3	5,946	7,126	4,299	4,179
XMCfsub3	7,959	9,009	6,965	4,179
XMCgsub3	9,698	10,505	7,895	5,000
XMCasub4	4,496	3,105	2,277	2,869
XMCcsub4	2,121	2,046	2,277	1,899
XMCfsub4	4,832	4,227	4,467	5,490
XMCgsub4	6,635	5,000	5,000	6,214
XMCasub5	19,971	19,339	5,124	13,067
XMCcsub5	4,651	3,264	1,238	2,122
XMCfsub5	12,343	12,327	3,407	8,986
XMCgsub5	19,971	19,339	5,000	10,833
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT				
constant1	24,553	17,400	17,367	16,154
constant2	45,685	36,486	27,293	27,813
constant3	48,822	56,007	45,686	41,457
constant4	32,697	31,006	33,697	34,509
constant5	84,847	85,260	45,782	60,254
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES				
TSseg1	6,863,761,383	1,946,008,494	1,962,845,152	1,663,799,224
TSseg2	30,532,084,445	20,164,253,714	10,700,529,348	10,177,092,526
TSseg3	6,549,824,113	8,149,178,838	5,687,202,213	3,644,828,853
TSseg4	8,310,632,740	5,794,823,908	6,466,321,161	7,044,810,255
TSseg5	12,126,345,569	12,630,146,560	3,393,450,027	6,925,298,866
Tssum	64,382,648,251	48,684,411,513	28,210,347,900	29,455,829,724
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES				
CSseg1	4,385,391,109	1,228,196,862	1,218,613,974	1,081,728,568

QUARTER	15	16	16	17
CSseg2	19,742,182,802	13,150,873,370	6,646,375,086	6,637,395,406
CSseg3	4,305,099,812	5,383,779,651	3,735,496,198	2,410,071,426
CSseg4	5,264,446,293	3,680,460,045	4,377,031,424	4,413,122,048
CSseg5	7,492,152,448	7,781,595,580	2,106,420,014	4,302,232,714
Cssum	41,189,272,464	31,224,905,508	18,083,936,697	18,844,550,162
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES				
PSseg1	2,478,370,275	717,811,632	744,231,178	582,070,656
PSseg2	10,789,901,643	7,013,380,344	4,054,154,262	3,539,697,120
PSseg3	2,244,724,301	2,765,399,187	1,951,706,015	1,234,757,427
PSseg4	3,046,186,447	2,114,363,863	2,089,289,737	2,631,688,207
PSseg5	4,634,193,122	4,848,550,979	1,287,030,012	2,623,066,152
Pssum	23,193,375,787	17,459,506,005	10,126,411,203	10,611,279,562
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES				
CStravseg1	5,463,390,625	4,529,070,313	4,529,070,313	4,996,460,938
CStravseg2	11,022,242,188	11,055,070,313	11,055,070,313	10,467,375,000
CStravseg3	2,278,765,625	2,495,242,188	2,495,242,188	2,274,523,438
CStravseg4	4,554,140,625	4,045,156,250	4,045,156,250	4,172,953,125
CStravseg5	2,058,226,563	2,246,140,625	2,246,140,625	1,919,789,063
Cstravsum	25,376,765,625	24,370,679,688	24,370,679,688	23,831,101,563
FIRST ORDER CONDITIONS UNDER LSET				
foc1l	2.10971E-11	-1.31483E-08	-0.099554299	0.00054193
foc2l	3.31818E-09	3.85806E-05	-0.005106249	-1.80997E-09
foc3l	-1.38698E-11	3.67176E-05	-0.164047235	3.89564E-05
foc4l	2.4412E-09	-0.000106284	-0.000611587	-0.000474794
foc5l	1.96678E-11	-1.38582E-08	-0.101968201	0.000540167
foc6l	3.32943E-09	3.89955E-05	-0.003595325	-1.91236E-09
foc7l	-1.38698E-11	3.71109E-05	-0.168666888	4.11598E-05
foc8l	2.25077E-09	-0.000107422	-0.000612337	-0.000474082
foc9l	2.12201E-11	-1.46042E-08	-0.009670331	0.000543416
foc10l	3.28566E-09	3.97093E-05	-0.075385135	-1.83348E-09
foc11l	-1.56888E-11	3.77971E-05	0.038286054	3.71969E-05
foc12l	2.43995E-09	-0.000109396	8.77257027	-0.00047543
foc13l	2.11947E-11	-1.44435E-08	-0.103382162	0.000545895
foc14l	3.27555E-09	3.98063E-05	-0.000174963	-1.85622E-09
foc15l	-1.93268E-11	3.78936E-05	-0.176234377	3.41997E-05
foc16l	2.47712E-09	-0.000109664	-0.000610665	-0.000476467
foc17l	-4.23406E-08	1.48284E-08	0.147982307	-9.03345E-06
foc18l	-4.19216E-08	1.57252E-08	0.149453386	-9.31098E-06
foc19l	-4.21451E-08	1.80262E-08	0.12625368	-8.81816E-06
foc20l	-4.21605E-08	1.87538E-08	0.143804481	-8.44733E-06
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET				
p1a1l	12,620	13,688	13,753	13,401
p1c1l	12,620	13,688	13,753	13,401
p1f1l	12,620	13,688	13,753	13,401
p1g1l	12,620	13,688	13,753	13,401
p2a2l	18,559	18,650	18,507	18,774
p2c2l	18,559	18,650	18,507	18,774
p2f2l	18,559	18,650	18,507	18,774
p2g2l	18,559	18,650	18,507	18,774
p3a3l	20,285	23,230	23,332	25,924
p3c3l	20,285	23,230	23,332	25,924
p3f3l	20,285	23,230	23,332	25,924
p3g3l	20,285	23,230	23,332	25,924
p4a4l	15,619	17,703	18,419	18,997
p4c4l	15,619	17,703	18,419	18,997
p4f4l	15,619	17,703	18,419	18,997
p4g4l	15,619	17,703	18,419	18,997
p5a5l	27,102	41,141	33,039	33,720
p5c5l	27,102	41,141	33,039	33,720
p5f5l	27,102	41,141	33,039	33,720

QUARTER	15	16	16	17
p5g5l	27,102	41,141	33,039	33,720
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET				
lemp_a1	2.20	2.30	2.07	2.17
lemp_c1	2.20	2.30	2.07	2.17
lemp_f1	2.20	2.30	2.07	2.17
lemp_g1	2.20	2.30	2.07	2.17
lemp_a2	3.11	3.25	2.93	3.07
lemp_c2	3.11	3.25	2.93	3.07
lemp_f2	3.11	3.25	2.93	3.07
lemp_g2	3.11	3.25	2.93	3.07
lemp_a3	3.56	3.72	3.35	3.51
lemp_c3	3.56	3.72	3.35	3.51
lemp_f3	3.56	3.72	3.35	3.51
lemp_g3	3.56	3.72	3.35	3.51
lemp_a4	3.56	3.72	3.35	3.51
lemp_c4	3.56	3.72	3.35	3.51
lemp_f4	3.56	3.72	3.35	3.51
lemp_g4	3.56	3.72	3.35	3.51
lemp_a5	3.56	3.72	3.35	3.51
lemp_c5	3.56	3.72	3.35	3.51
lemp_f5	3.56	3.72	3.35	3.51
lemp_g5	3.56	3.72	3.35	3.51
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET				
Asub1nl	225,184	174,849	175,529	161,844
Csub1nl	1,571	-	3,215	-
Fsub1nl	100,819	70,212	73,056	91,745
Gsub1nl	123,744	108,594	110,957	109,877
Asub2nl	419,332	358,924	290,601	254,432
Csub2nl	266,947	240,770	169,480	222,767
Fsub2nl	397,509	370,617	301,931	302,493
Gsub2nl	564,068	456,495	389,504	442,699
Asub3nl	43,177	48,624	30,852	48,257
Csub3nl	56,704	76,362	59,074	79,002
Fsub3nl	73,553	81,261	63,947	70,865
Gsub3nl	83,332	90,093	71,573	86,039
asub4nl	58,001	78,389	128,556	83,199
Csub4nl	-	37,732	87,420	52,786
fsub4nl	143,726	153,336	204,633	173,932
gsub4nl	175,526	179,412	233,190	197,469
asub5nl	90,779	152,321	131,088	144,287
Csub5nl	-	64,598	44,531	67,135
fsub5nl	36,162	113,764	92,793	115,603
gsub5nl	75,354	151,758	130,257	128,702
TOTAL SALES IN EACH SEGMENT AFTER LSET				
tseg1nl	451,318	353,655	362,758	363,466
tseg2nl	1,647,856	1,426,806	1,151,516	1,222,391
tseg3nl	256,766	296,340	225,446	284,163
tseg4nl	377,253	448,869	653,798	507,386
tseg5nl	202,294	482,440	398,669	455,727
tsumnl	2,935,488	3,008,110	2,792,187	2,833,132
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1l	247,996	226,066	216,963	276,081
lostsales2l	(237,009)	(11,757)	263,533	117,433
lostsales3l	34,916	23,051	93,945	6,976
lostsales4l	205,677	68,911	(136,018)	26,752
lostsales5l	61,159	(194,934)	(111,163)	(209,994)
lostsuml	312,738	111,337	327,260	217,249
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET				
CSlsetseg1	2,692,925,896	656,452,893	655,609,119	500,151,795
CSlsetseg2	22,349,443,261	12,724,254,008	5,058,800,914	5,524,874,865

QUARTER	15	16	16	17
CSlsetseg3	3,663,626,353	4,856,654,150	2,519,831,818	2,207,016,209
CSlsetseg4	3,221,354,391	2,985,614,397	4,994,118,919	3,935,218,121
CSlsetseg5	5,840,727,556	10,642,361,349	2,540,029,561	6,046,138,643
Cslsetsum	37,768,077,456	31,865,336,797	15,768,390,332	18,213,399,633
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET				
PSlsetseg1	1,632,046,575	394,200,094	425,722,586	299,762,272
PSlsetseg2	12,083,250,647	6,674,927,576	2,718,496,745	2,971,604,748
PSlsetseg3	1,922,491,720	2,495,922,099	1,334,814,870	1,140,507,913
PSlsetseg4	2,024,990,215	1,745,181,166	2,778,517,525	2,399,117,145
PSlsetseg5	3,338,586,507	11,754,005,118	1,932,313,833	7,755,208,175
Pslsetsum	21,001,365,664	23,064,236,053	9,189,865,558	14,566,200,253
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSlsetseg1	4,324,972,471	1,050,652,987	1,081,331,705	799,914,067
TSlsetseg2	34,432,693,908	19,399,181,584	7,777,297,659	8,496,479,614
TSlsetseg3	5,586,118,073	7,352,576,249	3,854,646,688	3,347,524,122
TSlsetseg4	5,246,344,606	4,730,795,563	7,772,636,444	6,334,335,266
TSlsetseg5	9,179,314,063	22,396,366,467	4,472,343,394	13,801,346,818
Tslsetsum	58,769,443,121	54,929,572,850	24,958,255,890	32,779,599,886
dwllset	5,613,205,130	(6,245,161,337)	3,252,092,011	(3,323,770,162)
surpluslset	84,146,208,746	79,300,252,537	49,328,935,577	56,610,701,449
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM				
LSET	173.43	158.86	196.07	178.33
ABATEMENT CONSTANT FROM ABATEMENT EQUATION				
Abate1	840	840	840	840
Abate2	1680	1680	1680	1680
Abate3	2200	2200	2200	2200
Abate4	2200	2200	2200	2200
Abate5	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER				
max emis1	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES				
cur_emis1	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET				
taxrevlsetseg1	172,259,380	129,190,269	147,217,499	140,672,562
taxrevlsetseg2	889,477,370	737,106,443	660,888,293	669,069,024
taxrevlsetseg3	158,602,524	175,191,172	148,066,732	177,985,653
taxrevlsetseg4	233,026,579	265,363,745	429,396,485	317,801,431
taxrevlsetseg5	124,955,657	285,210,425	261,834,747	285,444,593
taxrevlsetsum	1,578,321,510	1,592,062,054	1,647,403,756	1,590,973,262
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET				
taxa1	381.68	365.30	405.83	387.03
taxc1	381.68	365.30	405.83	387.03
taxf1	381.68	365.30	405.83	387.03
taxg1	381.68	365.30	405.83	387.03
taxa2	539.78	516.61	573.93	547.34
taxc2	539.78	516.61	573.93	547.34

QUARTER	15	16	16	17
taxf2	539.78	516.61	573.93	547.34
taxg2	539.78	516.61	573.93	547.34
taxa3	617.69	591.18	656.77	626.35
taxc3	617.69	591.18	656.77	626.35
taxf3	617.69	591.18	656.77	626.35
taxg3	617.69	591.18	656.77	626.35
taxa4	617.69	591.18	656.77	626.35
taxc4	617.69	591.18	656.77	626.35
taxf4	617.69	591.18	656.77	626.35
taxg4	617.69	591.18	656.77	626.35
taxa5	617.69	591.18	656.77	626.35
taxc5	617.69	591.18	656.77	626.35
taxf5	617.69	591.18	656.77	626.35
taxg5	617.69	591.18	656.77	626.35
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET				
pollution reduction 1	1,006,685,940	(886,671,847)	681,034,563	(2,080,393,772)
pollution reduction 2	30,892,310,050	16,697,761,752	7,152,002,047	11,934,592,447
pollution reduction 3	5,134,474,076	5,771,790,953	3,562,601,739	6,610,170,082
pollution reduction 4	3,838,783,006	7,926,697,505	20,134,663,244	11,459,649,899
pollution reduction 5	(872,253,072)	10,490,421,637	8,469,842,367	12,075,981,345
Total reduction	40	40	40.00014396	40
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM				
PMET	0.00373	0.01396	0.00793	0.02181
FIRST ORDER CONDITIONS UNDER LSET				
foc1p	1.36906E-09	6.45608E-09	-0.086956008	0.000565675
foc2p	2.0682E-08	-3.15635E-06	0.09093407	-6.03353E-07
foc3p	-2.17597E-10	-3.04305E-06	-0.29570574	0.000148442
foc4p	6.70783E-08	8.71264E-06	8.53044E-05	-0.000572455
foc5p	1.36908E-09	5.43248E-09	-0.087501922	0.000564004
foc6p	1.78301E-08	-2.77589E-06	0.09552433	-6.0338E-07
foc7p	-2.19416E-10	-2.68245E-06	-0.300850104	0.000150482
foc8p	6.75024E-08	7.66453E-06	8.42628E-05	-0.000571678
foc9p	1.36918E-09	4.59837E-09	-0.090339422	0.000567162
foc10p	2.06463E-08	-2.02808E-06	0.094677192	-6.03598E-07
foc11p	-2.19416E-10	-1.96306E-06	-0.30519872	0.000146687
foc12p	6.70847E-08	5.59992E-06	8.42301E-05	-0.000573091
foc13p	1.36916E-09	4.2764E-09	-0.09078427	0.000569639
foc14p	2.06326E-08	-1.9295E-06	0.095866913	-6.03319E-07
foc15p	-2.19416E-10	-1.87088E-06	-0.307892062	0.000143689
foc16p	6.71183E-08	5.33145E-06	8.47264E-05	-0.000574128
foc17p	-3.07284E-07	-2.43745E-09	0.015312557	-6.26618E-06
foc18p	-2.99417E-07	-1.15421E-09	0.00098497	-6.8837E-06
foc19p	-3.0709E-07	7.76708E-10	0.013110182	-6.05118E-06
foc20p	-3.07109E-07	1.64073E-09	0.011134317	-5.67984E-06
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET				
p1a1	12,170.55	13,421.34	13,239.32	13,197.30
p1c1	12,170.55	13,421.34	13,239.32	13,197.30
p1f1	12,170.55	13,421.34	13,239.32	13,197.30
p1g1	12,170.55	13,421.34	13,239.32	13,197.30
p2a2	18,050.05	18,262.74	18,116.67	18,251.85
p2c2	18,050.05	18,262.74	18,116.67	18,251.85
p2f2	18,050.05	18,262.74	18,116.67	18,251.85
p2g2	18,050.05	18,262.74	18,116.67	18,251.85
p3a3	19,624.22	22,796.73	23,048.12	26,567.99
p3c3	19,624.22	22,796.73	23,048.12	26,567.99
p3f3	19,624.22	22,796.73	23,048.12	26,567.99
p3g3	19,624.22	22,796.73	23,048.12	26,567.99
p4a4	14,936.18	17,004.57	17,663.96	18,346.20
p4c4	14,936.18	17,004.57	17,663.96	18,346.20

QUARTER	15	16	16	17
p4f4	14,936.18	17,004.57	17,663.96	18,346.20
p4g4	14,936.18	17,004.57	17,663.96	18,346.20
p5a5	28,367.12	29,099.51	31,418.44	23,705.67
p5c5	28367.12103	29099.50638	31418.4442	23705.67444
p5f5	28367.12103	29099.50638	31418.4442	23705.67444
p5g5	28367.12103	29099.50638	31418.4442	23705.67444
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST				
dp/dgas1	23,100	23,929	7,702	26,119
dp/dgas2	55,776	22,826	58,163	9,484
dp/dgas3	36,241	23,786	93,731	156,874
dp/dgas4	31,676	5,533	14,063	7,129
dp/dgas5	4,919	160,742	22,743	122,051
sum of dpdgas	151,712	236,816	196,401	321,657
MILES TRAVELED IN EACH SEGMENT UNDER PMET				
VMT1	11,893	11,796	11,729	11,756
VMT2	11,902	11,705	11,861	11,427
VMT3	11,861	11,669	11,874	11,839
VMT4	11,852	11,313	11,675	11,244
VMT5	11,852	11,313	11,675	11,244
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT				
tpma1	0.01164	0.02214	0.02941	0.02649
tpmc1	0.01164	0.02214	0.02941	0.02649
tpmf1	0.01164	0.02214	0.02941	0.02649
tpmg1	0.01164	0.02214	0.02941	0.02649
tpma2	0.01060	0.03205	0.01514	0.06216
tpmc2	0.01060	0.03205	0.01514	0.06216
tpmf2	0.01060	0.03205	0.01514	0.06216
tpmg2	0.01060	0.03205	0.01514	0.06216
tpma3	0.01504	0.03593	0.01364	0.01749
tpmc3	0.01504	0.03593	0.01364	0.01749
tpmf3	0.01504	0.03593	0.01364	0.01749
tpmg3	0.01504	0.03593	0.01364	0.01749
tpma4	0.01609	0.07451	0.03522	0.08205
tpmc4	0.01609	0.07451	0.03522	0.08205
tpmf4	0.01609	0.07451	0.03522	0.08205
tpmg4	0.01609	0.07451	0.03522	0.08205
tpma5	0.01609	0.07451	0.03522	0.08205
tpmc5	0.01609	0.07451	0.03522	0.08205
tpmf5	0.01609	0.07451	0.03522	0.08205
tpmg5	0.01609	0.07451	0.03522	0.08205
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET				
cstravelpmetseg1	5,372,767,354	4,436,293,492	4,325,607,245	4,882,129,044
cstravelpmetseg2	10,845,367,178	10,544,716,405	10,855,091,901	9,583,984,122
cstravelpmetseg3	2,228,390,583	2,361,163,722	2,471,556,855	2,229,746,727
cstravelpmetseg4	4,455,382,764	3,613,581,151	3,735,765,197	3,683,487,960
cstravelpmetseg5	2,007,438,548	2,042,867,599	2,133,294,228	1,741,204,440
cstravelpmetsum	24,909,346,427	22,998,622,369	23,521,315,425	22,120,552,293
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET				
epm_a1	3.12	1.59	3.71	1.21
epm_c1	3.12	1.59	3.71	1.21
epm_f1	3.12	1.59	3.71	1.21
epm_g1	3.12	1.59	3.71	1.21
epm_a2	2.84	2.30	1.91	2.85
epm_c2	2.84	2.30	1.91	2.85
epm_f2	2.84	2.30	1.91	2.85

QUARTER	15	16	16	17
epm_g2	2.84	2.30	1.91	2.85
epm_a3	4.04	2.57	1.72	0.80
epm_c3	4.04	2.57	1.72	0.80
epm_f3	4.04	2.57	1.72	0.80
epm_g3	4.04	2.57	1.72	0.80
epm_a4	4.32	5.34	4.44	3.76
epm_c4	4.32	5.34	4.44	3.76
epm_f4	4.32	5.34	4.44	3.76
epm_g4	4.32	5.34	4.44	3.76
epm_a5	4.32	5.34	4.44	3.76
epm_c5	4.32	5.34	4.44	3.76
epm_f5	4.32	5.34	4.44	3.76
epm_g5	4.32	5.34	4.44	3.76
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET				
Asub1n	275,445	174,379	227,342	161,830
Csub1n	51,051	-	67,943	-
Fsub1n	151,079	69,742	125,036	91,731
Gsub1n	174,005	108,124	162,770	109,863
Asub2n	356,281	338,122	278,914	252,150
Csub2n	205,009	219,723	160,474	220,485
Fsub2n	334,457	349,815	290,260	300,211
Gsub2n	501,016	435,693	377,817	440,417
Asub3n	49,184	53,330	11,252	30,913
Csub3n	62,613	81,199	38,373	61,657
Fsub3n	79,560	85,967	43,828	53,522
Gsub3n	89,339	94,799	51,972	68,695
asub4n	92,430	90,386	150,020	84,681
Csub4n	34,131	49,798	110,271	54,267
fsub4n	178,155	165,333	227,052	175,414
gsub4n	209,956	191,409	254,655	198,951
asub5n	106,526	90,661	102,290	77,185
Csub5n	15,141	1,189	2,913	-
fsub5n	51,910	52,104	63,974	48,501
gsub5n	91,102	90,099	101,458	61,600
TOTAL SALES IN EACH SEGMENT AFTER PMET				
tseg1n	651,581	352,245	583,092	363,424
tseg2n	1,396,763	1,343,353	1,107,466	1,213,263
tseg3n	280,695	315,296	145,425	214,787
tseg4n	514,672	496,925	741,998	513,313
tseg5n	264,680	234,053	270,634	187,286
tsumn	3,108,391	2,741,872	2,848,614	2,492,072
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET				
CSPMETseg1	3,946,626,701	607,503,838	1,137,459,400	411,488,336
CSPMETseg2	18,886,697,887	11,748,899,724	4,593,763,760	5,442,669,816
CSPMETseg3	4,021,347,392	5,100,845,214	1,553,064,752	1,304,362,922
CSPMETseg4	4,439,252,630	3,376,405,539	5,764,306,022	3,998,216,334
CSPMETseg5	7,464,104,131	5,170,775,563	1,835,191,796	2,484,719,764
CsPMETsum	38,758,028,741	26,004,429,877	14,883,785,730	13,641,457,172
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET				
PSpmetseg1	2,260,130,640	369,513,395	658,751,373	255,425,245
PSpmetseg2	10,348,088,387	6,187,613,159	2,483,614,095	2,930,502,223
PSpmetseg3	2,101,494,650	2,617,845,404	852,566,452	689,181,247
PSpmetseg4	2,634,654,080	1,940,469,639	3,161,392,597	2,430,616,981
PSpmetseg5	4,627,961,080	3,570,497,536	1,197,415,635	1,715,179,324
Pspmetsum	21,972,328,838	14,685,939,133	8,353,740,152	8,020,905,019
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSPMETseg1	6,206,757,341	977,017,233	1,796,210,773	666,913,581
TSPMETseg2	29,234,786,274	17,936,512,882	7,077,377,855	8,373,172,039
TSPMETseg3	6,122,842,043	7,718,690,618	2,405,631,204	1,993,544,169
TSPMETseg4	7,073,906,710	5,316,875,178	8,925,698,619	6,428,833,315

QUARTER	15	16	16	17
TSPMETseg5	12,092,065,211	8,741,273,099	3,032,607,431	4,199,899,088
TSPMETsum	60,730,357,579	40,690,369,010	23,237,525,882	21,662,362,191
dwlpmet	3,670,437,647	8,063,234,354	4,954,688,712	7,944,828,173
pmetsurplus	86,088,976,229	64,991,856,847	47,626,338,876	45,342,103,114
pmetsurplus10	90,132,426,234	76,717,646,054	55,433,816,994	59,374,800,786
TAX REVENUE IN EACH SEGMENT UNDER PMET				
taxrevpmetseg1	90,216,310	91,981,396	201,138,994	113,157,130
taxrevpmetseg2	156,736,142	421,558,949	182,198,420	705,177,082
taxrevpmetseg3	50,082,373	132,202,528	23,560,585	44,473,950
taxrevpmetseg4	98,143,893	418,863,956	305,148,850	473,542,439
taxrevpmetseg5	54,093,505	238,258,639	155,450,720	222,838,030
taxrevpmetsum	449,272,223	1,302,865,468	867,497,569	1,559,188,630
pmetrev10	4,492,722,228	13,028,654,675	8,674,975,687	15,591,886,302
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1	47,733	227,476	(3,371)	276,123
lostsales2	14,084	71,696	307,583	126,561
lostsales3	10,987	4,095	173,966	76,352
lostsales4	68,258	20,855	(224,218)	20,825
lostsales5	(1,227)	53,453	16,872	58,447
lostsum	139,835	377,575	270,833	558,309
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET				
taxa1p	268.94	529.72	226.53	691.79
taxc1p	268.94	529.72	226.53	691.79
taxf1p	268.94	529.72	226.53	691.79
taxg1p	268.94	529.72	226.53	691.79
taxa2p	590.99	731.67	880.33	589.53
taxc2p	590.99	731.67	880.33	589.53
taxf2p	590.99	731.67	880.33	589.53
taxg2p	590.99	731.67	880.33	589.53
taxa3p	545.15	854.70	1,278.86	2,743.73
taxc3p	545.15	854.70	1,278.86	2,743.73
taxf3p	545.15	854.70	1,278.86	2,743.73
taxg3p	545.15	854.70	1,278.86	2,743.73
taxa4p	509.66	412.21	495.36	584.88
taxc4p	509.66	412.21	495.36	584.88
taxf4p	509.66	412.21	495.36	584.88
taxg4p	509.66	412.21	495.36	584.88
taxa5p	509.66	412.21	495.36	584.88
taxc5p	509.66	412.21	495.36	584.88
taxf5p	509.66	412.21	495.36	584.88
taxg5p	509.66	412.21	495.36	584.88
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET				
pollution reduction 1p	6,745,975,495.22	2,156,197,056.03	4,160,885,538.96	2,194,400,937.70
pollution reduction 2p	22,580,506,485.05	28,763,238,779.20	18,569,290,001.61	16,627,917,427.37
pollution reduction 3p	4,826,001,403.93	11,241,157,078.16	2,452,244,712.74	10,304,569,649.56
pollution reduction 4p	5,999,915,490.10	2,292,059,953.23	15,878,728,989.70	11,669,304,253.03
pollution reduction 5p	(152,398,873.08)	(4,452,652,866.61)	(1,061,190,048.11)	(796,192,195.88)
Total reductionp	40	40	39.99995919	40.00000007
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET				
Tsdiff	(1,943)	(14,308)	1,703	(11,269)

QUARTER	17	18	18	19	19
COEFFICIENTS OF DEMAND					
a P1/q1	-0.003272028	-0.014680852	-0.006277464	-0.004931897	-0.004849022
b p2/q1	-0.00090968	-0.002653866	-1E-08	-0.004898664	-0.004084117
c p3/q1	0	-1E-08	-1E-08	-1E-08	-1.00002E-08
d p4/q1	-1.12686E-17	-1E-08	-0.001912587	-1E-08	-0.001312207
f P1/q2	-0.00090968	-0.002653866	-1E-08	-0.004898664	-0.004084117
g p2/q2	-0.004418861	-0.010581097	-0.009576092	-0.006032728	-0.004084117
h p3/q2	5.43708E-17	-0.008978625	-0.006177445	-0.001057137	-0.001057137
i p4/q2	-0.004418861	-0.00697343	-1E-08	-6.13414E-05	-0.000817795
k P1/q3	2.11072E-17	-1E-08	-1E-08	-1E-08	-1E-08
l p2/q3	0	-0.008978625	-0.006177445	-0.001057137	-0.001057137
m p3/q3	-0.049492761	-0.040207535	-0.027470393	-0.04372691	-0.04372691
n p4/q3	-0.003352556	-1E-08	-1E-08	-1E-08	-1E-08
p P1/q4	1.27475E-17	-1E-08	-0.001912587	-1E-08	-0.001312207
q p2/q4	-0.004418861	-0.00697343	-1E-08	-6.13414E-05	-0.000817795
r p3/q4	-0.003352556	-1E-08	-1E-08	-1E-08	-1E-08
s p4/q4	-0.018866416	-0.012657649	-0.017597421	-0.020332781	-0.019674991
u P1/q5	-1E-08	-1E-08	-1E-08	-9.99999E-09	-0.001807602
v p2/q5	-0.004418861	-1E-08	-0.001403932	-0.004838398	-0.004084117
w p3/q5	8.73562E-17	-1E-08	-1E-08	-1E-08	-1E-08
x p4/q5	7.13143E-18	-0.004009876	-1E-08	-0.00707112	-0.000908021
y p5/q5	-0.114841866	-0.072720839	-0.041159036	-0.189621604	-0.193402165
e p5/q1	-0.00000001	-0.00000001	-1E-08	-0.00000001	-0.001807602
j p5/q2	-0.004418861	-0.00000001	-0.001403932	-0.004838398	-0.004084117
o p5/q3	0	-0.00000001	-1E-08	-1E-08	-9.99971E-09
t p5/q4	0	-0.004009876	-0.00000001	-0.00707112	-0.000908021
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.003272028	-0.014680852	-0.006277464	-0.004931897	-0.004849022
bb	-0.00090968	-0.002653866	-1E-08	-0.004898664	-0.004084117
cc	-0.00000001	-1E-08	-1E-08	-1E-08	-1.00002E-08
dd	-1.12686E-17	-1E-08	-0.001912587	-1E-08	-0.001312207
ee	-0.00000001	-0.00000001	-1E-08	-0.00000001	-0.001807602
ff	-0.00090968	-0.002653866	-1E-08	-0.004898664	-0.004084117
gg	-0.004418861	-0.010581097	-0.009576092	-0.006032728	-0.004084117
hh	-0.00000001	-0.008978625	-0.006177445	-0.001057137	-0.001057137
ii	-0.004418861	-0.00697343	-1E-08	-6.13414E-05	-0.000817795
jj	-0.004418861	-0.00000001	-0.001403932	-0.004838398	-0.004084117
kk	-0.00000001	-1E-08	-1E-08	-1E-08	-1E-08
ll	-0.00000001	-0.008978625	-0.006177445	-0.001057137	-0.001057137
mm	-0.049492761	-0.040207535	-0.027470393	-0.04372691	-0.04372691
nn	-0.003352556	-1E-08	-1E-08	-1E-08	-1E-08
oo	-0.00000001	-0.00000001	-1E-08	-1E-08	-9.99971E-09
pp	-0.00000001	-1E-08	-0.001912587	-1E-08	-0.001312207
qq	-0.004418861	-0.00697343	-1E-08	-6.13414E-05	-0.000817795
rr	-0.003352556	-1E-08	-1E-08	-1E-08	-1E-08
ss	-0.018866416	-0.012657649	-0.017597421	-0.020332781	-0.019674991
tt	-0.00000001	-0.004009876	-0.00000001	-0.00707112	-0.000908021
uu	-1E-08	-1E-08	-1E-08	-9.99999E-09	-0.001807602
vv	-0.004418861	-1E-08	-0.001403932	-0.004838398	-0.004084117
ww	-0.00000001	-1E-08	-1E-08	-1E-08	-1E-08
xx	-0.00000001	-0.004009876	-1E-08	-0.00707112	-0.000908021
yy	-0.114841866	-0.072720839	-0.041159036	-0.189621604	-0.193402165
KNOWN PRICE BEFORE TAXES					
P1	12,771	13,267	13,267	13,400	13,400
P2	17,905	18,399	18,399	17,717	17,717
P3	24,901	22,509	22,509	21,639	21,639
P4	17,985	16,280	16,280	14,945	14,945
P5	25,238	25,226	25,226	32,555	32,555

QUARTER	17	18	18	19	19
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	230,312	288,801	288,801	276,963	276,963
Csub1	67,774	79,786	79,786	76,333	76,333
Fsub1	161,025	169,883	169,883	172,467	172,467
Gsub1	180,436	239,908	239,908	197,066	197,066
Asub2	284,385	390,476	390,476	426,028	426,028
Csub2	251,870	331,142	331,142	237,056	237,056
Fsub2	331,907	430,382	430,382	379,204	379,204
Gsub2	471,662	661,678	661,678	507,298	507,298
Asub3	49,929	51,583	51,583	56,442	56,442
Csub3	80,651	110,826	110,826	108,844	108,844
Fsub3	72,630	88,916	88,916	87,086	87,086
Gsub3	87,929	111,686	111,686	102,505	102,505
asub4	89,762	96,893	96,893	125,033	125,033
Csub4	59,443	59,962	59,962	41,595	41,595
fsub4	180,626	238,232	238,232	223,688	223,688
gsub4	204,307	258,467	258,467	215,518	215,518
asub5	91,795	108,859	108,859	113,928	113,928
Csub5	14,634	19,514	19,514	18,032	18,032
fsub5	63,104	71,496	71,496	59,365	59,365
gsub5	76,200	100,291	100,291	81,191	81,191
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	639,547	778,378	778,378	722,829	722,829
tseg2	1,339,824	1,813,678	1,813,678	1,549,586	1,549,586
tseg3	291,139	363,011	363,011	354,877	354,877
tseg4	534,138	653,554	653,554	605,834	605,834
tseg5	245,733	300,160	300,160	272,516	272,516
tsum	3,050,381	3,908,781	3,908,781	3,505,642	3,505,642
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	(6.10)	(1.16)	(2.72)	(3.76)	(3.82)
Elasiticity21	1.76	0.40	0.00	4.04	5.05
Elasiticity31	0.00	0.00	0.00	0.00	0.00
Elasiticity41	0.00	0.00	0.36	0.00	0.28
Elasiticity51	0.00	0.00	0.00	0.00	0.09
Elasiticity12	0.60	0.12	0.00	1.42	1.78
Elasiticity22	(3.02)	(0.96)	(1.06)	(1.90)	(2.80)
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.71	0.47	0.00	0.00	0.10
Elasiticity52	0.16	0.00	0.05	0.09	0.11
Elasiticity13	0.00	0.00	0.00	0.00	0.00
Elasiticity23	0.00	1.07	1.19	0.20	0.30
Elasiticity33	(1.73)	(1.54)	(2.26)	(1.39)	(1.39)
Elasiticity43	0.22	0.00	0.00	0.00	0.00
Elasiticity53	0.00	0.00	0.00	0.00	0.00
Elasiticity14	0.00	0.00	0.35	0.00	0.30
Elasiticity24	1.78	1.47	0.00	0.01	0.30
Elasiticity34	0.17	0.00	0.00	0.00	0.00
Elasiticity44	(1.78)	(1.97)	(1.42)	(1.21)	(1.25)
Elasiticity54	0.00	0.17	0.00	0.10	0.01
Elasiticity15	0.00	0.00	0.00	0.00	0.09
Elasiticity25	0.63	0.00	0.22	0.27	0.34
Elasiticity35	0.00	0.00	0.00	0.00	0.00
Elasiticity45	0.00	0.24	0.00	0.10	0.01
Elasiticity55	(0.89)	(1.16)	(2.04)	(0.63)	(0.62)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					
MCasub1	11,771	8,000	11,280	9,945	9,945
MCcsub1	12,330	11,222	12,658	11,865	11,977
MCfsub1	11,957	9,639	11,755	10,694	10,616

QUARTER	17	18	18	19	19
MCgsub1	11,771	8,000	11,280	9,945	9,945
MCasub2	15,632	12,392	14,222	13,169	14,217
MCcsub2	16,392	13,297	14,544	15,698	16,204
MCfsub2	15,207	10,968	13,664	14,184	14,939
MCgsub2	14,405	8,000	11,280	13,169	14,217
MCasub3	22,150	16,950	18,704	18,733	18,733
MCcsub3	20,728	15,093	17,434	16,639	16,639
MCfsub3	20,728	15,093	17,434	17,447	17,447
MCgsub3	19,901	12,110	15,390	16,639	16,639
MCasub4	14,877	11,897	14,025	11,558	11,657
MCcsub4	15,491	13,144	15,083	13,952	13,811
MCfsub4	12,881	9,983	11,769	9,945	9,945
MCgsub4	11,771	8,000	11,280	9,945	9,945
MCasub5	13,441	16,945	20,226	8,000	8,160
MCcsub5	22,444	23,586	23,981	27,684	27,913
MCfsub5	16,526	19,105	21,718	17,872	19,000
MCgsub5	14,405	16,945	20,226	13,169	14,217
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.00000001	-0.00000001	-1E-08	-0.00000001	-0.001807602
j	-0.004418861	-0.00000001	-0.001403932	-0.004838398	-0.004084117
o	0	-0.00000001	-1E-08	-1E-08	-9.99971E-09
t	0	-0.004009876	-0.00000001	-0.00707112	-0.000908021
y	-0.11484186	-0.072720839	-0.041159036	-0.189621604	-0.193402165
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	1,000	5,267	1,987	3,456	3,456
XMCcsub1	441	2,045	610	1,535	1,423
XMCfsub1	814	3,629	1,513	2,707	2,784
XMCgsub1	1,000	5,267	1,987	3,456	3,456
XMCasub2	2,273	6,007	4,178	4,547	3,500
XMCcsub2	1,513	5,102	3,855	2,019	1,512
XMCfsub2	2,699	7,431	4,735	3,533	2,777
XMCgsub2	3,500	10,399	7,119	4,547	3,500
XMCasub3	2,751	5,559	3,805	2,906	2,906
XMCcsub3	4,173	7,416	5,075	5,000	5,000
XMCfsub3	4,173	7,416	5,075	4,192	4,192
XMCgsub3	5,000	10,399	7,119	5,000	5,000
XMCasub4	3,108	4,383	2,255	3,387	3,288
XMCcsub4	2,493	3,136	1,197	992	1,133
XMCfsub4	5,104	6,297	4,512	5,000	5,000
XMCgsub4	6,214	8,280	5,000	5,000	5,000
XMCasub5	11,797	8,280	5,000	24,555	24,395
XMCcsub5	2,794	1,639	1,245	4,871	4,642
XMCfsub5	8,712	6,120	3,508	14,683	13,555
XMCgsub5	10,833	8,280	5,000	19,386	18,338
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	16,082	29,508	19,404	24,556	24,522
constant2	27,854	47,472	38,431	32,337	28,981
constant3	41,101	53,389	43,685	38,795	38,795
constant4	34,959	38,404	29,270	29,285	29,328
constant5	59,379	49,674	40,126	96,011	93,446
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	1,630,552,250	9,885,232,979	3,744,431,648	6,253,985,930	6,246,324,206
TSseg2	10,238,751,901	40,479,132,799	27,821,576,696	17,389,719,910	13,405,945,351
TSseg3	3,574,844,316	8,534,412,344	5,848,612,611	4,629,918,288	4,629,918,288
TSseg4	7,151,924,325	11,482,656,915	6,902,111,375	7,004,668,110	7,011,072,275
TSseg5	6,693,796,769	5,870,634,359	3,557,106,770	13,977,344,222	13,453,336,457
Tssum	29,289,869,560	76,252,069,397	47,873,839,099	49,255,636,460	44,746,596,576
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	1,058,909,792	6,320,632,996	2,388,158,534	4,031,879,516	4,019,394,498

QUARTER	17	18	18	19	19
CSseg2	6,664,568,809	26,364,774,551	18,165,659,186	11,327,461,809	8,727,576,024
CSseg3	2,358,225,950	5,604,913,235	3,843,554,787	3,044,102,091	3,044,102,091
CSseg4	4,533,182,538	7,229,493,028	4,244,704,114	4,343,935,071	4,356,848,502
CSseg5	4,194,777,641	3,669,243,963	2,236,281,153	8,646,438,037	8,296,827,902
Cssum	18,809,664,729	49,189,057,773	30,878,357,774	31,393,816,525	28,444,749,019
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	571,642,458	3,564,599,983	1,356,273,114	2,222,106,414	2,226,929,708
PSseg2	3,574,183,092	14,114,358,248	9,655,917,510	6,062,258,101	4,678,369,327
PSseg3	1,216,618,366	2,929,499,110	2,005,057,824	1,585,816,197	1,585,816,197
PSseg4	2,618,741,787	4,253,163,888	2,657,407,261	2,660,733,039	2,654,223,772
PSseg5	2,499,019,128	2,201,390,396	1,320,825,617	5,330,906,185	5,156,508,554
Pssum	10,480,204,830	27,063,011,624	16,995,481,326	17,861,819,935	16,301,847,557
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	4,996,460,938	6,081,078,125	6,081,078,125	5,647,101,563	5,647,101,563
CStravseg2	10,467,375,000	14,169,359,375	14,169,359,375	12,106,140,625	12,106,140,625
CStravseg3	2,274,523,438	2,836,023,438	2,836,023,438	2,772,476,563	2,772,476,563
CStravseg4	4,172,953,125	5,105,890,625	5,105,890,625	4,733,078,125	4,733,078,125
CStravseg5	1,919,789,063	2,345,000,000	2,345,000,000	2,129,031,250	2,129,031,250
Cstravsum	23,831,101,563	30,537,351,563	30,537,351,563	27,387,828,125	27,387,828,125
FIRST ORDER CONDITIONS UNDER LSET					
foc1l	-2.72113E-07	1.76795E-05	-2.53728E-07	1.36283E-07	0.003864483
foc2l	-3.85078E-07	-1.20545E-05	6.58028E-07	0.000402013	5.91815E-05
foc3l	-4.41114E-07	4.19856E-05	-4.84718E-07	5.17064E-07	6.79486E-05
foc4l	-4.41993E-07	-3.7182E-06	3.92447E-07	0.000102845	8.67948E-05
foc5l	-2.72235E-07	1.75002E-05	-2.53544E-07	5.44265E-08	-3.188598329
foc6l	-3.86952E-07	-1.19502E-05	6.61353E-07	0.000393086	5.98883E-05
foc7l	-4.40754E-07	4.1554E-05	-4.82218E-07	3.19985E-07	6.7301E-05
foc8l	-4.38542E-07	-3.63191E-06	3.92896E-07	0.00010678	9.49554E-05
foc9l	-2.72353E-07	1.75455E-05	-2.54471E-07	8.55326E-08	1.193372195
foc10l	-3.8562E-07	-1.19721E-05	6.62029E-07	0.00039552	6.11065E-05
foc11l	-4.41074E-07	4.16646E-05	-4.84579E-07	3.73561E-07	6.78654E-05
foc12l	-4.40219E-07	-3.66594E-06	3.93612E-07	0.000105775	0.000153763
foc13l	-2.72643E-07	1.73899E-05	-2.53583E-07	8.13883E-08	0.003752579
foc14l	-3.8649E-07	-1.18711E-05	6.6275E-07	0.000395572	5.81535E-05
foc15l	-4.40681E-07	4.12935E-05	-4.83014E-07	3.81141E-07	6.76799E-05
foc16l	-4.38326E-07	-3.6194E-06	3.92788E-07	0.000105804	8.64014E-05
foc17l	-4.49734E-07	-2.7394E-09	2.4214E-07	-0.000160977	-0.025878909
foc18l	-4.45909E-07	-2.74213E-09	2.91545E-07	-0.000175389	-0.033484559
foc19l	-4.23964E-07	-2.74122E-09	2.6203E-07	-0.000171348	-0.088641427
foc20l	-4.26705E-07	-2.7394E-09	2.76884E-07	-0.000171053	-0.025606352
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	13,439	13,776	13,827	13,888	13,950
p1c1l	13,439	13,776	13,827	13,888	13,950
p1f1l	13,439	13,776	13,827	13,888	13,950
p1g1l	13,439	13,776	13,827	13,888	13,950
p2a2l	18,827	19,137	19,208	18,401	18,489
p2c2l	18,827	19,137	19,208	18,401	18,489
p2f2l	18,827	19,137	19,208	18,401	18,489
p2g2l	18,827	19,137	19,208	18,401	18,489
p3a3l	25,985	23,340	23,422	22,440	22,540
p3c3l	25,985	23,340	23,422	22,440	22,540
p3f3l	25,985	23,340	23,422	22,440	22,540
p3g3l	25,985	23,340	23,422	22,440	22,540
p4a4l	19,059	17,099	17,178	15,726	15,827
p4c4l	19,059	17,099	17,178	15,726	15,827
p4f4l	19,059	17,099	17,178	15,726	15,827
p4g4l	19,059	17,099	17,178	15,726	15,827
p5a5l	24,938	31,203	25,771	41,295	32,651
p5c5l	24,938	31,203	25,771	41,295	32,651
p5f5l	24,938	31,203	25,771	41,295	32,651

QUARTER	17	18	18	19	19
p5g5l	24,938	31,203	25,771	41,295	32,651
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET					
lemp_a1	2.05	2.67	2.44	2.76	2.44
lemp_c1	2.05	2.67	2.44	2.76	2.44
lemp_f1	2.05	2.67	2.44	2.76	2.44
lemp_g1	2.05	2.67	2.44	2.76	2.44
lemp_a2	2.89	3.78	3.45	3.90	3.46
lemp_c2	2.89	3.78	3.45	3.90	3.46
lemp_f2	2.89	3.78	3.45	3.90	3.46
lemp_g2	2.89	3.78	3.45	3.90	3.46
lemp_a3	3.31	4.33	3.94	4.46	3.96
lemp_c3	3.31	4.33	3.94	4.46	3.96
lemp_f3	3.31	4.33	3.94	4.46	3.96
lemp_g3	3.31	4.33	3.94	4.46	3.96
lemp_a4	3.31	4.33	3.94	4.46	3.96
lemp_c4	3.31	4.33	3.94	4.46	3.96
lemp_f4	3.31	4.33	3.94	4.46	3.96
lemp_g4	3.31	4.33	3.94	4.46	3.96
lemp_a5	3.31	4.33	3.94	4.46	3.96
lemp_c5	3.31	4.33	3.94	4.46	3.96
lemp_f5	3.31	4.33	3.94	4.46	3.96
lemp_g5	3.31	4.33	3.94	4.46	3.96
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET					
Asub1nl	186,234	273,453	269,491	500,763	353,588
Csub1nl	23,761	64,467	61,524	286,683	138,950
Fsub1nl	115,540	154,683	150,936	386,285	233,747
Gsub1nl	133,079	224,824	220,336	410,943	259,926
Asub2nl	261,375	427,121	374,794	176,487	307,145
Csub2nl	230,963	369,120	315,818	-	134,444
Fsub2nl	310,848	466,733	414,435	138,837	277,249
Gsub2nl	452,564	696,127	644,618	266,916	403,743
Asub3nl	45,079	38,262	46,858	57,944	54,210
Csub3nl	75,898	97,411	106,344	110,099	106,274
Fsub3nl	67,693	75,613	84,167	88,260	84,339
Gsub3nl	82,853	98,574	106,802	103,646	99,763
asub4nl	82,006	38,322	86,467	99,540	113,951
Csub4nl	51,061	-	48,947	15,775	30,386
fsub4nl	172,183	179,609	227,590	198,057	212,750
gsub4nl	195,131	200,843	247,800	190,079	204,737
asub5nl	78,482	179,965	94,842	162,171	110,555
Csub5nl	1,257	90,758	5,618	65,990	14,469
fsub5nl	49,717	142,472	57,233	107,396	55,795
gsub5nl	62,727	171,003	85,639	129,225	77,649
TOTAL SALES IN EACH SEGMENT AFTER LSET					
tseg1nl	458,614	717,428	702,287	1,584,674	986,211
tseg2nl	1,255,749	1,959,101	1,749,665	582,241	1,122,581
tseg3nl	271,523	309,861	344,171	359,949	344,586
tseg4nl	500,380	418,774	610,803	503,451	561,824
tseg5nl	192,183	584,198	243,332	464,782	258,469
tsumnl	2,678,449	3,989,363	3,650,259	3,495,097	3,273,671
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1l	180,933	60,950	76,091	(861,845)	(263,382)
lostsales2l	84,075	(145,423)	64,013	967,345	427,005
lostsales3l	19,616	53,150	18,840	(5,072)	10,291
lostsales4l	33,758	234,780	42,751	102,383	44,010
lostsales5l	53,550	(284,038)	56,828	(192,266)	14,047
lostsuml	371,932	(80,582)	258,522	10,545	231,971
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET					
CSlsetseg1	606,044,751	5,643,163,549	1,958,265,120	8,452,382,445	5,212,792,371
CSlsetseg2	5,667,521,215	27,756,377,583	16,816,628,360	4,056,904,531	5,889,005,635

QUARTER	17	18	18	19	19
CSlsetseg3	2,052,160,335	4,655,484,450	3,486,968,120	2,943,479,906	2,800,519,118
CSlsetseg4	3,977,930,870	4,460,976,884	3,692,847,014	3,413,100,921	3,792,523,503
CSlsetseg5	3,309,466,199	5,395,456,857	1,746,517,535	12,715,492,879	7,856,713,207
Cslsetsum	15,613,123,369	47,911,459,323	27,701,226,149	31,581,360,681	25,551,553,834
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET					
PSlsetseg1	353,691,463	3,232,186,482	1,147,891,722	4,443,846,610	2,833,222,340
PSlsetseg2	3,065,581,939	14,860,826,418	9,044,159,550	2,403,363,182	3,237,557,113
PSlsetseg3	1,070,878,960	2,463,524,842	1,835,667,424	1,540,233,843	1,468,594,350
PSlsetseg4	2,345,976,389	2,879,178,968	2,386,244,938	2,190,212,697	2,367,258,990
PSlsetseg5	1,728,938,656	6,824,841,594	971,407,950	11,989,376,369	4,681,761,236
Pslsetsum	8,565,067,407	30,260,558,304	15,385,371,584	22,567,032,701	14,588,394,030
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSlsetseg1	959,736,214	8,875,350,031	3,106,156,842	12,896,229,054	8,046,014,710
TSlsetseg2	8,733,103,155	42,617,204,001	25,860,787,910	6,460,267,713	9,126,562,748
TSlsetseg3	3,123,039,295	7,119,009,292	5,322,635,544	4,483,713,748	4,269,113,469
TSlsetseg4	6,323,907,260	7,340,155,852	6,079,091,952	5,603,313,618	6,159,782,493
TSlsetseg5	5,038,404,854	12,220,298,451	2,717,925,485	24,704,869,248	12,538,474,443
Tslsetsum	24,178,190,777	78,172,017,627	43,086,597,732	54,148,393,382	40,139,947,863
dwllset	5,111,678,783	(1,919,948,231)	4,787,241,367	(4,892,756,922)	4,606,648,712
surpluslset	48,009,292,339	108,709,369,190	73,623,949,295	81,536,221,507	67,527,775,988
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM					
LSET	200.79	117.46	141.47	110.60	140.58
ABATEMENT CONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES					
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET					
taxrevlsetseg1	188,345,489	225,351,125	242,096,567	483,007,386	338,903,275
taxrevlsetseg2	729,332,442	870,268,843	852,989,573	250,975,686	545,555,165
taxrevlsetseg3	180,461,725	157,514,574	192,008,286	177,552,376	191,635,052
taxrevlsetseg4	332,566,859	212,879,187	340,758,678	248,337,770	312,448,344
taxrevlsetseg5	127,730,561	296,970,545	135,751,625	229,263,585	143,742,720
taxrevlsetsum	1,558,437,077	1,762,984,274	1,763,604,729	1,389,136,803	1,532,284,556
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET					
taxa1	410.68	314.11	344.73	304.80	343.64
taxc1	410.68	314.11	344.73	304.80	343.64
taxf1	410.68	314.11	344.73	304.80	343.64
taxg1	410.68	314.11	344.73	304.80	343.64
taxa2	580.79	444.22	487.52	431.05	485.98
taxc2	580.79	444.22	487.52	431.05	485.98

QUARTER	17	18	18	19	19
taxf2	580.79	444.22	487.52	431.05	485.98
taxg2	580.79	444.22	487.52	431.05	485.98
taxa3	664.63	508.34	557.89	493.27	556.13
taxc3	664.63	508.34	557.89	493.27	556.13
taxf3	664.63	508.34	557.89	493.27	556.13
taxg3	664.63	508.34	557.89	493.27	556.13
taxa4	664.63	508.34	557.89	493.27	556.13
taxc4	664.63	508.34	557.89	493.27	556.13
taxf4	664.63	508.34	557.89	493.27	556.13
taxg4	664.63	508.34	557.89	493.27	556.13
taxa5	664.63	508.34	557.89	493.27	556.13
taxc5	664.63	508.34	557.89	493.27	556.13
taxf5	664.63	508.34	557.89	493.27	556.13
taxg5	664.63	508.34	557.89	493.27	556.13
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	4,692,803,534	10,721,982,394	11,846,764,131	61,589,946,329	31,206,558,607
pollution reduction 2	16,372,012,509	15,587,413,387	13,295,188,617	(36,192,968,987)	(6,899,276,508)
pollution reduction 3	6,664,432,842	3,082,960,950	5,976,447,688	4,613,790,858	6,137,918,024
pollution reduction 4	12,339,074,845	255,818,723	10,382,880,947	3,825,737,850	9,353,941,891
pollution reduction 5	(68,323,586)	10,351,824,549	(1,501,281,669)	6,163,493,987	200,847,458
Total reduction	40.00000014	40	39.99999971	40.00000004	39.99998947
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM					
PMET	0.00627	0.00576	0.00324	0.00703	0.00388
FIRST ORDER CONDITIONS UNDER LSET					
foc1p	-0.001310309	7.23054E-05	0.000213785	-6.91759E-07	0.004420664
foc2p	-0.003640856	-4.46473E-05	0.001002549	-0.000135118	0.005302451
foc3p	-0.003024645	0.000172787	0.015665728	-2.31873E-06	6.02205E-05
foc4p	-0.008130917	-2.77627E-05	0.000387217	1.87726E-05	0.000402179
foc5p	-0.00131032	7.19752E-05	0.00021361	-7.27953E-07	0.004272766
foc6p	-0.003640858	-4.44464E-05	0.001002526	-0.000141091	0.005302584
foc7p	-0.003024661	0.000171996	0.015665365	-2.53884E-06	6.06186E-05
foc8p	-0.008130921	-2.76284E-05	0.000387234	2.26094E-05	0.000401681
foc9p	-0.001310317	7.21713E-05	0.000213786	-7.36812E-07	0.00430844
foc10p	-0.003640862	-4.45648E-05	0.001002603	-0.000141676	0.00530231
foc11p	-0.003024674	0.000172466	0.015666125	-2.48408E-06	6.05753E-05
foc12p	-0.008130908	-2.77105E-05	0.000387247	2.16934E-05	0.000401934
foc13p	-0.001310318	7.20157E-05	0.000213775	-7.40423E-07	0.004307307
foc14p	-0.003640849	-4.44639E-05	0.001002495	-0.000141603	0.005302751
foc15p	-0.003024647	0.000172095	0.015665694	-2.48307E-06	6.05144E-05
foc16p	-0.008130915	-2.7664E-05	0.000387223	2.17176E-05	0.00040187
foc17p	-0.003622907	9.75132E-07	0.000237669	-0.000286039	-0.018453801
foc18p	-0.001377882	1.0068E-06	0.000538726	-0.000294702	-0.015636753
foc19p	-0.003622905	9.75144E-07	0.000237681	-0.000296437	-0.018178861
foc20p	-0.003622915	9.75137E-07	-0.486180335	-0.000296135	-0.018176931
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET					
p1a1	12,949.54	13,520.36	13,460.11	13,660.78	13,543.80
p1c1	12,949.54	13,520.36	13,460.11	13,660.78	13,543.80
p1f1	12,949.54	13,520.36	13,460.11	13,660.78	13,543.80
p1g1	12,949.54	13,520.36	13,460.11	13,660.78	13,543.80
p2a2	18,363.05	18,760.76	18,722.00	17,958.24	18,062.17
p2c2	18,363.05	18,760.76	18,722.00	17,958.24	18,062.17
p2f2	18,363.05	18,760.76	18,722.00	17,958.24	18,062.17
p2g2	18,363.05	18,760.76	18,722.00	17,958.24	18,062.17
p3a3	25,308.11	23,439.52	22,867.06	22,498.84	22,206.40
p3c3	25,308.11	23,439.52	22,867.06	22,498.84	22,206.40
p3f3	25,308.11	23,439.52	22,867.06	22,498.84	22,206.40
p3g3	25,308.11	23,439.52	22,867.06	22,498.84	22,206.40
p4a4	18,336.42	16,483.62	16,608.22	15,345.00	15,307.97
p4c4	18,336.42	16,483.62	16,608.22	15,345.00	15,307.97

QUARTER	17	18	18	19	19
p4f4	18,336.42	16,483.62	16,608.22	15,345.00	15,307.97
p4g4	18,336.42	16,483.62	16,608.22	15,345.00	15,307.97
p5a5	25,697.40	24,380.18	25,649.28	32,430.67	32,788.41
p5c5	25697.40388	24380.17892	25649.27771	32430.66566	32788.41422
p5f5	25697.40388	24380.17892	25649.27771	32430.66566	32788.41422
p5g5	25697.40388	24380.17892	25649.27771	32430.66566	32788.41422
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST					
dp/dgas1	14,767	34,908	34,908	31,801	17,433
dp/dgas2	57,007	32,194	44,093	14,310	52,364
dp/dgas3	30,044	182,469	44,516	129,268	100,595
dp/dgas4	23,385	8,586	40,629	29,918	44,800
dp/dgas5	7,707	153,642	10,072	133,499	89,289
sum of dpdgas	132,910	411,800	174,218	338,796	304,481
MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,826	11,891	11,919	11,874	11,874
VMT2	11,875	11,840	11,898	11,735	11,897
VMT3	11,803	11,923	11,883	11,899	11,915
VMT4	11,776	11,646	11,878	11,790	11,873
VMT5	11,776	11,646	11,878	11,790	11,873
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT					
tpma1	0.01888	0.01178	0.00883	0.01363	0.01367
tpmc1	0.01888	0.01178	0.00883	0.01363	0.01367
tpmf1	0.01888	0.01178	0.00883	0.01363	0.01367
tpmg1	0.01888	0.01178	0.00883	0.01363	0.01367
tpma2	0.01359	0.01734	0.01111	0.02873	0.01115
tpmc2	0.01359	0.01734	0.01111	0.02873	0.01115
tpmf2	0.01359	0.01734	0.01111	0.02873	0.01115
tpmg2	0.01359	0.01734	0.01111	0.02873	0.01115
tpma3	0.02143	0.00834	0.01265	0.01094	0.00921
tpmc3	0.02143	0.00834	0.01265	0.01094	0.00921
tpmf3	0.02143	0.00834	0.01265	0.01094	0.00921
tpmg3	0.02143	0.00834	0.01265	0.01094	0.00921
tpma4	0.02429	0.03843	0.01324	0.02273	0.01380
tpmc4	0.02429	0.03843	0.01324	0.02273	0.01380
tpmf4	0.02429	0.03843	0.01324	0.02273	0.01380
tpmg4	0.02429	0.03843	0.01324	0.02273	0.01380
tpma5	0.02429	0.03843	0.01324	0.02273	0.01380
tpmc5	0.02429	0.03843	0.01324	0.02273	0.01380
tpmf5	0.02429	0.03843	0.01324	0.02273	0.01380
tpmg5	0.02429	0.03843	0.01324	0.02273	0.01380
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET					
cstravelpmetseg1	4,865,389,483	5,977,268,136	6,005,993,704	5,577,832,514	5,405,314,312
cstravelpmetseg2	10,298,359,257	13,799,839,752	13,938,248,014	11,524,241,345	12,029,968,019
cstravelpmetseg3	2,206,129,633	2,805,321,414	2,783,811,936	2,733,389,839	2,734,556,302
cstravelpmetseg4	4,011,462,882	4,811,555,466	5,009,213,498	4,582,089,577	4,643,193,971
cstravelpmetseg5	1,847,152,643	2,240,085,575	2,299,305,635	2,060,093,535	2,083,111,454
cstravelpmetsum	23,228,493,898	29,634,070,344	30,036,572,787	26,477,646,811	26,896,144,060
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET					
epm_a1	3.01	2.04	2.73	1.94	3.53
epm_c1	3.01	2.04	2.73	1.94	3.53
epm_f1	3.01	2.04	2.73	1.94	3.53
epm_g1	3.01	2.04	2.73	1.94	3.53
epm_a2	2.17	3.01	3.43	4.09	2.88
epm_c2	2.17	3.01	3.43	4.09	2.88
epm_f2	2.17	3.01	3.43	4.09	2.88

QUARTER	17	18	18	19	19
epm_g2	2.17	3.01	3.43	4.09	2.88
epm_a3	3.42	1.45	3.91	1.56	2.37
epm_c3	3.42	1.45	3.91	1.56	2.37
epm_f3	3.42	1.45	3.91	1.56	2.37
epm_g3	3.42	1.45	3.91	1.56	2.37
epm_a4	3.87	6.67	4.09	3.23	3.56
epm_c4	3.87	6.67	4.09	3.23	3.56
epm_f4	3.87	6.67	4.09	3.23	3.56
epm_g4	3.87	6.67	4.09	3.23	3.56
epm_a5	3.87	6.67	4.09	3.23	3.56
epm_c5	3.87	6.67	4.09	3.23	3.56
epm_f5	3.87	6.67	4.09	3.23	3.56
epm_g5	3.87	6.67	4.09	3.23	3.56
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET					
Asub1n	217,419	278,492	271,762	209,375	478,052
Csub1n	54,195	69,811	63,795	2,057	259,441
Fsub1n	146,725	159,722	153,208	94,897	359,912
Gsub1n	164,264	229,863	222,607	119,555	384,391
Asub2n	207,163	384,626	372,834	459,360	168,856
Csub2n	179,451	324,938	313,656	276,065	-
Fsub2n	256,636	424,238	412,476	421,709	137,236
Gsub2n	398,352	653,631	642,656	549,789	265,454
Asub3n	44,239	37,676	47,223	42,685	54,167
Csub3n	75,101	97,202	106,755	95,004	106,137
Fsub3n	66,853	75,027	84,533	73,001	84,337
Gsub3n	82,012	97,988	107,168	88,387	99,719
asub4n	96,903	95,093	86,674	113,396	109,903
Csub4n	65,317	58,729	49,155	29,090	26,437
fsub4n	187,079	236,381	227,797	211,913	208,659
gsub4n	210,027	257,614	248,007	203,935	200,689
asub5n	93,808	92,455	105,984	109,302	115,595
Csub5n	14,676	-	17,938	14,735	19,641
fsub5n	65,042	54,963	68,374	54,528	60,855
gsub5n	78,053	83,493	96,792	76,357	82,689
TOTAL SALES IN EACH SEGMENT AFTER PMET					
tseg1n	582,603	737,888	711,373	425,883	1,481,796
tseg2n	1,041,602	1,787,433	1,741,623	1,706,922	571,546
tseg3n	268,205	307,894	345,679	299,077	344,359
tseg4n	559,327	647,817	611,633	558,336	545,689
tseg5n	251,579	230,911	289,088	254,923	278,780
tsumn	2,703,315	3,711,943	3,699,396	3,245,140	3,222,170
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET					
CSPMETseg1	831,324,281	5,746,837,218	2,004,449,025	2,227,806,748	7,956,876,809
CSPMETseg2	4,539,277,141	25,160,999,624	16,736,324,870	11,920,704,728	2,953,451,767
CSPMETseg3	2,031,563,845	4,376,453,733	3,500,818,332	2,225,451,367	2,696,678,370
CSPMETseg4	4,489,812,126	6,993,281,412	3,707,645,590	3,701,715,593	3,656,496,202
CSPMETseg5	4,213,241,481	2,238,656,989	2,073,298,176	7,717,228,824	8,283,249,290
CsPMETsum	16,105,218,873	44,516,228,975	28,022,535,993	27,792,907,261	25,546,752,438
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET					
PSpmetseg1	466,610,462	3,283,411,447	1,170,983,828	1,323,086,016	4,211,159,047
PSpmetseg2	2,498,800,477	13,566,734,349	9,004,230,815	6,346,446,954	1,764,822,834
PSpmetseg3	1,060,586,348	2,323,903,555	1,842,590,001	1,181,338,982	1,416,603,082
PSpmetseg4	2,603,024,391	4,140,654,248	2,393,644,464	2,335,926,328	2,298,941,011
PSpmetseg5	2,532,505,697	1,521,846,022	1,242,979,166	4,831,472,692	5,145,056,135
Pspmetsum	9,161,527,376	24,836,549,622	15,654,428,273	16,018,270,973	14,836,582,110
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSPMETseg1	1,297,934,743	9,030,248,665	3,175,432,853	3,550,892,764	12,168,035,856
TSPMETseg2	7,038,077,618	38,727,733,973	25,740,555,685	18,267,151,682	4,718,274,602
TSPMETseg3	3,092,150,193	6,700,357,289	5,343,408,333	3,406,790,350	4,113,281,451
TSPMETseg4	7,092,836,517	11,133,935,660	6,101,290,053	6,037,641,921	5,955,437,213

QUARTER	17	18	18	19	19
TSPMETseg5	6,745,747,177	3,760,503,011	3,316,277,342	12,548,701,517	13,428,305,425
TSPMETsum	25,266,746,249	69,352,778,597	43,676,964,266	43,811,178,234	40,383,334,548
dwlpmet	4,033,473,624	6,934,423,694	4,227,207,597	5,541,935,624	4,330,181,920
pmetsurplus	49,087,497,498	99,854,997,265	74,183,983,065	71,101,528,961	67,804,242,780
pmetsurplus10	54,417,813,658	107,668,332,189	78,417,997,170	78,415,864,207	72,527,120,334
TAX REVENUE IN EACH SEGMENT UNDER PMET					
taxrevpmetseg1	130,114,007	103,338,388	74,829,091	68,904,719	240,511,400
taxrevpmetseg2	147,910,849	314,652,903	197,107,295	483,040,063	110,273,135
taxrevpmetseg3	67,826,399	30,603,426	51,956,679	38,921,876	37,785,687
taxrevpmetseg4	159,969,991	289,926,613	96,183,120	149,658,833	89,405,318
taxrevpmetseg5	86,436,105	129,626,996	50,369,827	72,178,425	46,788,632
taxrevpmetsum	592,257,351	868,148,325	470,446,012	812,703,916	524,764,173
pmetrev10	5,922,573,511	8,681,483,248	4,704,460,117	8,127,039,163	5,247,641,727
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1	56,944	40,490	67,005	296,946	(758,967)
lostsales2	298,222	26,245	72,055	(157,336)	978,040
lostsales3	22,934	55,117	17,332	55,800	10,518
lostsales4	(25,189)	5,737	41,921	47,498	60,145
lostsales5	(5,846)	69,249	11,072	17,593	(6,264)
lostsum	347,066	196,838	209,385	260,502	283,472
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET					
taxa1p	278.88	411.12	308.09	433.30	238.30
taxc1p	278.88	411.12	308.09	433.30	238.30
taxf1p	278.88	411.12	308.09	433.30	238.30
taxg1p	278.88	411.12	308.09	433.30	238.30
taxa2p	774.90	558.34	489.68	411.05	584.07
taxc2p	774.90	558.34	489.68	411.05	584.07
taxf2p	774.90	558.34	489.68	411.05	584.07
taxg2p	774.90	558.34	489.68	411.05	584.07
taxa3p	643.75	1,521.13	563.04	1,413.79	926.39
taxc3p	643.75	1,521.13	563.04	1,413.79	926.39
taxf3p	643.75	1,521.13	563.04	1,413.79	926.39
taxg3p	643.75	1,521.13	563.04	1,413.79	926.39
taxa4p	567.94	329.97	537.90	680.15	618.22
taxc4p	567.94	329.97	537.90	680.15	618.22
taxf4p	567.94	329.97	537.90	680.15	618.22
taxg4p	567.94	329.97	537.90	680.15	618.22
taxa5p	567.94	329.97	537.90	680.15	618.22
taxc5p	567.94	329.97	537.90	680.15	618.22
taxf5p	567.94	329.97	537.90	680.15	618.22
taxg5p	567.94	329.97	537.90	680.15	618.22
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET					
pollution reduction 1p	6,355,635,063.57	17,657,819,283.65	10,082,888,276.10	(98,321,795.78)	42,715,217,729.76
pollution reduction 2p	13,871,331,058.96	25,368,558,621.78	13,833,218,519.25	10,390,214,513.91	(29,483,129,353.44)
pollution reduction 3p	6,333,075,869.90	13,688,724,286.24	6,347,925,621.81	12,862,034,559.56	12,731,237,234.18
pollution reduction 4p	12,005,591,084.01	(7,681,634,730.85)	9,647,951,493.58	14,416,748,763.04	11,516,400,622.06
pollution reduction 5p	1,434,923,739.88	(9,033,467,453.71)	87,402,563.96	2,429,323,994.45	2,520,004,506.75
Total reductionp	40.00055682	40.00000001	39.99938647	40.00000004	39.99973074
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET					
Tsdiff	(1,078)	(8,854)	(560)	(10,435)	(276)

QUARTER	20	20	21	21
COEFFICIENTS OF DEMAND				
a P1/q1	-0.010656112	-0.004004769	-0.002914855	-0.002923558
b p2/q1	-1E-08	-0.000413468	-1E-08	-0.000733466
c p3/q1	-1E-08	-1E-08	-1E-08	-1E-08
d p4/q1	-0.001542357	-1E-08	-0.000990466	-1E-08
f P1/q2	-1E-08	-0.000413468	-1E-08	-0.000733466
g p2/q2	-0.006325199	-0.005552995	-0.010881204	-0.009867995
h p3/q2	-1E-08	-1E-08	-1E-08	-0.000994902
i p4/q2	-1E-08	-8.26383E-05	-1E-08	-0.000231409
k P1/q3	-1E-08	-1E-08	-1E-08	-1E-08
l p2/q3	-1E-08	-1E-08	-1E-08	-0.000994902
m p3/q3	-0.034537785	-0.036105288	-0.076802892	-0.075500834
n p4/q3	-0.002775945	-0.004146384	-0.001698776	-1E-08
p P1/q4	-0.001542357	-1E-08	-0.000990466	-1E-08
q p2/q4	-1E-08	-8.26383E-05	-1E-08	-0.000231409
r p3/q4	-0.002775945	-0.004146384	-0.001698776	-1E-08
s p4/q4	-0.032394111	-0.022700509	-0.017084653	-0.019411869
u P1/q5	-0.010656112	-1E-08	-0.001905017	-1E-08
v p2/q5	-0.002510317	-0.005552995	-0.000795921	-0.003728503
w p3/q5	-0.005136015	-1E-08	-1E-08	-1E-08
x p4/q5	-0.003337426	-0.002078298	-0.004161661	-1E-08
y p5/q5	-0.125263704	-0.140149023	-0.065257637	-0.062276777
e p5/q1	-0.010656112	-0.00000001	-0.001905017	-1E-08
j p5/q2	-0.002510317	-0.005552995	-0.000795921	-0.003728503
o p5/q3	-0.005136015	-0.00000001	-1E-08	-1E-08
t p5/q4	-0.003337426	-0.002078298	-0.004161661	-0.00000001
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR				
aa	-0.010656112	-0.004004769	-0.002914855	-0.002923558
bb	-1E-08	-0.000413468	-1E-08	-0.000733466
cc	-1E-08	-1E-08	-1E-08	-1E-08
dd	-0.001542357	-1E-08	-0.000990466	-1E-08
ee	-0.010656112	-0.00000001	-0.001905017	-1E-08
ff	-1E-08	-0.000413468	-1E-08	-0.000733466
gg	-0.006325199	-0.005552995	-0.010881204	-0.009867995
hh	-1E-08	-1E-08	-1E-08	-0.000994902
ii	-1E-08	-8.26383E-05	-1E-08	-0.000231409
jj	-0.002510317	-0.005552995	-0.000795921	-0.003728503
kk	-1E-08	-1E-08	-1E-08	-1E-08
ll	-1E-08	-1E-08	-1E-08	-0.000994902
mm	-0.034537785	-0.036105288	-0.076802892	-0.075500834
nn	-0.002775945	-0.004146384	-0.001698776	-1E-08
oo	-0.005136015	-0.00000001	-1E-08	-1E-08
pp	-0.001542357	-1E-08	-0.000990466	-1E-08
qq	-1E-08	-8.26383E-05	-1E-08	-0.000231409
rr	-0.002775945	-0.004146384	-0.001698776	-1E-08
ss	-0.032394111	-0.022700509	-0.017084653	-0.019411869
tt	-0.003337426	-0.002078298	-0.004161661	-0.00000001
uu	-0.010656112	-1E-08	-0.001905017	-1E-08
vv	-0.002510317	-0.005552995	-0.000795921	-0.003728503
ww	-0.005136015	-1E-08	-1E-08	-1E-08
xx	-0.003337426	-0.002078298	-0.004161661	-1E-08
yy	-0.125263704	-0.140149023	-0.065257637	-0.062276777
KNOWN PRICE BEFORE TAXES				
P1	13,709	13,709	14,208	14,208
P2	18,921	18,921	19,454	19,454
P3	22,002	22,002	21,780	21,780
P4	18,715	18,715	18,245	18,245
P5	32,168	32,168	20,887	20,887

QUARTER	20	20	21	21
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM				
Asub1	211,881	211,881	246,956	246,956
Csub1	72,957	72,957	87,889	87,889
Fsub1	147,965	147,965	147,206	147,206
Gsub1	199,104	199,104	205,024	205,024
Asub2	378,350	378,350	386,310	386,310
Csub2	229,607	229,607	274,744	274,744
Fsub2	358,708	358,708	401,648	401,648
Gsub2	510,710	510,710	568,131	568,131
Asub3	61,568	61,568	69,923	69,923
Csub3	109,880	109,880	109,733	109,733
Fsub3	88,205	88,205	82,874	82,874
Gsub3	110,920	110,920	105,965	105,965
asub4	93,279	93,279	96,467	96,467
Csub4	55,499	55,499	76,810	76,810
fsub4	241,272	241,272	221,504	221,504
gsub4	233,654	233,654	251,502	251,502
asub5	103,475	103,475	99,673	99,673
Csub5	22,417	22,417	16,039	16,039
fsub5	65,368	65,368	67,272	67,272
gsub5	96,188	96,188	88,876	88,876
TOTAL SALES IN EACH SEGMENT BEFORE TAXES				
tseg1	631,907	631,907	687,075	687,075
tseg2	1,477,375	1,477,375	1,630,833	1,630,833
tseg3	370,573	370,573	368,495	368,495
tseg4	623,704	623,704	646,283	646,283
tseg5	287,448	287,448	271,860	271,860
tsum	3,391,007	3,391,007	3,604,546	3,604,546
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j				
Elasiticity11	(2.04)	(5.42)	(7.09)	(7.07)
Elasiticity21	0.00	0.56	0.00	0.72
Elasiticity31	0.00	0.00	0.00	0.00
Elasiticity41	0.13	0.00	0.53	0.00
Elasiticity51	0.41	0.00	0.30	0.00
Elasiticity12	0.00	0.17	0.00	0.22
Elasiticity22	(2.02)	(2.31)	(1.10)	(1.21)
Elasiticity32	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.01	0.00	0.01
Elasiticity52	0.07	0.16	0.01	0.08
Elasiticity13	0.00	0.00	0.00	0.00
Elasiticity23	0.00	0.00	0.00	0.07
Elasiticity33	(1.72)	(1.64)	(0.77)	(0.78)
Elasiticity43	0.13	0.26	0.06	0.00
Elasiticity53	0.10	0.00	0.00	0.00
Elasiticity14	0.10	0.00	0.44	0.00
Elasiticity24	0.00	0.02	0.00	0.04
Elasiticity34	0.09	0.18	0.04	0.00
Elasiticity44	(0.93)	(1.32)	(1.65)	(1.45)
Elasiticity54	0.04	0.03	0.12	0.00
Elasiticity15	0.38	0.00	0.52	0.00
Elasiticity25	0.21	0.47	0.08	0.43
Elasiticity35	0.09	0.00	0.00	0.00
Elasiticity45	0.05	0.04	0.25	0.00
Elasiticity55	(0.89)	(0.80)	(1.18)	(1.23)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM				
MCasub1	10,209	12,709	13,208	13,208
MCcsub1	12,612	13,328	13,853	13,757
MCfsub1	11,067	12,972	13,444	13,496

QUARTER	20	20	21	21
MCgsub1	10,209	12,709	13,208	13,208
MCasub2	16,243	16,124	15,177	15,002
MCcsub2	17,403	17,477	16,454	16,493
MCfsub2	16,465	16,462	15,035	15,002
MCgsub2	15,421	15,421	13,208	13,208
MCasub3	19,056	19,363	16,233	16,104
MCcsub3	17,933	17,800	13,208	13,208
MCfsub3	17,933	17,800	15,039	15,124
MCgsub3	17,002	17,002	13,208	13,208
MCasub4	14,846	16,092	15,831	16,296
MCcsub4	16,427	16,937	16,609	16,707
MCfsub4	10,209	12,709	13,902	13,861
MCgsub4	10,209	12,709	13,208	13,245
MCasub5	15,421	15,421	13,208	13,245
MCcsub5	27,283	27,663	19,137	18,867
MCfsub5	20,283	20,552	14,982	15,207
MCgsub5	15,421	15,421	13,208	13,245
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM				
e	-0.010656112	-0.00000001	-0.001905017	-1E-08
j	-0.002510317	-0.005552995	-0.000795921	-0.003728503
o	-0.005136015	-0.00000001	-1E-08	-1E-08
t	-0.003337426	-0.002078298	-0.004161661	-0.00000001
y	-0.125263704	-0.140149023	-0.065257637	-0.062276777
MARKUP FOR EACH FIRM BY SEGMENT				
XMCasub1	3,500	1,000	1,000	1,000
XMCcsub1	1,097	381	356	451
XMCfsub1	2,642	737	764	713
XMCgsub1	3,500	1,000	1,000	1,000
XMCasub2	2,679	2,797	4,277	4,452
XMCcsub2	1,518	1,444	3,000	2,960
XMCfsub2	2,456	2,459	4,419	4,452
XMCgsub2	3,500	3,500	6,245	6,245
XMCasub3	2,946	2,639	5,547	5,676
XMCcsub3	4,070	4,203	8,572	8,572
XMCfsub3	4,070	4,203	6,741	6,657
XMCgsub3	5,000	5,000	8,572	8,572
XMCasub4	3,869	2,623	2,413	1,949
XMCcsub4	2,288	1,778	1,635	1,537
XMCfsub4	8,506	6,006	4,342	4,384
XMCgsub4	8,506	6,006	5,036	5,000
XMCasub5	16,747	16,747	7,678	7,642
XMCcsub5	4,884	4,505	1,749	2,020
XMCfsub5	11,884	11,615	5,905	5,680
XMCgsub5	16,747	16,747	7,678	7,642
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT				
constant1	24,468	16,850	17,369	17,413
constant2	28,987	29,034	37,416	37,584
constant3	38,009	37,968	51,180	51,224
constant4	41,882	35,129	31,724	31,168
constant5	82,602	81,953	43,924	43,898
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES				
TSseg1	5,308,618,030	1,540,329,688	1,681,572,254	1,697,514,977
TSseg2	11,466,216,105	11,529,323,891	22,445,954,184	22,652,630,514
TSseg3	4,507,890,547	4,507,805,551	8,212,226,344	8,222,522,242
TSseg4	11,752,316,735	8,314,675,856	6,942,549,273	6,710,622,421
TSseg5	11,478,592,210	11,359,306,942	5,004,519,838	4,983,340,966
Tssum	44,513,633,627	37,251,441,928	44,286,821,893	44,266,631,119
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES				
CSseg1	3,399,262,400	992,568,426	1,085,840,735	1,100,995,448

QUARTER	20	20	21	21
CSseg2	7,435,845,087	7,470,252,776	14,646,366,180	14,783,291,127
CSseg3	2,965,787,790	2,958,244,459	5,416,765,574	5,425,023,010
CSseg4	7,224,676,668	5,118,873,710	4,355,766,755	4,175,945,662
CSseg5	7,248,574,426	7,155,394,966	3,131,481,892	3,127,905,234
Cssum	28,274,146,370	23,695,334,338	28,636,221,136	28,613,160,480
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES				
PSseg1	1,909,355,630	547,761,262	595,731,520	596,519,529
PSseg2	4,030,371,018	4,059,071,115	7,799,588,004	7,869,339,387
PSseg3	1,542,102,757	1,549,561,092	2,795,460,770	2,797,499,232
PSseg4	4,527,640,067	3,195,802,145	2,586,782,518	2,534,676,759
PSseg5	4,230,017,783	4,203,911,976	1,873,037,946	1,855,435,732
Pssum	16,239,487,256	13,556,107,590	15,650,600,757	15,653,470,639
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES				
CStravseg1	4,936,773,438	4,936,773,438	5,367,773,438	5,367,773,438
CStravseg2	11,541,992,188	11,541,992,188	12,740,882,813	12,740,882,813
CStravseg3	2,895,101,563	2,895,101,563	2,878,867,188	2,878,867,188
CStravseg4	4,872,687,500	4,872,687,500	5,049,085,938	5,049,085,938
CStravseg5	2,245,687,500	2,245,687,500	2,123,906,250	2,123,906,250
Cstravsum	26,492,242,188	26,492,242,188	28,160,515,625	28,160,515,625
FIRST ORDER CONDITIONS UNDER LSET				
foc1l	4.21397E-05	1.40602E-10	-1.8961E-06	2.99406E-10
foc2l	2.0908E-05	4.37694E-11	2.38322E-05	-1.38641E-10
foc3l	-6.56584E-05	2.72559E-11	4.31064E-08	1.77988E-10
foc4l	-2.33486E-05	7.87281E-12	-9.54555E-05	6.65788E-12
foc5l	4.22072E-05	1.42328E-10	-1.8969E-06	2.97652E-10
foc6l	2.0908E-05	2.66596E-11	2.38391E-05	-1.35405E-10
foc7l	-6.56584E-05	3.26199E-11	4.30144E-08	1.81692E-10
foc8l	-2.33378E-05	1.53051E-11	-9.54647E-05	2.32337E-11
foc9l	4.21082E-05	1.37838E-10	-1.89626E-06	2.97065E-10
foc10l	2.0908E-05	5.11591E-13	2.38373E-05	-1.42933E-10
foc11l	-6.56583E-05	3.35867E-11	4.30961E-08	1.73829E-10
foc12l	-2.33516E-05	4.91696E-12	-9.54539E-05	1.12401E-11
foc13l	4.234E-05	1.41093E-10	-1.89669E-06	2.98019E-10
foc14l	2.0908E-05	2.17142E-11	2.38416E-05	-1.47736E-10
foc15l	-6.56583E-05	3.3204E-11	4.30866E-08	1.76601E-10
foc16l	-2.33197E-05	5.31486E-12	-9.54587E-05	5.76299E-12
foc17l	-0.00022028	-1.8008E-10	0.000193656	-1.05501E-10
foc18l	-0.000220214	-8.4583E-11	0.000193641	-1.06979E-10
foc19l	-0.000220312	8.73115E-11	0.00019362	-1.06866E-10
foc20l	-0.000220079	-3.45608E-11	0.000193605	-9.64064E-11
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET				
p1a1l	14,337	14,320	14,811	14,811
p1c1l	14,337	14,320	14,811	14,811
p1f1l	14,337	14,320	14,811	14,811
p1g1l	14,337	14,320	14,811	14,811
p2a2l	19,786	19,762	20,298	20,298
p2c2l	19,786	19,762	20,298	20,298
p2f2l	19,786	19,762	20,298	20,298
p2g2l	19,786	19,762	20,298	20,298
p3a3l	22,997	22,969	22,735	22,736
p3c3l	22,997	22,969	22,735	22,736
p3f3l	22,997	22,969	22,735	22,736
p3g3l	22,997	22,969	22,735	22,736
p4a4l	19,724	19,697	19,216	19,217
p4c4l	19,724	19,697	19,216	19,217
p4f4l	19,724	19,697	19,216	19,217
p4g4l	19,724	19,697	19,216	19,217
p5a5l	38,761	32,515	26,410	21,330
p5c5l	38,761	32,515	26,410	21,330
p5f5l	38,761	32,515	26,410	21,330

QUARTER	20	20	21	21
p5g5l	38,761	32,515	26,410	21,330
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET				
lemp_a1	2.15	2.22	2.26	2.26
lemp_c1	2.15	2.22	2.26	2.26
lemp_f1	2.15	2.22	2.26	2.26
lemp_g1	2.15	2.22	2.26	2.26
lemp_a2	3.05	3.13	3.20	3.20
lemp_c2	3.05	3.13	3.20	3.20
lemp_f2	3.05	3.13	3.20	3.20
lemp_g2	3.05	3.13	3.20	3.20
lemp_a3	3.49	3.59	3.66	3.66
lemp_c3	3.49	3.59	3.66	3.66
lemp_f3	3.49	3.59	3.66	3.66
lemp_g3	3.49	3.59	3.66	3.66
lemp_a4	3.49	3.59	3.66	3.66
lemp_c4	3.49	3.59	3.66	3.66
lemp_f4	3.49	3.59	3.66	3.66
lemp_g4	3.49	3.59	3.66	3.66
lemp_a5	3.49	3.59	3.66	3.66
lemp_c5	3.49	3.59	3.66	3.66
lemp_f5	3.49	3.59	3.66	3.66
lemp_g5	3.49	3.59	3.66	3.66
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET				
Asub1nl	149,109	176,963	159,711	200,406
Csub1nl	9,826	38,069	-	40,577
Fsub1nl	85,158	113,274	57,359	98,148
Gsub1nl	136,115	163,235	114,010	154,752
Asub2nl	325,217	349,334	361,695	373,246
Csub2nl	173,821	197,409	250,421	262,064
Fsub2nl	305,055	329,032	377,103	388,878
Gsub2nl	457,989	482,288	543,360	555,218
Asub3nl	48,006	56,187	67,454	66,995
Csub3nl	95,588	103,855	107,278	106,808
Fsub3nl	74,296	82,523	80,230	79,772
Gsub3nl	97,283	105,475	103,405	102,945
asub4nl	84,665	84,220	70,343	84,105
Csub4nl	46,742	46,255	50,458	64,224
fsub4nl	232,523	232,003	195,800	209,366
gsub4nl	224,967	224,446	225,571	239,113
asub5nl	152,826	98,120	170,332	88,178
Csub5nl	72,071	17,355	86,766	4,561
fsub5nl	114,838	60,120	137,954	55,732
gsub5nl	145,512	90,772	159,551	77,284
TOTAL SALES IN EACH SEGMENT AFTER LSET				
tseg1nl	380,209	491,541	331,079	493,884
tseg2nl	1,262,081	1,358,062	1,532,579	1,579,406
tseg3nl	315,174	348,039	358,367	356,520
tseg4nl	588,896	586,924	542,172	596,807
tseg5nl	485,248	266,367	554,603	225,755
tsumnl	3,031,608	3,050,934	3,318,800	3,252,372
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1l	251,698	140,366	355,996	193,191
lostsales2l	215,294	119,313	98,254	51,427
lostsales3l	55,399	22,534	10,128	11,975
lostsales4l	34,808	36,780	104,111	49,476
lostsales5l	(197,800)	21,081	(282,743)	46,105
lostsuml	359,399	340,073	285,746	352,174
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET				
CSlsetseg1	1,925,892,569	621,807,999	423,548,732	642,629,275
CSlsetseg2	5,806,239,592	6,296,104,497	13,117,143,336	13,650,179,187

QUARTER	20	20	21	21
CSlsetseg3	2,365,757,368	2,610,242,519	5,096,803,542	5,078,445,057
CSlsetseg4	6,524,261,367	4,528,826,364	3,390,634,534	3,566,114,987
CSlsetseg5	10,636,680,305	6,584,408,884	4,856,633,781	2,547,424,892
Cslsetsum	27,258,831,202	20,641,390,264	26,884,763,926	25,484,793,397
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET				
PSlsetseg1	1,176,255,175	365,941,970	271,104,289	374,088,202
PSlsetseg2	3,186,902,079	3,444,246,718	7,042,572,311	7,310,747,885
PSlsetseg3	1,234,666,652	1,368,040,526	2,632,498,914	2,621,233,179
PSlsetseg4	4,177,034,542	2,900,706,897	2,113,889,613	2,238,876,663
PSlsetseg5	9,300,030,853	3,705,308,831	5,896,346,666	1,418,890,604
Pslsetsum	19,074,889,301	11,784,244,942	17,956,411,793	13,963,836,533
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSlsetseg1	3,102,147,744	987,749,969	694,653,022	1,016,717,476
TSlsetseg2	8,993,141,672	9,740,351,215	20,159,715,647	20,960,927,072
TSlsetseg3	3,600,424,021	3,978,283,045	7,729,302,456	7,699,678,235
TSlsetseg4	10,701,295,909	7,429,533,261	5,504,524,147	5,804,991,650
TSlsetseg5	19,936,711,158	10,289,717,715	10,752,980,447	3,966,315,496
Tslsetsum	46,333,720,503	32,425,635,206	44,841,175,719	39,448,629,930
dwllset	(1,820,086,876)	4,825,806,722	(554,353,825)	4,818,001,189
surpluslset	72,825,962,691	58,917,877,393	73,001,691,344	67,609,145,555
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM				
LSET	181.07	171.15	164.07	164.24
ABATEMENT CONSTANT FROM ABATEMENT EQUATION				
Abate1	840	840	840	840
Abate2	1680	1680	1680	1680
Abate3	2200	2200	2200	2200
Abate4	2200	2200	2200	2200
Abate5	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER				
max emis1	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES				
cur_emis1	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET				
taxrevlsetseg1	148,280,693	186,375,490	122,907,999	183,443,737
taxrevlsetseg2	696,088,813	728,221,885	804,612,196	829,634,788
taxrevlsetseg3	198,922,550	213,564,547	215,301,909	214,305,906
taxrevlsetseg4	371,683,157	360,149,490	325,729,562	358,743,390
taxrevlsetseg5	306,265,113	163,448,463	333,198,485	135,702,236
taxrevlsetsum	1,721,240,326	1,651,759,876	1,801,750,151	1,721,830,057
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET				
taxa1	390.00	379.17	371.23	371.43
taxc1	390.00	379.17	371.23	371.43
taxf1	390.00	379.17	371.23	371.43
taxg1	390.00	379.17	371.23	371.43
taxa2	551.54	536.22	525.01	525.28
taxc2	551.54	536.22	525.01	525.28

QUARTER	20	20	21	21
taxf2	551.54	536.22	525.01	525.28
taxg2	551.54	536.22	525.01	525.28
taxa3	631.15	613.62	600.79	601.10
taxc3	631.15	613.62	600.79	601.10
taxf3	631.15	613.62	600.79	601.10
taxg3	631.15	613.62	600.79	601.10
taxa4	631.15	613.62	600.79	601.10
taxc4	631.15	613.62	600.79	601.10
taxf4	631.15	613.62	600.79	601.10
taxg4	631.15	613.62	600.79	601.10
taxa5	631.15	613.62	600.79	601.10
taxc5	631.15	613.62	600.79	601.10
taxf5	631.15	613.62	600.79	601.10
taxg5	631.15	613.62	600.79	601.10
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET				
pollution reduction 1	(631,705,128)	6,147,710,200	(6,400,733,716)	3,838,210,735
pollution reduction 2	8,951,452,807	12,663,274,297	14,500,691,721	16,949,015,394
pollution reduction 3	6,288,711,281	7,456,009,003	7,661,632,652	7,584,874,059
pollution reduction 4	13,399,259,674	12,602,899,840	9,460,344,732	11,990,582,289
pollution reduction 5	11,992,281,500	1,130,106,660	14,778,064,592	(362,682,477)
Total reduction	40.00000013	40	39.99999998	40
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM				
PMET	0.00675	0.00317	0.01079	0.00237
FIRST ORDER CONDITIONS UNDER LSET				
foc1p	1.4389E-05	0.000183703	-5.29345E-07	-2.07749E-07
foc2p	-1.24921E-08	9.11518E-05	8.51798E-07	-4.28828E-07
foc3p	2.57637E-08	9.1196E-05	-3.61284E-07	-1.03405E-07
foc4p	2.36736E-06	0.000236067	-2.26982E-07	1.01916E-07
foc5p	1.44569E-05	0.000183703	-5.16738E-07	-2.07737E-07
foc6p	-1.23287E-08	9.11521E-05	6.13988E-07	-4.2883E-07
foc7p	2.49173E-08	9.11958E-05	-3.61295E-07	9.99917E-07
foc8p	2.37594E-06	0.000236067	-1.38523E-07	1.01925E-07
foc9p	1.43575E-05	0.000183703	-5.29487E-07	-2.0775E-07
foc10p	-1.24864E-08	9.11524E-05	8.56463E-07	-4.28843E-07
foc11p	2.58628E-08	9.11959E-05	-3.61289E-07	1.95612E-07
foc12p	2.36441E-06	0.000236067	-2.24887E-07	1.01917E-07
foc13p	1.45893E-05	0.000183703	-5.29909E-07	-2.07742E-07
foc14p	-1.24973E-08	9.11521E-05	8.61341E-07	-4.28838E-07
foc15p	2.5834E-08	9.11964E-05	-3.61285E-07	8.70653E-07
foc16p	2.39633E-06	0.000236067	-2.29957E-07	1.01912E-07
foc17p	1.43135E-05	0.000112538	-7.20225E-06	-3.43407E-08
foc18p	1.43759E-05	4.00808E-05	-6.17256E-06	-3.00494E-07
foc19p	1.42816E-05	0.000112538	-7.23764E-06	-3.43471E-08
foc20p	1.4514E-05	0.000112539	-7.25349E-06	-3.4348E-08
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET				
p1a1	13,794.44	13,882.88	14,554.55	14,375.14
p1c1	13,794.44	13,882.88	14,554.55	14,375.14
p1f1	13,794.44	13,882.88	14,554.55	14,375.14
p1g1	13,794.44	13,882.88	14,554.55	14,375.14
p2a2	19,425.70	19,261.49	19,744.06	19,785.32
p2c2	19,425.70	19,261.49	19,744.06	19,785.32
p2f2	19,425.70	19,261.49	19,744.06	19,785.32
p2g2	19,425.70	19,261.49	19,744.06	19,785.32
p3a3	22,508.80	22,344.60	23,039.45	22,141.49
p3c3	22,508.80	22,344.60	23,039.45	22,141.49
p3f3	22,508.80	22,344.60	23,039.45	22,141.49
p3g3	22,508.80	22,344.60	23,039.45	22,141.49
p4a4	19,089.92	19,063.34	18,567.81	18,596.97
p4c4	19,089.92	19,063.34	18,567.81	18,596.97

QUARTER	20	20	21	21
p4f4	19,089.92	19,063.34	18,567.81	18,596.97
p4g4	19,089.92	19,063.34	18,567.81	18,596.97
p5a5	31,976.38	32,646.60	20,167.10	21,323.93
p5c5	31976.3824	32646.60441	20167.10238	21323.93359
p5f5	31976.3824	32646.60441	20167.10238	21323.93359
p5g5	31976.3824	32646.60441	20167.10238	21323.93359
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST				
dp/dgas1	3,253	29,835	34,976	34,976
dp/dgas2	66,693	66,693	12,545	74,707
dp/dgas3	50,979	50,979	187,396	71,956
dp/dgas4	26,344	48,228	11,433	62,170
dp/dgas5	163,164	9,482	124,310	10,459
sum of dpdgas	310,432	205,217	370,661	254,268
MILES TRAVELED IN EACH SEGMENT UNDER PMET				
VMT1	11,615	11,913	11,852	11,930
VMT2	11,880	11,918	11,650	11,933
VMT3	11,843	11,892	11,896	11,922
VMT4	11,781	11,889	11,580	11,916
VMT5	11,781	11,889	11,580	11,916
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT				
tpma1	0.04176	0.00945	0.01610	0.00755
tpmc1	0.04176	0.00945	0.01610	0.00755
tpmf1	0.04176	0.00945	0.01610	0.00755
tpmg1	0.04176	0.00945	0.01610	0.00755
tpma2	0.01304	0.00894	0.03802	0.00730
tpmc2	0.01304	0.00894	0.03802	0.00730
tpmf2	0.01304	0.00894	0.03802	0.00730
tpmg2	0.01304	0.00894	0.03802	0.00730
tpma3	0.01707	0.01170	0.01126	0.00852
tpmc3	0.01707	0.01170	0.01126	0.00852
tpmf3	0.01707	0.01170	0.01126	0.00852
tpmg3	0.01707	0.01170	0.01126	0.00852
tpma4	0.02375	0.01203	0.04557	0.00916
tpmc4	0.02375	0.01203	0.04557	0.00916
tpmf4	0.02375	0.01203	0.04557	0.00916
tpmg4	0.02375	0.01203	0.04557	0.00916
tpma5	0.02375	0.01203	0.04557	0.00916
tpmc5	0.02375	0.01203	0.04557	0.00916
tpmf5	0.02375	0.01203	0.04557	0.00916
tpmg5	0.02375	0.01203	0.04557	0.00916
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET				
cstravelpmetseg1	4,621,924,911	4,876,325,345	5,286,517,646	5,317,309,123
cstravelpmetseg2	11,344,311,583	11,401,557,990	12,037,214,426	12,604,932,680
cstravelpmetseg3	2,826,661,310	2,846,351,582	2,835,164,309	2,842,540,287
cstravelpmetseg4	4,703,872,805	4,788,326,144	4,709,142,516	4,983,377,587
cstravelpmetseg5	2,171,220,813	2,203,983,413	2,013,516,828	2,094,560,368
cstravelpmetsum	25,667,991,421	26,116,544,473	26,881,555,725	27,842,720,044
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET				
epm_a1	6.18	2.98	1.49	3.18
epm_c1	6.18	2.98	1.49	3.18
epm_f1	6.18	2.98	1.49	3.18
epm_g1	6.18	2.98	1.49	3.18
epm_a2	1.93	2.82	3.52	3.08
epm_c2	1.93	2.82	3.52	3.08
epm_f2	1.93	2.82	3.52	3.08

QUARTER	20	20	21	21
epm_g2	1.93	2.82	3.52	3.08
epm_a3	2.53	3.69	1.04	3.59
epm_c3	2.53	3.69	1.04	3.59
epm_f3	2.53	3.69	1.04	3.59
epm_g3	2.53	3.69	1.04	3.59
epm_a4	3.52	3.79	4.22	3.86
epm_c4	3.52	3.79	4.22	3.86
epm_f4	3.52	3.79	4.22	3.86
epm_g4	3.52	3.79	4.22	3.86
epm_a5	3.52	3.79	4.22	3.86
epm_c5	3.52	3.79	4.22	3.86
epm_f5	3.52	3.79	4.22	3.86
epm_g5	3.52	3.79	4.22	3.86
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET				
Asub1n	213,165	187,820	182,839	216,603
Csub1n	76,034	48,914	22,722	56,812
Fsub1n	149,214	124,132	80,486	114,345
Gsub1n	200,172	174,093	137,138	170,949
Asub2n	326,854	338,206	369,860	367,260
Csub2n	176,318	186,402	258,534	255,926
Fsub2n	306,693	317,904	385,267	382,892
Gsub2n	459,627	471,160	551,524	549,233
Asub3n	53,214	56,371	59,095	67,011
Csub3n	101,110	104,038	98,922	106,827
Fsub3n	79,504	82,708	71,871	79,789
Gsub3n	102,490	105,659	95,046	102,962
asub4n	86,887	84,267	93,006	84,824
Csub4n	49,058	46,313	72,974	64,944
fsub4n	234,745	232,050	218,462	210,085
gsub4n	227,189	224,494	248,233	239,832
asub5n	97,989	104,119	82,869	98,597
Csub5n	15,069	23,235	-	15,373
fsub5n	60,001	66,119	50,491	66,151
gsub5n	90,675	96,772	72,088	87,702
TOTAL SALES IN EACH SEGMENT AFTER PMET				
tseg1n	638,585	534,960	423,185	558,707
tseg2n	1,269,491	1,313,671	1,565,185	1,555,311
tseg3n	336,318	348,777	324,935	356,588
tseg4n	597,880	587,124	632,675	599,685
tseg5n	263,734	290,245	205,448	267,824
tsumn	3,106,008	3,074,776	3,151,427	3,338,116
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET				
CSPMETseg1	3,364,505,957	718,334,237	476,413,661	774,981,264
CSPMETseg2	5,517,115,360	6,027,289,511	13,456,397,559	13,416,520,702
CSPMETseg3	2,460,147,474	2,620,556,493	4,229,146,325	5,076,056,750
CSPMETseg4	6,626,469,023	4,546,081,965	3,996,983,911	3,598,388,094
CSPMETseg5	6,164,870,835	7,138,947,138	1,858,475,674	3,010,105,127
CsPMETsum	24,133,108,649	21,051,209,344	24,017,417,130	25,876,051,938
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET				
PSpmetseg1	1,892,145,019	414,210,123	297,709,095	440,251,250
PSpmetseg2	3,041,463,453	3,309,706,630	7,212,275,193	7,194,156,652
PSpmetseg3	1,281,876,888	1,373,197,309	2,198,674,244	2,620,041,432
PSpmetseg4	4,227,810,081	2,909,309,947	2,417,316,937	2,255,010,174
PSpmetseg5	3,730,743,027	4,207,531,195	1,233,038,449	1,795,024,022
Pspmetsum	14,174,038,468	12,213,955,204	13,359,013,918	14,304,483,530
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSPMETseg1	5,256,650,976	1,132,544,360	774,122,756	1,215,232,514
TSPMETseg2	8,558,578,813	9,336,996,142	20,668,672,752	20,610,677,354
TSPMETseg3	3,742,024,362	3,993,753,802	6,427,820,568	7,696,098,182
TSPMETseg4	10,854,279,103	7,455,391,912	6,414,300,848	5,853,398,268

QUARTER	20	20	21	21
TSPMETseg5	9,895,613,863	11,346,478,333	3,091,514,123	4,805,129,149
TSPMETsum	38,307,147,117	33,265,164,548	37,376,431,049	40,180,535,468
dwlpmet	6,221,330,884	3,999,132,769	6,995,466,342	4,099,022,914
pmetsurplus	64,784,544,930	59,744,551,347	65,451,871,176	68,328,123,830
pmetsurplus10	72,069,202,456	63,010,132,276	76,196,830,801	71,071,938,698
TAX REVENUE IN EACH SEGMENT UNDER PMET				
taxrevpmetseg1	309,717,850	60,227,926	80,750,298	50,317,606
taxrevpmetseg2	181,148,458	125,303,423	588,798,276	118,212,044
taxrevpmetseg3	67,988,671	48,529,960	43,513,148	36,207,698
taxrevpmetseg4	167,261,190	83,969,859	333,888,371	65,476,329
taxrevpmetseg5	83,290,222	44,811,158	146,934,309	34,654,642
taxrevpmetsum	809,406,392	362,842,325	1,193,884,403	304,868,319
pmetrev10	8,094,063,918	3,628,423,255	11,938,844,028	3,048,683,187
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1	(6,678)	96,947	263,890	128,368
lostsales2	207,884	163,704	65,648	75,522
lostsales3	34,255	21,796	43,560	11,907
lostsales4	25,824	36,580	13,608	46,598
lostsales5	23,714	(2,797)	66,412	4,036
lostsum	284,999	316,231	453,119	266,430
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET				
taxa1p	135.83	281.96	563.13	264.03
taxc1p	135.83	281.96	563.13	264.03
taxf1p	135.83	281.96	563.13	264.03
taxg1p	135.83	281.96	563.13	264.03
taxa2p	869.79	596.18	476.94	545.71
taxc2p	869.79	596.18	476.94	545.71
taxf2p	869.79	596.18	476.94	545.71
taxg2p	869.79	596.18	476.94	545.71
taxa3p	870.21	596.47	2,109.48	612.87
taxc3p	870.21	596.47	2,109.48	612.87
taxf3p	870.21	596.47	2,109.48	612.87
taxg3p	870.21	596.47	2,109.48	612.87
taxa4p	625.56	580.16	521.05	569.68
taxc4p	625.56	580.16	521.05	569.68
taxf4p	625.56	580.16	521.05	569.68
taxg4p	625.56	580.16	521.05	569.68
taxa5p	625.56	580.16	521.05	569.68
taxc5p	625.56	580.16	521.05	569.68
taxf5p	625.56	580.16	521.05	569.68
taxg5p	625.56	580.16	521.05	569.68
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET				
pollution reduction 1p	(13,420,703,702.11)	4,137,020,355.08	3,397,121,756.11	1,869,034,842.13
pollution reduction 2p	26,620,582,940.12	15,609,343,899.24	12,058,478,936.65	18,261,689,988.61
pollution reduction 3p	11,305,566,178.66	7,197,880,885.02	16,368,873,440.25	7,989,262,491.67
pollution reduction 4p	14,068,614,981.72	11,402,139,578.23	10,496,020,627.36	10,865,709,470.20
pollution reduction 5p	1,425,939,603.14	1,653,596,580.40	(2,320,494,723.43)	1,014,303,328.67
Total reductionp	40	39.9999813	40.00000004	40.00000012
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET				
Tsdiff	(8,041)	(827)	(7,550)	(719)

QUARTER	22	22	23	23
COEFFICIENTS OF DEMAND				
a P1/q1	-0.002053492	-0.003374889	-0.001465196	-0.003163817
b p2/q1	-0.000686543	-1E-08	-0.001465196	-0.001171495
c p3/q1	-1E-08	-1E-08	-4.35417E-09	-1E-08
d p4/q1	-1E-08	-0.000890117	-7.31429E-05	-1E-08
f P1/q2	-0.000686543	-1E-08	-0.001465196	-0.001171495
g p2/q2	-0.010781438	-0.007623535	-0.008300821	-0.008996747
h p3/q2	-1E-08	-1E-08	-0.001969218	-0.001969213
i p4/q2	-1E-08	-0.001548735	-0.006055343	-0.005802105
k P1/q3	-1E-08	-1E-08	-4.35417E-09	-1E-08
l p2/q3	-1E-08	-1E-08	-0.001969218	-0.001969213
m p3/q3	-0.079172092	-0.071715262	-0.053894824	-0.05389483
n p4/q3	-0.005828164	-1E-08	-0.002340941	-0.002340946
p P1/q4	-1E-08	-0.000890117	-7.31429E-05	-1E-08
q p2/q4	-1E-08	-0.001548735	-0.006055343	-0.005802105
r p3/q4	-0.005828164	-1E-08	-0.002340941	-0.002340946
s p4/q4	-0.015432091	-0.013021124	-0.006055343	-0.006710909
u P1/q5	-0.001174303	-1E-08	-0.001226873	-1.00003E-08
v p2/q5	-0.001984102	-0.007623535	-0.008300821	-0.005868738
w p3/q5	-1E-08	-0.01328455	-1E-08	-1E-08
x p4/q5	-0.009523373	-1E-08	-4.88379E-05	-1.0001E-08
y p5/q5	-0.14030534	-0.112172157	-0.093656512	-0.10800054
e p5/q1	-0.001174303	-0.00000001	-0.001226873	-1.00003E-08
j p5/q2	-0.001984102	-0.007623535	-0.008300821	-0.005868738
o p5/q3	-0.00000001	-0.01328455	-0.00000001	-9.99974E-09
t p5/q4	-0.009523373	-0.00000001	-4.88379E-05	-1.00007E-08
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR				
aa	-0.002053492	-0.003374889	-0.001465196	-0.003163817
bb	-0.000686543	-1E-08	-0.001465196	-0.001171495
cc	-1E-08	-1E-08	-4.35417E-09	-1E-08
dd	-1E-08	-0.000890117	-7.31429E-05	-1E-08
ee	-0.001174303	-0.00000001	-0.001226873	-1.00003E-08
ff	-0.000686543	-1E-08	-0.001465196	-0.001171495
gg	-0.010781438	-0.007623535	-0.008300821	-0.008996747
hh	-1E-08	-1E-08	-0.001969218	-0.001969213
ii	-1E-08	-0.001548735	-0.006055343	-0.005802105
jj	-0.001984102	-0.007623535	-0.008300821	-0.005868738
kk	-1E-08	-1E-08	-4.35417E-09	-1E-08
ll	-1E-08	-1E-08	-0.001969218	-0.001969213
mm	-0.079172092	-0.071715262	-0.053894824	-0.05389483
nn	-0.005828164	-1E-08	-0.002340941	-0.002340946
oo	-0.00000001	-0.01328455	-0.00000001	-9.99974E-09
pp	-1E-08	-0.000890117	-7.31429E-05	-1E-08
qq	-1E-08	-0.001548735	-0.006055343	-0.005802105
rr	-0.005828164	-1E-08	-0.002340941	-0.002340946
ss	-0.015432091	-0.013021124	-0.006055343	-0.006710909
tt	-0.009523373	-0.00000001	-4.88379E-05	-1.00007E-08
uu	-0.001174303	-1E-08	-0.001226873	-1.00003E-08
vv	-0.001984102	-0.007623535	-0.008300821	-0.005868738
ww	-1E-08	-0.01328455	-1E-08	-1E-08
xx	-0.009523373	-1E-08	-4.88379E-05	-1.0001E-08
yy	-0.14030534	-0.112172157	-0.093656512	-0.10800054
KNOWN PRICE BEFORE TAXES				
P1	13,796	13,796	13,519	13,519
P2	20,001	20,001	19,636	19,636
P3	22,470	22,470	22,022	22,022
P4	18,957	18,957	17,309	17,309
P5	31,800	31,800	27,224	27,224

QUARTER	22	22	23	23
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM				
Asub1	274,556	274,556	271,005	271,005
Csub1	95,720	95,720	70,794	70,794
Fsub1	154,806	154,806	145,143	145,143
Gsub1	222,444	222,444	183,024	183,024
Asub2	466,762	466,762	453,447	453,447
Csub2	305,865	305,865	221,174	221,174
Fsub2	482,367	482,367	428,571	428,571
Gsub2	640,646	640,646	544,633	544,633
Asub3	73,338	73,338	85,478	85,478
Csub3	115,807	115,807	95,302	95,302
Fsub3	90,042	90,042	81,709	81,709
Gsub3	100,864	100,864	106,577	106,577
asub4	109,988	109,988	128,757	128,757
Csub4	92,442	92,442	87,674	87,674
fsub4	252,288	252,288	238,199	238,199
gsub4	301,743	301,743	238,826	238,826
asub5	119,414	119,414	122,458	122,458
Csub5	20,903	20,903	24,872	24,872
fsub5	74,663	74,663	65,024	65,024
gsub5	104,480	104,480	108,874	108,874
TOTAL SALES IN EACH SEGMENT BEFORE TAXES				
tseg1	747,526	747,526	669,966	669,966
tseg2	1,895,640	1,895,640	1,647,825	1,647,825
tseg3	380,051	380,051	369,066	369,066
tseg4	756,461	756,461	693,456	693,456
tseg5	319,460	319,460	321,228	321,228
tsum	4,099,138	4,099,138	3,701,541	3,701,541
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j				
Elasiticity11	(8.99)	(5.47)	(13.77)	(6.38)
Elasiticity21	0.83	0.00	3.53	1.21
Elasiticity31	0.00	0.00	0.00	0.00
Elasiticity41	0.00	0.51	0.21	0.00
Elasiticity51	0.17	0.00	0.36	0.00
Elasiticity12	0.23	0.00	0.99	0.34
Elasiticity22	(0.98)	(1.38)	(1.44)	(1.32)
Elasiticity32	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.16	1.27	1.01
Elasiticity52	0.02	0.15	0.18	0.10
Elasiticity13	0.00	0.00	0.00	0.00
Elasiticity23	0.00	0.00	0.23	0.22
Elasiticity33	(0.75)	(0.82)	(1.11)	(1.11)
Elasiticity43	0.24	0.00	0.34	0.30
Elasiticity53	0.00	0.14	0.00	0.00
Elasiticity14	0.00	0.37	0.16	0.00
Elasiticity24	0.00	0.41	3.41	2.72
Elasiticity34	0.14	0.00	0.23	0.21
Elasiticity44	(1.62)	(1.92)	(4.12)	(3.72)
Elasiticity54	0.18	0.00	0.00	0.00
Elasiticity15	0.18	0.00	0.38	0.00
Elasiticity25	0.08	0.56	0.65	0.37
Elasiticity35	0.00	0.12	0.00	0.00
Elasiticity45	0.26	0.00	0.00	0.00
Elasiticity55	(0.71)	(0.89)	(0.90)	(0.78)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM				
MCasub1	12,796	12,796	12,309	12,142
MCcsub1	13,368	13,394	13,059	13,040
MCfsub1	13,072	13,062	12,587	12,563

QUARTER	22	22	23	23
MCgsub1	12,796	12,796	12,309	12,309
MCasub2	14,592	15,415	13,538	13,632
MCcsub2	16,622	17,395	16,779	16,729
MCfsub2	14,592	15,415	13,739	13,702
MCgsub2	12,796	13,922	12,309	12,309
MCasub3	16,109	15,716	16,262	16,262
MCcsub3	12,796	13,922	16,262	16,262
MCfsub3	13,919	15,071	16,262	16,262
MCgsub3	12,796	13,922	14,695	14,695
MCasub4	15,743	16,609	13,568	13,624
MCcsub4	16,680	17,220	15,219	15,224
MCfsub4	13,890	14,854	13,077	13,044
MCgsub4	12,796	13,922	12,309	12,309
MCasub5	12,796	13,922	11,688	11,374
MCcsub5	27,296	25,616	22,985	23,257
MCfsub5	17,828	18,600	17,420	17,721
MCgsub5	12,796	13,922	12,309	12,309
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM				
e	-0.001174303	-0.00000001	-0.001226873	-1.00003E-08
j	-0.001984102	-0.007623535	-0.008300821	-0.005868738
o	-0.00000001	-0.01328455	-0.00000001	-9.99974E-09
t	-0.009523373	-0.00000001	-4.88379E-05	-1.00007E-08
y	-0.14030534	-0.112172157	-0.093656512	-0.10800054
MARKUP FOR EACH FIRM BY SEGMENT				
XMCasub1	1,000	1,000	1,210	1,378
XMCcsub1	428	402	461	479
XMCfsub1	724	734	933	956
XMCgsub1	1,000	1,000	1,210	1,210
XMCasub2	5,410	4,587	6,098	6,004
XMCcsub2	3,380	2,606	2,857	2,907
XMCfsub2	5,410	4,587	5,897	5,934
XMCgsub2	7,205	6,079	7,327	7,327
XMCasub3	6,361	6,754	5,760	5,760
XMCcsub3	9,674	8,548	5,760	5,760
XMCfsub3	8,551	7,399	5,760	5,760
XMCgsub3	9,674	8,548	7,327	7,327
XMCasub4	3,214	2,348	3,742	3,686
XMCcsub4	2,277	1,737	2,091	2,086
XMCfsub4	5,067	4,103	4,232	4,266
XMCgsub4	6,160	5,034	5,000	5,000
XMCasub5	19,004	17,878	15,536	15,850
XMCcsub5	4,504	6,184	4,239	3,967
XMCfsub5	13,972	13,200	9,804	9,503
XMCgsub5	19,004	17,878	14,915	14,915
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT				
constant1	17,008	16,992	17,360	17,569
constant2	41,586	38,060	41,888	41,881
constant3	56,969	53,970	46,781	46,781
constant4	35,888	32,408	32,415	32,388
constant5	88,465	87,135	71,843	71,587
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES				
TSseg1	1,850,482,878	1,843,834,296	2,004,041,087	2,124,298,213
TSseg2	31,242,772,874	26,161,170,070	28,248,562,172	28,227,159,466
TSseg3	9,888,192,939	8,999,397,438	6,861,595,639	6,861,595,856
TSseg4	10,105,032,835	8,060,644,139	8,104,851,544	8,095,774,034
TSseg5	14,443,277,913	13,956,136,494	11,435,674,256	11,406,794,443
Tssum	67,529,759,439	59,021,182,438	56,654,724,699	56,715,622,011
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES				
CSseg1	1,200,388,593	1,194,614,413	1,286,618,177	1,356,708,741

QUARTER	22	22	23	23
CSseg2	20,458,491,313	17,116,170,474	18,333,925,920	18,328,266,523
CSseg3	6,555,545,512	5,985,684,209	4,568,856,233	4,568,856,380
CSseg4	6,403,872,730	5,087,657,774	5,237,643,097	5,228,154,776
CSseg5	9,051,096,078	8,838,630,197	7,166,472,687	7,125,393,938
Cssum	43,669,394,227	38,222,757,067	36,593,516,114	36,607,380,357
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES				
PSseg1	650,094,285	649,219,883	717,422,910	767,589,471
PSseg2	10,784,281,561	9,044,999,596	9,914,636,253	9,898,892,943
PSseg3	3,332,647,426	3,013,713,229	2,292,739,406	2,292,739,476
PSseg4	3,701,160,105	2,972,986,365	2,867,208,446	2,867,619,257
PSseg5	5,392,181,835	5,117,506,297	4,269,201,569	4,281,400,506
Pssum	23,860,365,212	20,798,425,371	20,061,208,585	20,108,241,654
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES				
CStravseg1	5,840,046,875	5,840,046,875	5,234,109,375	5,234,109,375
CStravseg2	14,809,687,500	14,809,687,500	12,873,632,813	12,873,632,813
CStravseg3	2,969,148,438	2,969,148,438	2,883,328,125	2,883,328,125
CStravseg4	5,909,851,563	5,909,851,563	5,417,625,000	5,417,625,000
CStravseg5	2,495,781,250	2,495,781,250	2,509,593,750	2,509,593,750
Cstravsum	32,024,515,625	32,024,515,625	28,918,289,063	28,918,289,063
FIRST ORDER CONDITIONS UNDER LSET				
foc1l	8.53983E-05	-4.74541E-09	-8.22897E-06	7.39605E-06
foc2l	6.68426E-06	-7.1185E-09	3.45362E-05	9.94259E-05
foc3l	2.46576E-08	4.29141E-08	-3.15194E-07	8.80468E-07
foc4l	-1.51344E-07	-2.31655E-08	-0.000111905	4.5497E-05
foc5l	8.58954E-05	-4.74779E-09	-1.26447E-05	7.63744E-06
foc6l	6.72239E-06	-7.61842E-09	3.87251E-05	0.00010164
foc7l	2.46362E-08	4.29829E-08	-3.15079E-07	6.77506E-07
foc8l	-1.51432E-07	-2.31443E-08	-0.000113837	4.52437E-05
foc9l	8.56738E-05	-4.73844E-09	-1.08546E-05	7.38822E-06
foc10l	6.70541E-06	-7.79295E-09	3.71376E-05	0.000101232
foc11l	2.46445E-08	4.39996E-08	-3.1532E-07	1.31005E-06
foc12l	-1.51382E-07	-2.30294E-08	-0.000113097	4.51441E-05
foc13l	8.55318E-05	-4.74961E-09	-1.00275E-05	7.69557E-06
foc14l	6.69451E-06	-7.21275E-09	3.63137E-05	0.000100794
foc15l	2.4641E-08	4.2327E-08	-3.15376E-07	5.81832E-07
foc16l	-1.5135E-07	-2.3046E-08	-0.000112718	4.5295E-05
foc17l	-3.3379E-06	-3.5152E-08	-0.000181125	-0.001532495
foc18l	-4.62964E-06	-3.96135E-08	-0.000190396	-0.001543217
foc19l	-4.05375E-06	-3.75849E-08	-0.000187096	-0.001541534
foc20l	-3.68478E-06	-3.87481E-08	-0.000185195	-0.001539096
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET				
p1a1l	14,410	14,363	14,059	14,150
p1c1l	14,410	14,363	14,059	14,150
p1f1l	14,410	14,363	14,059	14,150
p1g1l	14,410	14,363	14,059	14,150
p2a2l	20,890	20,826	20,406	20,535
p2c2l	20,890	20,826	20,406	20,535
p2f2l	20,890	20,826	20,406	20,535
p2g2l	20,890	20,826	20,406	20,535
p3a3l	23,493	23,419	22,917	23,065
p3c3l	23,493	23,419	22,917	23,065
p3f3l	23,493	23,419	22,917	23,065
p3g3l	23,493	23,419	22,917	23,065
p4a4l	19,974	19,901	18,182	18,330
p4c4l	19,974	19,901	18,182	18,330
p4f4l	19,974	19,901	18,182	18,330
p4g4l	19,974	19,901	18,182	18,330
p5a5l	40,891	31,208	30,783	26,166
p5c5l	40,891	31,208	30,783	26,166
p5f5l	40,891	31,208	30,783	26,166

QUARTER	22	22	23	23
p5g5l	40,891	31,208	30,783	26,166
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET				
lemp_a1	2.23	2.42	2.52	2.15
lemp_c1	2.23	2.42	2.52	2.15
lemp_f1	2.23	2.42	2.52	2.15
lemp_g1	2.23	2.42	2.52	2.15
lemp_a2	3.15	3.42	3.56	3.04
lemp_c2	3.15	3.42	3.56	3.04
lemp_f2	3.15	3.42	3.56	3.04
lemp_g2	3.15	3.42	3.56	3.04
lemp_a3	3.61	3.92	4.07	3.48
lemp_c3	3.61	3.92	4.07	3.48
lemp_f3	3.61	3.92	4.07	3.48
lemp_g3	3.61	3.92	4.07	3.48
lemp_a4	3.61	3.92	4.07	3.48
lemp_c4	3.61	3.92	4.07	3.48
lemp_f4	3.61	3.92	4.07	3.48
lemp_g4	3.61	3.92	4.07	3.48
lemp_a5	3.61	3.92	4.07	3.48
lemp_c5	3.61	3.92	4.07	3.48
lemp_f5	3.61	3.92	4.07	3.48
lemp_g5	3.61	3.92	4.07	3.48
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET				
Asub1nl	168,825	233,313	274,319	199,873
Csub1nl	-	60,547	51,219	-
Fsub1nl	54,916	117,516	136,493	74,748
Gsub1nl	119,693	183,405	178,163	112,380
Asub2nl	441,446	457,125	318,369	507,367
Csub2nl	282,081	299,353	117,099	279,948
Fsub2nl	456,927	473,386	311,689	485,575
Gsub2nl	613,880	629,493	421,884	600,515
Asub3nl	73,727	72,396	81,849	82,234
Csub3nl	116,762	115,689	92,329	92,513
Fsub3nl	90,995	89,701	78,132	78,398
Gsub3nl	101,616	100,194	102,907	103,211
asub4nl	56,249	96,268	228,976	45,365
Csub4nl	40,099	79,911	157,018	-
fsub4nl	197,404	237,039	320,176	151,999
gsub4nl	245,852	285,494	326,398	153,383
asub5nl	180,081	104,447	160,405	97,671
Csub5nl	81,497	5,791	60,590	-
fsub5nl	135,370	59,588	101,551	40,091
gsub5nl	165,185	89,440	145,809	83,949
TOTAL SALES IN EACH SEGMENT AFTER LSET				
tseg1nl	343,434	594,780	640,194	387,001
tseg2nl	1,794,334	1,859,357	1,169,041	1,873,404
tseg3nl	383,100	377,980	355,217	356,356
tseg4nl	539,603	698,712	1,032,569	350,747
tseg5nl	562,133	259,267	468,356	221,711
tsumnl	3,622,603	3,790,095	3,665,377	3,189,220
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1l	404,092	152,746	29,772	282,965
lostsales2l	101,306	36,283	478,784	(225,579)
lostsales3l	(3,049)	2,071	13,849	12,710
lostsales4l	216,858	57,749	(339,113)	342,709
lostsales5l	(242,673)	60,193	(147,128)	99,517
lostsuml	476,535	309,043	36,164	512,321
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET				
CSlsetseg1	445,991,984	781,920,333	1,056,648,602	661,597,176
CSlsetseg2	18,568,315,270	16,021,639,218	12,556,551,101	19,994,743,522

QUARTER	22	22	23	23
CSlsetseg3	6,412,277,292	5,773,858,397	4,238,376,901	4,225,656,599
CSlsetseg4	4,293,455,455	4,369,426,421	7,348,140,096	2,465,358,185
CSlsetseg5	13,371,398,830	7,250,010,667	9,615,457,621	5,035,260,541
Cslsetsum	43,091,438,831	34,196,855,036	34,815,174,321	32,382,616,023
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET				
PSlsetseg1	280,628,568	451,918,250	616,423,959	424,406,827
PSlsetseg2	9,918,947,337	8,584,298,802	7,001,363,666	10,754,398,017
PSlsetseg3	3,284,554,893	2,932,087,067	2,141,286,059	2,134,954,707
PSlsetseg4	2,678,345,812	2,649,782,223	3,957,331,196	1,496,636,511
PSlsetseg5	13,245,082,074	3,843,969,095	7,079,626,051	2,665,941,823
Pslsetsum	29,407,558,684	18,462,055,437	20,796,030,931	17,476,337,886
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSlsetseg1	726,620,552	1,233,838,583	1,673,072,561	1,086,004,003
TSlsetseg2	28,487,262,607	24,605,938,020	19,557,914,767	30,749,141,539
TSlsetseg3	9,696,832,185	8,705,945,464	6,379,662,960	6,360,611,306
TSlsetseg4	6,971,801,267	7,019,208,644	11,305,471,293	3,961,994,696
TSlsetseg5	26,616,480,905	11,093,979,762	16,695,083,672	7,701,202,364
Tslsetsum	72,498,997,516	52,658,910,473	55,611,205,251	49,858,953,909
dwllset	(4,969,238,077)	6,362,271,965	1,043,519,447	6,856,668,103
surpluslset	104,523,513,141	84,683,426,098	84,529,494,314	78,777,242,971
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM				
LSET	168.82	143.26	132.79	182.02
ABATEMENT CONSTANT FROM ABATEMENT EQUATION				
Abate1	840	840	840	840
Abate2	1680	1680	1680	1680
Abate3	2200	2200	2200	2200
Abate4	2200	2200	2200	2200
Abate5	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER				
max emis1	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES				
cur_emis1	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET				
taxrevlsetseg1	129,330,034	206,330,398	213,816,765	151,324,566
taxrevlsetseg2	955,595,486	912,188,562	552,172,038	1,035,960,869
taxrevlsetseg3	233,474,621	212,200,714	191,997,137	225,502,977
taxrevlsetseg4	328,853,028	392,262,346	558,110,816	221,954,088
taxrevlsetseg5	342,583,544	145,554,404	253,150,015	140,299,709
taxrevlsetsum	1,989,836,712	1,868,536,423	1,769,246,772	1,775,042,210
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET				
taxa1	376.58	346.90	333.99	391.02
taxc1	376.58	346.90	333.99	391.02
taxf1	376.58	346.90	333.99	391.02
taxg1	376.58	346.90	333.99	391.02
taxa2	532.56	490.59	472.33	552.98
taxc2	532.56	490.59	472.33	552.98

QUARTER	22	22	23	23
taxf2	532.56	490.59	472.33	552.98
taxg2	532.56	490.59	472.33	552.98
taxa3	609.44	561.41	540.51	632.80
taxc3	609.44	561.41	540.51	632.80
taxf3	609.44	561.41	540.51	632.80
taxg3	609.44	561.41	540.51	632.80
taxa4	609.44	561.41	540.51	632.80
taxc4	609.44	561.41	540.51	632.80
taxf4	609.44	561.41	540.51	632.80
taxg4	609.44	561.41	540.51	632.80
taxa5	609.44	561.41	540.51	632.80
taxc5	609.44	561.41	540.51	632.80
taxf5	609.44	561.41	540.51	632.80
taxg5	609.44	561.41	540.51	632.80
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET				
pollution reduction 1	(7,885,762,239)	6,645,530,837	11,765,270,195	(1,676,979,988)
pollution reduction 2	18,498,747,260	15,868,079,030	(9,937,316,109)	35,054,165,640
pollution reduction 3	8,762,344,110	7,122,587,123	5,762,061,912	8,347,575,296
pollution reduction 4	7,034,249,936	11,872,334,739	25,854,473,581	291,446,381
pollution reduction 5	13,590,420,920	(1,508,531,724)	6,555,510,625	(2,016,207,633)
Total reduction	39.99999999	40	40.00000021	39.9999997
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM				
PMET	0.00694	0.00317	0.00364	0.00275
FIRST ORDER CONDITIONS UNDER LSET				
foc1p	-2.80329E-05	-4.61983E-05	4.07637E-05	9.1154E-05
foc2p	-2.14543E-06	-0.00057815	-4.04527E-05	0.001561014
foc3p	4.62534E-08	-0.0003397	3.02622E-07	0.002718036
foc4p	4.71966E-08	-0.000157533	2.28229E-05	0.001333141
foc5p	-2.67207E-05	-4.61981E-05	2.90551E-05	8.86257E-05
foc6p	-2.04482E-06	-0.00057815	-3.00822E-05	0.001481053
foc7p	4.62358E-08	-0.000339694	3.04024E-07	0.002717564
foc8p	4.68442E-08	-0.000157535	1.72958E-05	0.001310792
foc9p	-2.77574E-05	-4.61984E-05	3.81377E-05	9.10976E-05
foc10p	-2.1243E-06	-0.000578149	-3.78558E-05	0.00156342
foc11p	4.6244E-08	-0.000339699	3.02274E-07	0.002717955
foc12p	4.7133E-08	-0.000157533	2.16315E-05	0.001332746
foc13p	-2.78995E-05	-4.61985E-05	3.89651E-05	9.12864E-05
foc14p	-2.13519E-06	-0.000578148	-3.86853E-05	0.001562552
foc15p	4.62278E-08	-0.0003397	3.02078E-07	0.002717696
foc16p	4.71459E-08	-0.000157534	2.20124E-05	0.001333062
foc17p	9.56464E-05	-8.53571E-05	0.000107441	-0.005271308
foc18p	9.2247E-05	-0.000295687	8.31089E-05	-0.004489043
foc19p	9.49306E-05	-8.53563E-05	0.000101482	-0.005280849
foc20p	9.52996E-05	-8.5356E-05	0.000103403	-0.005277367
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET				
p1a1	13,902.37	13,925.41	13,625.61	13,678.39
p1c1	13,902.37	13,925.41	13,625.61	13,678.39
p1f1	13,902.37	13,925.41	13,625.61	13,678.39
p1g1	13,902.37	13,925.41	13,625.61	13,678.39
p2a2	20,657.21	20,460.24	20,070.63	20,016.23
p2c2	20,657.21	20,460.24	20,070.63	20,016.23
p2f2	20,657.21	20,460.24	20,070.63	20,016.23
p2g2	20,657.21	20,460.24	20,070.63	20,016.23
p3a3	23,547.30	23,000.34	22,472.12	22,402.07
p3c3	23,547.30	23,000.34	22,472.12	22,402.07
p3f3	23,547.30	23,000.34	22,472.12	22,402.07
p3g3	23,547.30	23,000.34	22,472.12	22,402.07
p4a4	19,204.24	19,262.80	17,623.82	17,610.13
p4c4	19,204.24	19,262.80	17,623.82	17,610.13

QUARTER	22	22	23	23
p4f4	19,204.24	19,262.80	17,623.82	17,610.13
p4g4	19,204.24	19,262.80	17,623.82	17,610.13
p5a5	30,692.04	32,214.73	27,677.01	27,649.52
p5c5	30692.03552	32214.73498	27677.00878	27649.52361
p5f5	30692.03552	32214.73498	27677.00878	27649.52361
p5g5	30692.03552	32214.73498	27677.00878	27649.52361
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST				
dp/dgas1	4,246	14,387	9,236	28,335
dp/dgas2	91,452	91,452	80,201	80,201
dp/dgas3	192,730	91,715	61,230	56,094
dp/dgas4	7,643	26,991	32,555	39,217
dp/dgas5	174,028	7,587	5,839	5,839
sum of dpdgas	470,100	232,132	189,060	209,686
MILES TRAVELED IN EACH SEGMENT UNDER PMET				
VMT1	11,658	11,875	11,832	11,917
VMT2	11,896	11,930	11,920	11,930
VMT3	11,918	11,920	11,895	11,904
VMT4	11,588	11,852	11,856	11,885
VMT5	11,588	11,852	11,856	11,885
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT				
tpma1	0.03706	0.01361	0.01818	0.00904
tpmc1	0.03706	0.01361	0.01818	0.00904
tpmf1	0.03706	0.01361	0.01818	0.00904
tpmg1	0.03706	0.01361	0.01818	0.00904
tpma2	0.01129	0.00763	0.00873	0.00760
tpmc2	0.01129	0.00763	0.00873	0.00760
tpmf2	0.01129	0.00763	0.00873	0.00760
tpmg2	0.01129	0.00763	0.00873	0.00760
tpma3	0.00890	0.00872	0.01143	0.01039
tpmc3	0.00890	0.00872	0.01143	0.01039
tpmf3	0.00890	0.00872	0.01143	0.01039
tpmg3	0.00890	0.00872	0.01143	0.01039
tpma4	0.04470	0.01608	0.01567	0.01243
tpmc4	0.04470	0.01608	0.01567	0.01243
tpmf4	0.04470	0.01608	0.01567	0.01243
tpmg4	0.04470	0.01608	0.01567	0.01243
tpma5	0.04470	0.01608	0.01567	0.01243
tpmc5	0.04470	0.01608	0.01567	0.01243
tpmf5	0.04470	0.01608	0.01567	0.01243
tpmg5	0.04470	0.01608	0.01567	0.01243
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET				
cstravelpmetseg1	5,536,052,416	5,732,880,039	5,107,222,009	5,174,301,138
cstravelpmetseg2	14,573,453,841	14,650,566,147	12,712,656,767	12,727,464,155
cstravelpmetseg3	2,932,468,164	2,931,596,505	2,835,182,499	2,839,095,006
cstravelpmetseg4	5,509,379,809	5,771,079,640	5,292,353,755	5,326,353,875
cstravelpmetseg5	2,351,222,281	2,433,002,283	2,448,668,117	2,462,268,772
cstravelpmetsum	30,902,576,510	31,519,124,614	28,396,083,148	28,529,482,946
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET				
epm_a1	5.34	4.29	5.00	3.28
epm_c1	5.34	4.29	5.00	3.28
epm_f1	5.34	4.29	5.00	3.28
epm_g1	5.34	4.29	5.00	3.28
epm_a2	1.63	2.41	2.40	2.76
epm_c2	1.63	2.41	2.40	2.76
epm_f2	1.63	2.41	2.40	2.76

QUARTER	22	22	23	23
epm_g2	1.63	2.41	2.40	2.76
epm_a3	1.28	2.75	3.14	3.77
epm_c3	1.28	2.75	3.14	3.77
epm_f3	1.28	2.75	3.14	3.77
epm_g3	1.28	2.75	3.14	3.77
epm_a4	6.44	5.07	4.31	4.51
epm_c4	6.44	5.07	4.31	4.51
epm_f4	6.44	5.07	4.31	4.51
epm_g4	6.44	5.07	4.31	4.51
epm_a5	6.44	5.07	4.31	4.51
epm_c5	6.44	5.07	4.31	4.51
epm_f5	6.44	5.07	4.31	4.51
epm_g5	6.44	5.07	4.31	4.51
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET				
Asub1n	255,654	249,551	268,748	241,675
Csub1n	89,531	76,869	13,324	41,043
Fsub1n	141,745	133,753	130,922	116,550
Gsub1n	206,522	199,642	172,592	154,182
Asub2n	430,367	427,260	402,102	440,554
Csub2n	271,784	272,144	239,231	215,185
Fsub2n	445,849	443,520	395,422	418,763
Gsub2n	602,801	599,627	505,618	533,703
Asub3n	64,149	67,789	81,130	82,158
Csub3n	106,943	111,561	91,860	92,440
Fsub3n	81,418	85,093	77,413	78,322
Gsub3n	92,038	95,586	102,189	103,135
asub4n	110,429	102,627	147,862	111,816
Csub4n	97,568	85,948	37,840	64,678
fsub4n	251,584	243,398	239,062	218,450
gsub4n	300,032	291,853	245,284	219,834
asub5n	109,394	122,141	126,032	122,245
Csub5n	5,626	20,894	21,232	23,336
fsub5n	64,682	77,282	67,178	64,665
gsub5n	94,497	107,134	111,436	108,523
TOTAL SALES IN EACH SEGMENT AFTER PMET				
tseg1n	693,452	659,816	585,586	553,450
tseg2n	1,750,801	1,742,550	1,542,373	1,608,205
tseg3n	344,548	360,029	352,593	356,054
tseg4n	759,613	723,825	670,048	614,779
tseg5n	274,199	327,451	325,878	318,769
tsumn	3,822,612	3,813,671	3,476,478	3,451,256
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET				
CSPMETseg1	1,022,148,310	947,204,339	1,044,305,035	1,005,903,658
CSPMETseg2	17,417,216,359	14,726,069,551	16,285,696,867	17,091,922,431
CSPMETseg3	5,462,068,742	5,430,981,393	4,162,137,332	4,236,253,218
CSPMETseg4	6,206,722,594	4,600,301,324	4,784,516,535	4,392,659,173
CSPMETseg5	6,854,102,351	8,971,845,015	7,181,479,704	6,991,455,106
CsPMETsum	36,962,258,355	34,676,401,621	33,458,135,472	33,718,193,586
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET				
PSpmetseg1	567,733,968	534,527,815	626,182,017	596,959,858
PSpmetseg2	9,341,857,019	7,931,575,913	8,762,729,341	9,297,588,559
PSpmetseg3	2,809,182,033	2,761,001,645	2,103,068,213	2,140,253,156
PSpmetseg4	3,628,719,319	2,765,724,359	2,739,294,872	2,463,254,194
PSpmetseg5	4,406,293,630	5,241,940,244	4,349,954,059	4,243,529,257
Pspmetsum	20,753,785,968	19,234,769,976	18,581,228,503	18,741,585,024
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSPMETseg1	1,589,882,278	1,481,732,154	1,670,487,052	1,602,863,516
TSPMETseg2	26,759,073,378	22,657,645,464	25,048,426,208	26,389,510,990
TSPMETseg3	8,271,250,775	8,191,983,037	6,265,205,545	6,376,506,374
TSPMETseg4	9,835,441,913	7,366,025,683	7,523,811,408	6,855,913,366

QUARTER	22	22	23	23
TSPMETseg5	11,260,395,98(	14,213,785,25(	11,531,433,76(	11,234,984,36(
TSPMETsum	57,716,044,324	53,911,171,597	52,039,363,97(	52,459,778,60(
dwlpmet	9,805,635,424	5,117,803,941	4,638,546,16(	4,266,994,24(
pmetsurplus	89,748,639,64(	85,927,894,12(	80,934,467,59(	81,366,916,824
pmetsurplus10	99,918,808,89(	90,406,275,32(	85,425,651,85(	84,765,814,24(
TAX REVENUE IN EACH SEGMENT UNDER PMET				
taxrevpmetseg1	299,605,97(	106,603,97(	125,995,12(	59,599,973
taxrevpmetseg2	210,720,73(	140,874,54(	136,936,38(	129,959,701
taxrevpmetseg3	36,554,456	37,425,753	47,933,394	44,055,862
taxrevpmetseg4	393,477,513	137,909,94(	124,512,684	90,833,347
taxrevpmetseg5	189,660,12(	74,783,69(	63,642,885	53,206,386
taxrevpmetsum	1,130,018,80(	497,597,911	499,020,473	377,655,26(
pmetrev10	11,300,188,05(	4,975,979,111	4,990,204,731	3,776,552,68(
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1	54,074	87,710	84,380	116,516
lostsales2	144,839	153,090	105,452	39,620
lostsales3	35,503	20,022	16,473	13,012
lostsales4	(3,152)	32,636	23,408	78,677
lostsales5	45,261	(7,991)	(4,650)	2,459
lostsum	276,526	285,467	225,063	250,285
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET				
taxa1p	157.36	195.75	167.94	256.06
taxc1p	157.36	195.75	167.94	256.06
taxf1p	157.36	195.75	167.94	256.06
taxg1p	157.36	195.75	167.94	256.06
taxa2p	1,032.77	697.96	699.89	609.23
taxc2p	1,032.77	697.96	699.89	609.23
taxf2p	1,032.77	697.96	699.89	609.23
taxg2p	1,032.77	697.96	699.89	609.23
taxa3p	1,715.69	799.85	699.80	583.05
taxc3p	1,715.69	799.85	699.80	583.05
taxf3p	1,715.69	799.85	699.80	583.05
taxg3p	1,715.69	799.85	699.80	583.05
taxa4p	341.67	433.91	510.27	487.51
taxc4p	341.67	433.91	510.27	487.51
taxf4p	341.67	433.91	510.27	487.51
taxg4p	341.67	433.91	510.27	487.51
taxa5p	341.67	433.91	510.27	487.51
taxc5p	341.67	433.91	510.27	487.51
taxf5p	341.67	433.91	510.27	487.51
taxg5p	341.67	433.91	510.27	487.51
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET				
pollution reduction 1p	(10,347,745,195.71)	(3,840,119,492.55)	(8,484,621,369.02)	1,643,874,807.35
pollution reduction 2p	48,624,947,666.99	31,724,858,762.95	29,429,828,785.02	26,577,693,581.19
pollution reduction 3p	16,622,624,301.77	11,477,817,342.10	9,691,010,274.48	7,194,152,033.58
pollution reduction 4p	(6,467,933,971.37)	3,494,197,428.73	9,412,400,424.08	5,712,859,507.57
pollution reduction 5p	(8,431,892,813.89)	(2,856,716,386.41)	(48,619,757.96)	(1,128,924,283.65)
Total reductionp	39.99999999	40.00003765	39.9999983(	39.99965565
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET				
Tsdiff	(14,775)	(1,244)	(3,595)	(2,590)

QUARTER	24	24	25	25
COEFFICIENTS OF DEMAND				
a P1/q1	-0.02005433€	-0.003034074	-0.004524677	-0.010122964
b p2/q1	-0.002852111	-1E-08	-0.000163975	-2.22497E-15
c p3/q1	-0.01595612	-1E-08	-8.07505E-14	-2.89189E-15
d p4/q1	-9.9982E-09	-0.001799389	-0.002158455	4.89397E-15
f P1/q2	-0.002852111	-1E-08	-0.000163975	2.22607E-13
g p2/q2	-0.016139423	-0.007667679	-0.013249958	-0.011892453
h p3/q2	-1E-08	-1E-08	-0.000164048	3.14255E-13
i p4/q2	5.23067E-11	-1E-08	-4.58238E-14	8.00711E-14
k P1/q3	-0.01595612	-1E-08	4.49035E-11	-9.84451E-15
l p2/q3	-1E-08	-1E-08	-0.000164048	-5.97012E-15
m p3/q3	-0.088950875	-0.055009091	-0.111096362	-0.111302197
n p4/q3	1.15579E-16	-1E-08	3.65676E-11	1.48698E-15
p P1/q4	-1E-08	-0.001799389	-0.002158455	9.82507E-16
q p2/q4	-1.73307E-16	-1.00035E-08	-5.20186E-07	3.30839E-15
r p3/q4	3.73064E-17	-1E-08	-5.19406E-07	4.2909E-15
s p4/q4	-0.035773454	-0.01427042	-0.021850865	-0.021747287
u P1/q5	-1E-08	-0.002786641	-0.003026389	-9.99343E-09
v p2/q5	-0.012839656	-0.007667679	-0.002180722	-0.011474792
w p3/q5	3.12558E-16	-0.016949195	-0.007527429	-0.008257814
x p4/q5	-0.015041893	-0.009939286	-0.002689099	-0.006888151
y p5/q5	-0.077628796	-0.036004667	-0.024450991	-0.098997381
e p5/q1	-0.00000001	-0.002786641	-0.003026389	-0.00000001
j p5/q2	-0.012839656	-0.007667679	-0.002180722	-0.011474792
o p5/q3	-0.00000001	-0.016949195	-0.007527429	-0.008257814
t p5/q4	-0.015041893	-0.009939286	-0.002689099	-0.006888151
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR				
aa	-0.02005433€	-0.003034074	-0.004524677	-0.010122964
bb	-0.002852111	-1E-08	-0.000163975	-2.22497E-15
cc	-0.01595612	-1E-08	-8.07505E-14	-2.89189E-15
dd	-9.9982E-09	-0.001799389	-0.002158455	-0.00000001
ee	-0.00000001	-0.002786641	-0.003026389	-0.00000001
ff	-0.002852111	-1E-08	-0.000163975	-0.00000001
gg	-0.016139423	-0.007667679	-0.013249958	-0.011892453
hh	-1E-08	-1E-08	-0.000164048	-0.00000001
ii	-0.00000001	-1E-08	-4.58238E-14	-0.00000001
jj	-0.012839656	-0.007667679	-0.002180722	-0.011474792
kk	-0.01595612	-1E-08	-0.00000001	-9.84451E-15
ll	-1E-08	-1E-08	-0.000164048	-5.97012E-15
mm	-0.088950875	-0.055009091	-0.111096362	-0.111302197
nn	-0.00000001	-1E-08	-0.00000001	-0.00000001
oo	-0.00000001	-0.016949195	-0.007527429	-0.008257814
pp	-1E-08	-0.001799389	-0.002158455	-0.00000001
qq	-1.73307E-16	-1.00035E-08	-5.20186E-07	-0.00000001
rr	-0.00000001	-1E-08	-5.19406E-07	-0.00000001
ss	-0.035773454	-0.01427042	-0.021850865	-0.021747287
tt	-0.015041893	-0.009939286	-0.002689099	-0.006888151
uu	-1E-08	-0.002786641	-0.003026389	-9.99343E-09
vv	-0.012839656	-0.007667679	-0.002180722	-0.011474792
ww	-0.00000001	-0.016949195	-0.007527429	-0.008257814
xx	-0.015041893	-0.009939286	-0.002689099	-0.006888151
yy	-0.077628796	-0.036004667	-0.024450991	-0.098997381
KNOWN PRICE BEFORE TAXES				
P1	14,814	14,814	14,628	14,628
P2	18,937	18,937	19,990	19,990
P3	24,631	24,631	27,894	27,894
P4	18,710	18,710	17,799	17,799
P5	27,535	27,535	33,250	33,250

QUARTER	24	24	25	25
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM				
Asub1	213,076	213,076	212,911	212,911
Csub1	59,035	59,035	66,888	66,888
Fsub1	114,072	114,072	111,361	111,361
Gsub1	132,486	132,486	148,720	148,720
Asub2	403,923	403,923	372,149	372,149
Csub2	225,226	225,226	253,975	253,975
Fsub2	458,872	458,872	453,633	453,633
Gsub2	563,804	563,804	528,724	528,724
Asub3	87,998	87,998	68,074	68,074
Csub3	115,603	115,603	94,252	94,252
Fsub3	72,852	72,852	91,162	91,162
Gsub3	162,010	162,010	129,859	129,859
asub4	103,631	103,631	94,837	94,837
Csub4	91,611	91,611	92,210	92,210
fsub4	249,346	249,346	232,187	232,187
gsub4	251,275	251,275	229,785	229,785
asub5	106,519	106,519	113,036	113,036
Csub5	16,752	16,752	17,255	17,255
fsub5	69,190	69,190	63,041	63,041
gsub5	110,868	110,868	82,188	82,188
TOTAL SALES IN EACH SEGMENT BEFORE TAXES				
tseg1	518,669	518,669	539,880	539,880
tseg2	1,651,825	1,651,825	1,608,481	1,608,481
tseg3	438,463	438,463	383,347	383,347
tseg4	695,863	695,863	649,019	649,019
tseg5	303,329	303,329	275,520	275,520
tsum	3,608,149	3,608,149	3,456,247	3,456,247
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j				
Elasiticity11	(1.42)	(9.41)	(5.99)	(2.68)
Elasiticity21	0.32	0.00	0.10	0.00
Elasiticity31	0.42	0.00	0.00	0.00
Elasiticity41	0.00	1.50	0.72	0.00
Elasiticity51	0.00	1.35	1.68	0.00
Elasiticity12	0.08	0.00	0.02	0.00
Elasiticity22	(0.71)	(1.50)	(0.94)	(1.05)
Elasiticity32	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.00	0.00	0.00
Elasiticity52	0.17	0.46	0.14	0.20
Elasiticity13	0.30	0.00	0.00	0.00
Elasiticity23	0.00	0.00	0.01	0.00
Elasiticity33	(0.63)	(1.02)	(0.65)	(0.65)
Elasiticity43	0.00	0.00	0.00	0.00
Elasiticity53	0.00	0.54	0.24	0.07
Elasiticity14	0.00	0.88	0.49	0.00
Elasiticity24	0.00	0.00	0.00	0.00
Elasiticity34	0.00	0.00	0.00	0.00
Elasiticity44	(0.75)	(1.88)	(1.26)	(1.26)
Elasiticity54	0.21	0.77	0.26	0.16
Elasiticity15	0.00	1.25	1.45	0.00
Elasiticity25	0.64	1.73	0.49	0.71
Elasiticity35	0.00	0.69	0.28	0.08
Elasiticity45	0.33	1.19	0.33	0.21
Elasiticity55	(1.17)	(2.52)	(4.94)	(1.22)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM				
MCasub1	8,000	13,710	12,799	12,216
MCcsub1	11,155	14,444	13,869	13,788
MCfsub1	10,091	13,885	13,090	13,234

QUARTER	24	24	25	25
MCgsub1	8,000	13,710	12,799	12,799
MCasub2	10,421	14,991	14,877	14,378
MCcsub2	14,905	17,061	16,578	16,789
MCfsub2	10,283	14,838	13,826	13,890
MCgsub2	8,000	13,710	12,799	12,799
MCasub3	13,368	17,940	19,363	19,327
MCcsub3	13,368	17,940	17,269	17,278
MCfsub3	16,229	19,329	17,269	17,278
MCgsub3	8,000	13,710	12,799	12,799
MCasub4	13,356	15,731	15,370	15,365
MCcsub4	15,157	17,098	15,862	15,943
MCfsub4	8,708	14,202	12,799	12,799
MCgsub4	8,000	13,710	12,799	12,799
MCasub5	12,596	17,577	28,250	16,608
MCcsub5	22,000	22,212	31,121	27,249
MCfsub5	12,596	17,577	29,360	19,719
MCgsub5	8,000	13,710	28,250	16,608
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM				
e	-0.00000001	-0.002786641	-0.003026389	-0.00000001
j	-0.012839656	-0.007667679	-0.002180722	-0.011474792
o	-0.00000001	-0.016949195	-0.007527429	-0.008257814
t	-0.015041893	-0.009939286	-0.002689099	-0.006888151
y	-0.077628796	-0.036004667	-0.024450991	-0.098997381
MARKUP FOR EACH FIRM BY SEGMENT				
XMCasub1	6,814	1,104	1,829	2,412
XMCcsub1	3,659	370	759	840
XMCfsub1	4,723	930	1,538	1,394
XMCgsub1	6,814	1,104	1,829	1,829
XMCasub2	8,516	3,945	5,113	5,612
XMCcsub2	4,032	1,876	3,412	3,201
XMCfsub2	8,654	4,099	6,164	6,100
XMCgsub2	10,937	5,226	7,191	7,191
XMCasub3	11,264	6,692	8,531	8,567
XMCcsub3	11,264	6,692	10,625	10,616
XMCfsub3	8,402	5,303	10,625	10,616
XMCgsub3	16,631	10,921	15,095	15,095
XMCasub4	5,355	2,980	2,429	2,434
XMCcsub4	3,553	1,612	1,937	1,855
XMCfsub4	10,002	4,508	5,000	5,000
XMCgsub4	10,710	5,000	5,000	5,000
XMCasub5	14,939	9,958	5,000	16,642
XMCcsub5	5,535	5,323	2,129	6,001
XMCfsub5	14,939	9,958	3,890	13,531
XMCgsub5	19,535	13,825	5,000	16,642
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT				
constant1	36,923	18,485	19,569	20,093
constant2	50,970	33,928	42,055	42,280
constant3	71,909	53,892	72,821	72,837
constant4	48,166	32,589	33,887	33,811
constant5	82,758	66,915	49,759	86,619
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES				
TSseg1	8,843,183,960	1,461,433,758	2,217,351,109	2,472,340,412
TSseg2	40,941,799,592	19,225,295,890	27,113,110,734	27,397,809,718
TSseg3	15,964,616,046	9,932,976,256	13,122,358,628	13,126,041,795
TSseg4	16,314,365,790	7,665,674,598	7,939,443,230	7,907,858,879
TSseg5	13,258,909,733	9,344,202,645	3,532,393,686	11,557,502,886
Tssum	95,322,875,120	47,629,583,147	53,924,657,386	62,461,553,695
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES				
CSseg1	5,733,608,128	952,042,340	1,333,838,711	1,475,272,979

QUARTER	24	24	25	25
CSseg2	26,456,825,772	12,381,674,593	17,745,477,687	17,926,777,579
CSseg3	10,364,745,459	6,414,858,832	8,611,242,293	8,614,297,089
CSseg4	10,248,694,687	4,828,746,177	5,220,654,921	5,196,119,413
CSseg5	8,375,374,035	5,972,584,956	2,274,302,835	7,352,099,362
Cssum	61,179,248,081	30,549,906,898	35,185,516,447	40,564,566,422
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES				
PSseg1	3,109,575,832	509,391,419	883,512,398	997,067,433
PSseg2	14,484,973,820	6,843,621,297	9,367,633,047	9,471,032,139
PSseg3	5,599,870,587	3,518,117,424	4,511,116,335	4,511,744,710
PSseg4	6,065,671,103	2,836,928,421	2,718,788,309	2,711,739,466
PSseg5	4,883,535,698	3,371,617,688	1,258,090,851	4,205,403,525
Pssum	34,143,627,039	17,079,676,249	18,739,140,939	21,896,987,273
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES				
CStravseg1	4,052,101,563	4,052,101,563	4,217,812,500	4,217,812,500
CStravseg2	12,904,882,813	12,904,882,813	12,566,257,813	12,566,257,813
CStravseg3	3,425,492,188	3,425,492,188	2,994,898,438	2,994,898,438
CStravseg4	5,436,429,688	5,436,429,688	5,070,460,938	5,070,460,938
CStravseg5	2,369,757,813	2,369,757,813	2,152,500,000	2,152,500,000
Cstravsum	28,188,664,063	28,188,664,063	27,001,929,688	27,001,929,688
FIRST ORDER CONDITIONS UNDER LSET				
foc1l	-5.73143E-06	5.56769E-06	-7.22477E-06	1.56373E-06
foc2l	2.85582E-05	9.27214E-08	2.68418E-05	-5.6985E-06
foc3l	-1.54249E-05	1.06435E-07	-9.783E-06	1.2049E-06
foc4l	-2.31832E-05	1.18669E-06	-3.65565E-05	1.98402E-06
foc5l	-5.90999E-06	5.51834E-06	-2.89949E-05	3.35984E-06
foc6l	2.8705E-05	9.2637E-08	3.73261E-05	-1.24049E-05
foc7l	-1.58146E-05	1.06289E-07	-1.22222E-05	3.32482E-06
foc8l	-2.31799E-05	1.16598E-06	-5.49825E-05	2.13095E-06
foc9l	-5.60388E-06	5.53181E-06	8.593E-06	2.18868E-06
foc10l	2.8469E-05	9.24052E-08	3.56265E-05	-1.46865E-05
foc11l	-1.51994E-05	1.06896E-07	-9.92781E-06	3.80809E-06
foc12l	-2.31788E-05	1.17457E-06	-4.9338E-05	6.86815E-07
foc13l	-5.59124E-06	5.55792E-06	1.72141E-05	5.02083E-06
foc14l	2.84573E-05	9.24451E-08	3.07708E-05	-1.14036E-05
foc15l	-1.5174E-05	1.06595E-07	-9.56847E-06	3.04674E-06
foc16l	-2.3179E-05	1.18584E-06	-4.21076E-05	1.23E-06
foc17l	-2.2214E-05	-4.60769E-06	-0.000101756	-0.000814795
foc18l	-2.21894E-05	-4.5017E-06	-7.73806E-05	-0.000809869
foc19l	-2.22355E-05	-4.53699E-06	-0.000146644	-0.000812756
foc20l	-2.22254E-05	-4.59488E-06	-0.000154592	-0.000812358
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET				
p1a1l	15,397	15,504	14,985	14,980
p1c1l	15,397	15,504	14,985	14,980
p1f1l	15,397	15,504	14,985	14,980
p1g1l	15,397	15,504	14,985	14,980
p2a2l	19,712	19,835	20,819	20,811
p2c2l	19,712	19,835	20,819	20,811
p2f2l	19,712	19,835	20,819	20,811
p2g2l	19,712	19,835	20,819	20,811
p3a3l	25,486	25,625	28,810	28,801
p3c3l	25,486	25,625	28,810	28,801
p3f3l	25,486	25,625	28,810	28,801
p3g3l	25,486	25,625	28,810	28,801
p4a4l	19,588	19,730	19,049	19,040
p4c4l	19,588	19,730	19,049	19,040
p4f4l	19,588	19,730	19,049	19,040
p4g4l	19,588	19,730	19,049	19,040
p5a5l	40,738	28,807	34,033	32,704
p5c5l	40,738	28,807	34,033	32,704
p5f5l	40,738	28,807	34,033	32,704

QUARTER	24	24	25	25
p5g5l	40,738	28,807	34,033	32,704
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET				
lemp_a1	2.39	2.05	2.40	2.42
lemp_c1	2.39	2.05	2.40	2.42
lemp_f1	2.39	2.05	2.40	2.42
lemp_g1	2.39	2.05	2.40	2.42
lemp_a2	3.38	2.89	3.39	3.43
lemp_c2	3.38	2.89	3.39	3.43
lemp_f2	3.38	2.89	3.39	3.43
lemp_g2	3.38	2.89	3.39	3.43
lemp_a3	3.86	3.31	3.88	3.92
lemp_c3	3.86	3.31	3.88	3.92
lemp_f3	3.86	3.31	3.88	3.92
lemp_g3	3.86	3.31	3.88	3.92
lemp_a4	3.86	3.31	3.88	3.92
lemp_c4	3.86	3.31	3.88	3.92
lemp_f4	3.86	3.31	3.88	3.92
lemp_g4	3.86	3.31	3.88	3.92
lemp_a5	3.86	3.31	3.88	3.92
lemp_c5	3.86	3.31	3.88	3.92
lemp_f5	3.86	3.31	3.88	3.92
lemp_g5	3.86	3.31	3.88	3.92
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET				
Asub1nl	237,048	153,370	206,963	204,675
Csub1nl	83,389	-	34,783	49,308
Fsub1nl	135,944	43,688	118,141	104,026
Gsub1nl	154,227	62,102	169,282	147,068
Asub2nl	227,308	346,435	353,330	364,649
Csub2nl	47,328	161,657	242,414	255,829
Fsub2nl	283,573	404,936	444,079	457,227
Gsub2nl	388,937	512,557	516,974	529,421
Asub3nl	80,909	74,346	67,328	67,821
Csub3nl	108,473	100,566	92,761	93,451
Fsub3nl	66,874	60,935	90,407	90,194
Gsub3nl	156,111	150,935	129,077	128,937
asub4nl	12,998	74,572	83,394	86,623
Csub4nl	-	57,345	89,553	90,847
fsub4nl	158,705	222,277	217,762	221,544
gsub4nl	161,132	226,995	210,062	215,125
asub5nl	307,739	133,749	103,171	97,307
Csub5nl	218,883	48,653	8,439	-
fsub5nl	270,199	95,318	38,797	43,901
gsub5nl	311,504	134,698	60,299	64,169
TOTAL SALES IN EACH SEGMENT AFTER LSET				
tseg1nl	610,608	259,160	529,169	505,078
tseg2nl	947,146	1,425,585	1,556,796	1,607,126
tseg3nl	412,367	386,781	379,572	380,403
tseg4nl	332,836	581,189	600,771	614,139
tseg5nl	1,108,325	412,418	210,706	205,377
tsumnl	3,411,282	3,065,133	3,277,014	3,312,124
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1l	(91,939)	259,509	10,711	34,802
lostsales2l	704,679	226,240	51,685	1,355
lostsales3l	26,096	51,682	3,775	2,944
lostsales4l	363,027	114,674	48,248	34,880
lostsales5l	(804,996)	(109,089)	64,814	70,143
lostsuml	196,867	543,016	179,233	144,123
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET				
CSlsetseg1	6,572,130,272	386,326,217	1,212,855,977	1,291,204,090
CSlsetseg2	14,803,142,420	10,045,545,799	16,530,074,567	17,251,963,997

QUARTER	24	24	25	25
CSlsetseg3	9,571,739,704	5,466,498,506	8,352,586,733	8,375,668,520
CSlsetseg4	4,755,886,177	3,736,846,818	4,456,865,899	4,535,582,542
CSlsetseg5	23,286,096,758	7,858,303,128	1,656,765,239	5,536,466,456
Cslsetsum	58,988,995,330	27,493,520,468	32,209,148,414	36,990,885,604
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET				
PSlsetseg1	3,539,529,907	244,358,380	714,955,908	777,178,912
PSlsetseg2	8,625,844,264	5,633,267,512	8,837,915,204	9,206,475,974
PSlsetseg3	5,174,110,971	3,012,313,768	4,386,820,957	4,395,305,677
PSlsetseg4	3,296,086,855	2,271,426,495	2,585,940,273	2,636,643,425
PSlsetseg5	29,301,785,922	4,378,538,314	912,609,695	2,938,780,990
Pslsetsum	49,937,357,919	15,539,904,469	17,438,242,038	19,954,384,978
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSlsetseg1	10,111,660,179	630,684,596	1,927,811,885	2,068,383,002
TSlsetseg2	23,428,986,685	15,678,813,312	25,367,989,772	26,458,439,971
TSlsetseg3	14,745,850,675	8,478,812,274	12,739,407,690	12,770,974,196
TSlsetseg4	8,051,973,032	6,008,273,313	7,042,806,172	7,172,225,967
TSlsetseg5	52,587,882,680	12,236,841,442	2,569,374,934	8,475,247,445
Tslsetsum	108,926,353,249	43,033,424,936	49,647,390,452	56,945,270,582
dwllset	(13,603,478,129)	4,596,158,211	4,277,266,934	5,516,283,112
surpluslset	137,115,017,312	71,222,088,999	76,649,320,139	83,947,200,270
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM				
LSET	147.33	200.79	145.81	142.88
ABATEMENT CONSTANT FROM ABATEMENT EQUATION				
Abate1	840	840	840	840
Abate2	1680	1680	1680	1680
Abate3	2200	2200	2200	2200
Abate4	2200	2200	2200	2200
Abate5	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER				
max emis1	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES				
cur_emis1	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET				
taxrevlsetseg1	214,803,798	106,433,389	185,197,224	174,976,574
taxrevlsetseg2	471,206,352	827,977,261	770,525,913	787,383,642
taxrevlsetseg3	234,765,939	257,067,426	214,984,145	213,273,833
taxrevlsetseg4	189,487,591	386,277,814	340,267,826	344,318,221
taxrevlsetseg5	630,983,541	274,106,965	119,340,845	115,144,990
taxrevlsetsum	1,741,247,220	1,851,862,856	1,630,315,952	1,635,097,261
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET				
taxa1	351.79	410.69	349.98	346.43
taxc1	351.79	410.69	349.98	346.43
taxf1	351.79	410.69	349.98	346.43
taxg1	351.79	410.69	349.98	346.43
taxa2	497.50	580.80	494.94	489.93
taxc2	497.50	580.80	494.94	489.93

QUARTER	24	24	25	25
taxf2	497.50	580.80	494.94	489.93
taxg2	497.50	580.80	494.94	489.93
taxa3	569.31	664.63	566.39	560.65
taxc3	569.31	664.63	566.39	560.65
taxf3	569.31	664.63	566.39	560.65
taxg3	569.31	664.63	566.39	560.65
taxa4	569.31	664.63	566.39	560.65
taxc4	569.31	664.63	566.39	560.65
taxf4	569.31	664.63	566.39	560.65
taxg4	569.31	664.63	566.39	560.65
taxa5	569.31	664.63	566.39	560.65
taxc5	569.31	664.63	566.39	560.65
taxf5	569.31	664.63	566.39	560.65
taxg5	569.31	664.63	566.39	560.65
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET				
pollution reduction 1	16,919,243,058	(3,575,803,947)	11,004,898,256	9,381,828,968
pollution reduction 2	(18,549,863,292)	13,407,108,444	13,004,489,662	14,814,661,262
pollution reduction 3	7,467,770,748	8,923,783,396	7,268,789,089	7,123,521,869
pollution reduction 4	(2,179,657,310)	12,520,820,914	10,490,167,055	10,777,451,820
pollution reduction 5	36,342,506,802	8,724,091,155	(1,768,344,076)	(2,097,464,332)
Total reduction	40.00000001	39.99999996	39.99999999	39.99999959
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM				
PMET	0.00931	0.00601	0.00544	0.00274
FIRST ORDER CONDITIONS UNDER LSET				
foc1p	-8.72547E-06	-7.92056E-06	2.2378E-05	2.97978E-05
foc2p	8.45449E-06	0.001430192	4.06613E-05	0.000376695
foc3p	-2.20728E-05	8.2E-09	2.78773E-05	0.000230164
foc4p	-1.32484E-06	-5.88933E-06	-5.7497E-05	3.8616E-06
foc5p	-8.50006E-06	-2.46705E-05	-2.08381E-05	3.00391E-05
foc6p	8.14935E-06	0.001430192	4.99495E-05	0.000363833
foc7p	-2.15825E-05	7.88589E-09	2.52991E-05	0.000233726
foc8p	-1.24222E-06	-1.02501E-05	-7.59602E-05	8.5957E-07
foc9p	-8.59799E-06	-7.95581E-06	3.80344E-05	2.7764E-05
foc10p	8.36451E-06	0.001430191	4.80028E-05	0.000359363
foc11p	-2.18469E-05	7.33985E-09	2.75085E-05	0.000231216
foc12p	-1.3202E-06	-5.90252E-06	-6.75189E-05	4.15638E-07
foc13p	-8.58407E-06	-7.9296E-06	4.70158E-05	2.97301E-05
foc14p	8.35246E-06	0.001430191	4.48393E-05	0.000358555
foc15p	-2.182E-05	7.99128E-09	2.93161E-05	0.000231286
foc16p	-1.32086E-06	-5.89041E-06	-6.17341E-05	2.2524E-06
foc17p	1.37874E-06	2.27403E-05	-0.000127042	-0.000784923
foc18p	1.77E-06	0.000767757	-6.14346E-05	-0.000834064
foc19p	1.35728E-06	2.28104E-05	-0.000172444	-0.000834919
foc20p	1.36708E-06	2.27534E-05	-0.000179881	-0.000834411
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET				
p1a1	14,899.96	14,983.80	14,490.89	14,537.29
p1c1	14,899.96	14,983.80	14,490.89	14,537.29
p1f1	14,899.96	14,983.80	14,490.89	14,537.29
p1g1	14,899.96	14,983.80	14,490.89	14,537.29
p2a2	19,567.76	19,216.22	20,363.01	20,327.18
p2c2	19,567.76	19,216.22	20,363.01	20,327.18
p2f2	19,567.76	19,216.22	20,363.01	20,327.18
p2g2	19,567.76	19,216.22	20,363.01	20,327.18
p3a3	25,760.91	24,975.33	28,754.70	28,416.93
p3c3	25,760.91	24,975.33	28,754.70	28,416.93
p3f3	25,760.91	24,975.33	28,754.70	28,416.93
p3g3	25,760.91	24,975.33	28,754.70	28,416.93
p4a4	18,906.91	19,094.43	18,694.59	18,534.66
p4c4	18,906.91	19,094.43	18,694.59	18,534.66

QUARTER	24	24	25	25
p4f4	18,906.91	19,094.43	18,694.59	18,534.66
p4g4	18,906.91	19,094.43	18,694.59	18,534.66
p5a5	27,992.47	28,114.96	33,998.44	33,842.85
p5c5	27992.46693	28114.96026	33998.44434	33842.85429
p5f5	27992.46693	28114.96026	33998.44434	33842.85429
p5g5	27992.46693	28114.96026	33998.44434	33842.85429
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST				
dp/dgas1	1,551	10,306	2,614	14,936
dp/dgas2	75,479	26,524	34,306	54,326
dp/dgas3	190,707	35,868	167,940	121,295
dp/dgas4	7,129	38,528	70,549	70,549
dp/dgas5	4,116	4,116	5,016	5,016
sum of dpdgas	278,983	115,342	280,425	266,122
MILES TRAVELED IN EACH SEGMENT UNDER PMET				
VMT1	11,345	11,796	11,615	11,886
VMT2	11,867	11,820	11,850	11,915
VMT3	11,904	11,823	11,922	11,935
VMT4	11,506	11,829	11,880	11,915
VMT5	11,506	11,829	11,880	11,915
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT				
tpma1	0.07102	0.02214	0.04182	0.01242
tpmc1	0.07102	0.02214	0.04182	0.01242
tpmf1	0.07102	0.02214	0.04182	0.01242
tpmg1	0.07102	0.02214	0.04182	0.01242
tpma2	0.01440	0.01951	0.01633	0.00921
tpmc2	0.01440	0.01951	0.01633	0.00921
tpmf2	0.01440	0.01951	0.01633	0.00921
tpmg2	0.01440	0.01951	0.01633	0.00921
tpma3	0.01037	0.01920	0.00844	0.00705
tpmc3	0.01037	0.01920	0.00844	0.00705
tpmf3	0.01037	0.01920	0.00844	0.00705
tpmg3	0.01037	0.01920	0.00844	0.00705
tpma4	0.05361	0.01853	0.01303	0.00924
tpmc4	0.05361	0.01853	0.01303	0.00924
tpmf4	0.05361	0.01853	0.01303	0.00924
tpmg4	0.05361	0.01853	0.01303	0.00924
tpma5	0.05361	0.01853	0.01303	0.00924
tpmc5	0.05361	0.01853	0.01303	0.00924
tpmf5	0.05361	0.01853	0.01303	0.00924
tpmg5	0.05361	0.01853	0.01303	0.00924
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET				
cstravelpmetseg1	3,587,176,468	3,952,610,897	3,920,024,967	4,139,151,315
cstravelpmetseg2	12,642,927,413	12,565,817,790	12,266,304,516	12,397,829,412
cstravelpmetseg3	3,376,432,595	3,335,763,690	2,958,108,694	2,963,650,025
cstravelpmetseg4	5,012,605,532	5,309,551,559	4,983,029,106	5,006,065,148
cstravelpmetseg5	2,168,026,540	2,283,167,530	2,112,696,833	2,121,120,603
cstravelpmetsum	26,787,168,549	27,446,911,466	26,240,164,116	26,627,816,503
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET				
epm_a1	7.63	3.68	7.68	4.53
epm_c1	7.63	3.68	7.68	4.53
epm_f1	7.63	3.68	7.68	4.53
epm_g1	7.63	3.68	7.68	4.53
epm_a2	1.55	3.25	3.00	3.36
epm_c2	1.55	3.25	3.00	3.36
epm_f2	1.55	3.25	3.00	3.36

QUARTER	24	24	25	25
epm_g2	1.55	3.25	3.00	3.36
epm_a3	1.11	3.19	1.55	2.57
epm_c3	1.11	3.19	1.55	2.57
epm_f3	1.11	3.19	1.55	2.57
epm_g3	1.11	3.19	1.55	2.57
epm_a4	5.76	3.08	2.39	3.37
epm_c4	5.76	3.08	2.39	3.37
epm_f4	5.76	3.08	2.39	3.37
epm_g4	5.76	3.08	2.39	3.37
epm_a5	5.76	3.08	2.39	3.37
epm_c5	5.76	3.08	2.39	3.37
epm_f5	5.76	3.08	2.39	3.37
epm_g5	5.76	3.08	2.39	3.37
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET				
Asub1n	224,990	184,766	228,088	211,037
Csub1n	69,756	24,414	45,324	55,670
Fsub1n	123,886	75,083	139,266	110,388
Gsub1n	142,170	93,498	190,407	153,430
Asub2n	369,286	357,970	349,974	345,804
Csub2n	198,807	160,409	236,457	235,260
Fsub2n	425,551	416,470	440,723	438,381
Gsub2n	530,915	524,091	513,617	510,575
Asub3n	76,743	76,708	63,783	65,340
Csub3n	104,589	98,990	88,091	90,838
Fsub3n	62,707	63,297	86,863	87,713
Gsub3n	151,945	153,297	125,532	126,456
asub4n	96,724	74,971	73,974	78,865
Csub4n	88,600	49,722	79,126	82,524
fsub4n	242,431	222,676	208,342	213,787
gsub4n	244,858	227,393	200,642	207,367
asub5n	113,593	125,513	110,296	116,483
Csub5n	13,145	53,199	32,246	20,962
fsub5n	76,053	87,082	45,922	63,077
gsub5n	117,358	126,462	67,424	83,345
TOTAL SALES IN EACH SEGMENT AFTER PMET				
tseg1n	560,802	377,761	603,085	530,526
tseg2n	1,524,559	1,458,940	1,540,771	1,530,020
tseg3n	395,984	392,292	364,269	370,346
tseg4n	672,614	574,762	562,084	582,543
tseg5n	320,150	392,256	255,888	283,867
tsumn	3,474,109	3,196,011	3,326,096	3,297,302
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET				
CSPMETseg1	6,144,458,531	618,294,078	1,498,382,174	1,424,592,419
CSPMETseg2	23,108,958,967	10,354,385,766	16,279,639,409	16,411,768,826
CSPMETseg3	8,745,589,434	5,536,818,185	7,767,656,337	8,066,964,529
CSPMETseg4	9,711,656,475	3,672,897,600	4,011,267,085	4,259,570,118
CSPMETseg5	8,731,290,002	7,594,905,171	2,008,124,873	7,484,111,299
CsPMETsum	56,441,953,409	27,777,300,801	31,565,069,879	37,647,007,191
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET				
PSpmetseg1	3,328,599,591	363,879,131	865,445,327	843,873,091
PSpmetseg2	12,740,726,435	5,812,112,099	8,718,049,219	8,790,386,024
PSpmetseg3	4,760,858,703	3,050,269,847	4,095,024,793	4,241,034,290
PSpmetseg4	5,755,196,361	2,254,797,539	2,364,807,830	2,499,608,629
PSpmetseg5	5,222,617,398	4,095,959,652	1,092,220,191	4,287,905,889
Pspmetsum	31,807,998,488	15,577,018,268	17,135,547,360	20,662,807,923
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSPMETseg1	9,473,058,122	982,173,209	2,363,827,501	2,268,465,510
TSPMETseg2	35,849,685,401	16,166,497,865	24,997,688,628	25,202,154,849
TSPMETseg3	13,506,448,137	8,587,088,032	11,862,681,131	12,307,998,820
TSPMETseg4	15,466,852,836	5,927,695,140	6,376,074,915	6,759,178,747

QUARTER	24	24	25	25
TSPMETseg5	13,953,907,400	11,690,864,823	3,100,345,064	11,772,017,188
TSPMETsum	88,249,951,897	43,354,319,069	48,700,617,239	58,309,815,115
dwlpmet	7,076,265,356	4,313,002,465	5,261,270,966	4,166,057,587
pmetsurplus	116,435,273,827	71,505,244,745	75,665,316,107	85,297,425,795
pmetsurplus10	129,018,654,258	77,841,372,636	82,186,128,882	88,535,573,389
TAX REVENUE IN EACH SEGMENT UNDER PMET				
taxrevpmetseg1	451,889,694	98,637,737	292,927,423	78,284,381
taxrevpmetseg2	238,448,297	305,137,779	261,086,528	148,131,306
taxrevpmetseg3	48,863,534	89,061,952	36,670,069	31,163,582
taxrevpmetseg4	414,915,246	125,968,975	86,992,245	64,166,372
taxrevpmetseg5	244,036,610	85,207,768	46,858,488	38,048,536
taxrevpmetsum	1,398,153,381	704,014,210	724,534,753	359,794,177
pmetrev10	13,981,533,812	7,040,142,101	7,245,347,528	3,597,941,771
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1	(42,133)	140,908	(63,205)	9,354
lostsales2	127,266	192,885	67,710	78,461
lostsales3	42,479	46,171	19,078	13,001
lostsales4	23,249	121,101	86,935	66,476
lostsales5	(16,821)	(88,927)	19,632	(8,347)
lostsum	134,040	412,138	130,151	158,945
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET				
taxa1p	110.16	228.13	109.32	185.43
taxc1p	110.16	228.13	109.32	185.43
taxf1p	110.16	228.13	109.32	185.43
taxg1p	110.16	228.13	109.32	185.43
taxa2p	1,086.77	517.57	560.07	500.13
taxc2p	1,086.77	517.57	560.07	500.13
taxf2p	1,086.77	517.57	560.07	500.13
taxg2p	1,086.77	517.57	560.07	500.13
taxa3p	1,976.80	688.75	1,418.03	855.18
taxc3p	1,976.80	688.75	1,418.03	855.18
taxf3p	1,976.80	688.75	1,418.03	855.18
taxg3p	1,976.80	688.75	1,418.03	855.18
taxa4p	382.20	713.83	919.08	652.20
taxc4p	382.20	713.83	919.08	652.20
taxf4p	382.20	713.83	919.08	652.20
taxg4p	382.20	713.83	919.08	652.20
taxa5p	382.20	713.83	919.08	652.20
taxc5p	382.20	713.83	919.08	652.20
taxf5p	382.20	713.83	919.08	652.20
taxg5p	382.20	713.83	919.08	652.20
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET				
pollution reduction 1p	(18,584,164,634.48)	(2,948,733,461.97)	(20,923,922,187.53)	(2,196,197,800.70)
pollution reduction 2p	43,829,630,594.73	9,916,361,562.88	20,207,951,135.52	12,768,161,717.87
pollution reduction 3p	19,869,250,603.47	9,968,124,849.00	16,846,151,860.38	12,759,915,533.48
pollution reduction 4p	(712,795,815.42)	14,073,511,016.99	19,027,176,281.58	13,439,519,066.29
pollution reduction 5p	(4,401,920,748.25)	8,990,598,907.82	4,842,642,588.44	3,228,590,420.82
Total reductionp	40	39.99986287	39.99999968	39.99998894
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET				
Tsdiff	(20,680)	(283)	(984)	(1,350)

QUARTER	26	26	27	27	28
COEFFICIENTS OF DEMAND					
a P1/q1	-0.006554475	-0.005322628	-0.004579193	-0.007240458	-0.004633851
b p2/q1	-0.002134445	-0.002153214	-0.003206333	-4.37321E-05	-1E-08
c p3/q1	-1E-08	-0.001758807	-9.99978E-09	-1E-08	0
d p4/q1	-0.002639248	-1E-08	-9.99756E-09	-0.004788388	-0.000308012
f P1/q2	-0.002134445	-0.002153214	-0.003206333	-4.37321E-05	-1E-08
g p2/q2	-0.004792039	-0.003549392	-0.003206333	-0.011057672	-0.006625391
h p3/q2	0	-1E-08	2.66231E-13	-1E-08	-1E-08
i p4/q2	-1E-08	-0.001748809	-0.003206333	-0.000130391	-0.000189476
k P1/q3	-1E-08	-0.001758807	-4.56725E-07	-1E-08	1.38796E-18
l p2/q3	3.38525E-16	-1E-08	2.3044E-13	-1E-08	-1E-08
m p3/q3	-0.013594304	-0.014610018	-0.085201485	-0.112534157	-0.055666248
n p4/q3	-0.011073256	-0.010031255	-0.000844212	2.51904E-15	-0.003247609
p P1/q4	-0.002639248	-1E-08	-6.86199E-07	-0.004788388	-0.000308012
q p2/q4	-1E-08	-0.001748809	-0.003206333	-0.000130391	-0.000189476
r p3/q4	-0.011073256	-0.010031255	-0.000844212	1.71065E-16	-0.003247609
s p4/q4	-0.017212953	-0.010031255	-0.017637635	-0.023330435	-0.018951643
u P1/q5	-0.006056898	-1E-08	-0.001590848	-0.007240458	-0.000955379
v p2/q5	-1E-08	-0.003305956	-0.003206333	-0.005789262	-0.000767072
w p3/q5	-0.005804674	-0.003487195	-0.002038444	-0.00281864	-0.011598623
x p4/q5	-1E-08	-0.002165832	-1.00003E-08	-4.88281E-05	-1E-08
y p5/q5	-0.15327613	-0.141570783	-0.169801481	-0.010572435	-0.029903872
e p5/q1	-0.006056898	-0.00000001	-0.001590848	-0.007240458	-0.000955379
j p5/q2	-0.00000001	-0.003305956	-0.003206333	-0.005789262	-0.000767072
o p5/q3	-0.005804674	-0.003487195	-0.002038444	-0.00281864	-0.011598623
t p5/q4	-0.00000001	-0.002165832	-0.00000001	-4.88281E-05	-0.00000001
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR					
aa	-0.006554475	-0.005322628	-0.004579193	-0.007240458	-0.004633851
bb	-0.002134445	-0.002153214	-0.003206333	-4.37321E-05	-1E-08
cc	-1E-08	-0.001758807	-9.99978E-09	-1E-08	-0.00000001
dd	-0.002639248	-1E-08	-9.99756E-09	-0.004788388	-0.000308012
ee	-0.006056898	-0.00000001	-0.001590848	-0.007240458	-0.000955379
ff	-0.002134445	-0.002153214	-0.003206333	-4.37321E-05	-1E-08
gg	-0.004792039	-0.003549392	-0.003206333	-0.011057672	-0.006625391
hh	-0.00000001	-1E-08	-0.00000001	-1E-08	-1E-08
ii	-1E-08	-0.001748809	-0.003206333	-0.000130391	-0.000189476
jj	-0.00000001	-0.003305956	-0.003206333	-0.005789262	-0.000767072
kk	-1E-08	-0.001758807	-4.56725E-07	-1E-08	-0.00000001
ll	-0.00000001	-1E-08	-0.00000001	-1E-08	-1E-08
mm	-0.013594304	-0.014610018	-0.085201485	-0.112534157	-0.055666248
nn	-0.011073256	-0.010031255	-0.000844212	-0.00000001	-0.003247609
oo	-0.005804674	-0.003487195	-0.002038444	-0.00281864	-0.011598623
pp	-0.002639248	-1E-08	-6.86199E-07	-0.004788388	-0.000308012
qq	-1E-08	-0.001748809	-0.003206333	-0.000130391	-0.000189476
rr	-0.011073256	-0.010031255	-0.000844212	-0.00000001	-0.003247609
ss	-0.017212953	-0.010031255	-0.017637635	-0.023330435	-0.018951643
tt	-0.00000001	-0.002165832	-0.00000001	-4.88281E-05	-0.00000001
uu	-0.006056898	-1E-08	-0.001590848	-0.007240458	-0.000955379
vv	-1E-08	-0.003305956	-0.003206333	-0.005789262	-0.000767072
ww	-0.005804674	-0.003487195	-0.002038444	-0.00281864	-0.011598623
xx	-1E-08	-0.002165832	-1.00003E-08	-4.88281E-05	-1E-08
yy	-0.15327613	-0.141570783	-0.169801481	-0.010572435	-0.029903872
KNOWN PRICE BEFORE TAXES					
P1	15,431	15,431	15,567	15,567	15,455
P2	19,902	19,902	19,188	19,188	19,656
P3	27,762	27,762	27,017	27,017	26,609
P4	18,315	18,315	18,483	18,483	20,731
P5	32,687	32,687	35,356	35,356	37,800

QUARTER	26	26	27	27	28
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM					
Asub1	265,131	265,131	260,198	260,198	197,449
Csub1	81,642	81,642	65,061	65,061	53,775
Fsub1	105,976	105,976	96,373	96,373	85,218
Gsub1	194,344	194,344	201,744	201,744	191,863
Asub2	443,230	443,230	473,236	473,236	394,156
Csub2	295,194	295,194	243,985	243,985	242,241
Fsub2	519,200	519,200	449,608	449,608	398,823
Gsub2	612,909	612,909	567,343	567,343	517,012
Asub3	75,960	75,960	93,865	93,865	88,309
Csub3	125,421	125,421	96,689	96,689	110,266
Fsub3	125,855	125,855	108,285	108,285	124,161
Gsub3	138,857	138,857	128,316	128,316	154,084
asub4	92,958	92,958	101,068	101,068	81,992
Csub4	96,564	96,564	89,200	89,200	105,204
fsub4	256,424	256,424	243,090	243,090	235,586
gsub4	258,315	258,315	220,705	220,705	226,826
asub5	132,737	132,737	122,858	122,858	122,106
Csub5	13,466	13,466	10,842	10,842	10,213
fsub5	75,610	75,610	60,485	60,485	58,268
gsub5	92,465	92,465	101,672	101,672	96,919
TOTAL SALES IN EACH SEGMENT BEFORE TAXES					
tseg1	647,093	647,093	623,376	623,376	528,305
tseg2	1,870,533	1,870,533	1,734,172	1,734,172	1,552,232
tseg3	466,093	466,093	427,155	427,155	476,820
tseg4	704,261	704,261	654,063	654,063	649,608
tseg5	314,278	314,278	295,857	295,857	287,506
tsum	4,002,258	4,002,258	3,734,623	3,734,623	3,494,471
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j					
Elasiticity11	(3.64)	(4.48)	(5.45)	(3.45)	(6.31)
Elasiticity21	2.09	3.51	6.72	0.02	0.00
Elasiticity31	0.00	0.97	0.00	0.00	0.00
Elasiticity41	0.66	0.00	0.00	0.84	0.14
Elasiticity51	0.30	0.00	0.12	5.36	0.49
Elasiticity12	0.56	0.94	1.96	0.00	0.00
Elasiticity22	(2.22)	(3.00)	(3.45)	(1.00)	(1.91)
Elasiticity32	0.00	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.48	0.60	0.01	0.02
Elasiticity52	0.00	0.11	0.12	1.01	0.09
Elasiticity13	0.00	0.75	0.00	0.00	0.00
Elasiticity23	0.00	0.00	0.00	0.00	0.00
Elasiticity33	(4.38)	(4.08)	(0.74)	(0.56)	(1.00)
Elasiticity43	1.86	2.69	0.02	0.00	0.13
Elasiticity53	0.20	0.12	0.01	0.20	0.55
Elasiticity14	0.51	0.00	0.00	0.67	0.08
Elasiticity24	0.00	1.39	1.66	0.01	0.05
Elasiticity34	1.87	2.70	0.02	0.00	0.13
Elasiticity44	(1.51)	(2.59)	(1.60)	(1.21)	(1.68)
Elasiticity54	0.00	0.07	0.00	0.01	0.00
Elasiticity15	0.30	0.00	0.11	4.98	0.37
Elasiticity25	0.00	0.42	0.38	3.21	0.26
Elasiticity35	0.25	0.15	0.01	0.22	0.64
Elasiticity45	0.00	0.09	0.00	0.01	0.00
Elasiticity55	(0.68)	(0.73)	(0.70)	(11.30)	(4.40)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM					
MCasub1	11,931	13,180	12,662	12,288	14,455
MCcsub1	14,071	14,291	14,470	14,580	15,181
MCfsub1	12,767	13,822	13,588	13,248	14,958

QUARTER	26	26	27	27	28
MCgsub1	11,931	13,180	12,662	12,288	14,455
MCasub2	17,075	17,019	16,118	13,219	16,962
MCcsub2	18,240	18,392	17,877	16,413	18,044
MCfsub2	17,075	17,019	16,464	13,831	16,962
MCgsub2	16,402	16,402	15,688	12,288	16,156
MCasub3	25,043	24,904	18,681	16,105	19,997
MCcsub3	25,043	24,904	18,681	16,105	19,997
MCfsub3	23,054	23,182	17,461	14,659	18,245
MCgsub3	22,762	22,762	15,688	12,288	16,156
MCasub4	15,198	15,583	15,103	14,810	18,721
MCcsub4	15,086	15,583	16,045	16,058	18,302
MCfsub4	12,347	13,537	12,662	12,288	15,731
MCgsub4	11,931	13,180	12,662	12,288	15,731
MCasub5	10,176	11,846	12,370	29,162	32,800
MCcsub5	29,325	29,086	32,432	33,081	36,106
MCfsub5	19,628	19,179	23,269	31,098	34,457
MCgsub5	16,402	16,402	15,688	29,162	32,800
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM					
e	-0.006056898	-0.00000001	-0.001590848	-0.007240458	-0.000955379
j	-0.00000001	-0.003305956	-0.003206333	-0.005789262	-0.000767072
o	-0.005804674	-0.003487195	-0.002038444	-0.00281864	-0.011598623
t	-0.00000001	-0.002165832	-0.00000001	-4.88281E-05	-0.00000001
y	-0.15327613	-0.141570783	-0.169801481	-0.010572435	-0.029903872
MARKUP FOR EACH FIRM BY SEGMENT					
XMCasub1	3,500	2,251	2,905	3,279	1,000
XMCcsub1	1,360	1,139	1,097	987	274
XMCfsub1	2,664	1,609	1,979	2,319	497
XMCgsub1	3,500	2,251	2,905	3,279	1,000
XMCasub2	2,827	2,883	3,070	5,970	2,694
XMCcsub2	1,662	1,510	1,312	2,775	1,612
XMCfsub2	2,827	2,883	2,724	5,358	2,694
XMCgsub2	3,500	3,500	3,500	6,900	3,500
XMCasub3	2,718	2,858	8,336	10,912	6,612
XMCcsub3	2,718	2,858	8,336	10,912	6,612
XMCfsub3	4,708	4,580	9,556	12,358	8,364
XMCgsub3	5,000	5,000	11,329	14,729	10,453
XMCasub4	3,117	2,733	3,380	3,672	2,010
XMCcsub4	3,229	2,733	2,437	2,425	2,430
XMCfsub4	5,968	4,778	5,821	6,194	5,000
XMCgsub4	6,384	5,135	5,821	6,194	5,000
XMCasub5	22,512	20,841	22,987	6,194	5,000
XMCcsub5	3,362	3,601	2,924	2,275	1,694
XMCfsub5	13,059	13,508	12,087	4,258	3,343
XMCgsub5	16,285	16,285	19,668	6,194	5,000
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT					
constant1	27,427	23,723	24,453	25,430	18,378
constant2	30,247	30,205	29,793	40,190	30,283
constant3	43,721	43,870	64,567	75,920	58,596
constant4	37,307	34,007	35,940	36,968	35,048
constant5	87,484	86,515	93,016	54,273	53,624
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES					
TSseg1	5,882,817,374	3,980,470,622	4,373,769,768	4,876,684,115	1,218,511,582
TSseg2	15,031,929,155	15,001,845,389	14,178,788,819	28,035,644,346	12,584,246,275
TSseg3	5,553,377,992	5,600,217,053	12,096,583,716	15,752,072,555	11,588,132,294
TSseg4	10,468,725,667	8,595,334,741	8,967,564,066	9,505,589,525	7,382,531,929
TSseg5	14,137,286,312	13,800,388,862	14,116,093,034	4,471,408,450	3,581,887,859
Tssum	51,074,136,500	46,978,256,667	53,732,799,403	62,641,398,990	36,355,309,939
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES					
CSseg1	3,881,321,861	2,682,741,302	2,769,721,686	3,074,309,118	772,082,484

QUARTER	26	26	27	27	28
CSseg2	9,675,203,441	9,636,234,682	9,195,311,064	18,209,889,299	8,248,387,861
CSseg3	3,719,179,788	3,753,989,295	8,019,728,417	10,444,679,991	7,626,054,609
CSseg4	6,687,464,955	5,525,633,386	5,709,013,629	6,045,212,163	4,650,057,068
CSseg5	8,610,625,698	8,458,345,675	8,529,516,482	2,798,358,259	2,274,662,654
Cssum	32,573,795,743	30,056,944,340	34,223,291,277	40,572,448,829	23,571,244,676
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES					
PSseg1	2,001,495,513	1,297,729,321	1,604,048,082	1,802,374,996	446,429,098
PSseg2	5,356,725,715	5,365,610,707	4,983,477,755	9,825,755,046	4,335,858,414
PSseg3	1,834,198,204	1,846,227,758	4,076,855,299	5,307,392,564	3,962,077,686
PSseg4	3,781,260,711	3,069,701,354	3,258,550,437	3,460,377,363	2,732,474,862
PSseg5	5,526,660,614	5,342,043,186	5,586,576,552	1,673,050,191	1,307,225,205
Pssum	18,500,340,757	16,921,312,326	19,509,508,125	22,068,950,161	12,784,065,264
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES					
CStravseg1	5,055,414,063	5,055,414,063	4,870,125,000	4,870,125,000	4,127,382,813
CStravseg2	14,613,539,063	14,613,539,063	13,548,218,750	13,548,218,750	12,126,812,500
CStravseg3	3,641,351,563	3,641,351,563	3,337,148,438	3,337,148,438	3,725,156,250
CStravseg4	5,502,039,063	5,502,039,063	5,109,867,188	5,109,867,188	5,075,062,500
CStravseg5	2,455,296,875	2,455,296,875	2,311,382,813	2,311,382,813	2,246,140,625
Cstravsum	31,267,640,625	31,267,640,625	29,176,742,188	29,176,742,188	27,300,554,688
FIRST ORDER CONDITIONS UNDER LSET					
foc1l	1.45073E-05	-0.000143227	0.002440543	1.85588E-05	-0.000185574
foc2l	-1.50087E-08	-4.16607E-05	0.000382391	2.17892E-06	0.001031266
foc3l	-2.63742E-05	0.000118576	-0.000619317	7.67786E-07	-3.54031E-05
foc4l	1.15109E-05	-4.96307E-05	-0.00033415	1.57494E-05	-0.00119503
foc5l	1.70953E-05	-0.000173641	0.002449785	1.88377E-05	-0.000185752
foc6l	-1.52328E-08	-0.000104849	0.000382648	2.50663E-06	0.001031542
foc7l	-1.85073E-05	0.000167978	-0.000626255	7.78679E-07	-3.54118E-05
foc8l	6.29933E-06	-1.19038E-05	-0.0003397	1.55299E-05	-0.001195319
foc9l	1.1693E-05	-0.0001656	0.002450302	1.86916E-05	-0.000185701
foc10l	-1.50899E-08	-6.45845E-05	0.000384295	2.30654E-06	0.001031404
foc11l	-3.63326E-05	0.000145235	-0.000623572	7.7998E-07	-3.54235E-05
foc12l	1.80675E-05	-4.3191E-05	-0.000333035	1.56645E-05	-0.001195164
foc13l	9.91112E-06	-0.000152381	0.002442633	1.86047E-05	-0.000185575
foc14l	-1.51397E-08	-3.50279E-05	0.000383491	2.20136E-06	0.001031198
foc15l	-4.19516E-05	0.000122877	-0.000621554	7.74032E-07	-3.54199E-05
foc16l	2.17843E-05	-6.14076E-05	-0.000336732	1.57453E-05	-0.001194946
foc17l	-1.9722E-05	0.000181653	-0.004584701	7.23611E-06	-0.001005063
foc18l	-2.24212E-05	0.000271831	-0.004597726	7.7513E-06	-0.001005489
foc19l	-1.71607E-05	0.000221964	-0.004599196	7.4277E-06	-0.001005201
foc20l	-1.53564E-05	0.000179364	-0.004590778	7.2705E-06	-0.001004867
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET					
p1a1l	16,199	16,199	16,106	16,142	16,036
p1c1l	16,199	16,199	16,106	16,142	16,036
p1f1l	16,199	16,199	16,106	16,142	16,036
p1g1l	16,199	16,199	16,106	16,142	16,036
p2a2l	20,619	20,599	19,950	20,002	20,459
p2c2l	20,619	20,599	19,950	20,002	20,459
p2f2l	20,619	20,599	19,950	20,002	20,459
p2g2l	20,619	20,599	19,950	20,002	20,459
p3a3l	28,853	28,830	27,888	27,947	27,488
p3c3l	28,853	28,830	27,888	27,947	27,488
p3f3l	28,853	28,830	27,888	27,947	27,488
p3g3l	28,853	28,830	27,888	27,947	27,488
p4a4l	19,302	19,284	19,355	19,414	21,597
p4c4l	19,302	19,284	19,355	19,414	21,597
p4f4l	19,302	19,284	19,355	19,414	21,597
p4g4l	19,302	19,284	19,355	19,414	21,597
p5a5l	39,934	31,474	38,723	36,260	42,549
p5c5l	39,934	31,474	38,723	36,260	42,549
p5f5l	39,934	31,474	38,723	36,260	42,549

QUARTER	26	26	27	27	28
p5g5l	39,934	31,474	38,723	36,260	42,549
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET					
lemp_a1	2.34	2.40	2.49	2.34	2.44
lemp_c1	2.34	2.40	2.49	2.34	2.44
lemp_f1	2.34	2.40	2.49	2.34	2.44
lemp_g1	2.34	2.40	2.49	2.34	2.44
lemp_a2	3.31	3.40	3.53	3.30	3.46
lemp_c2	3.31	3.40	3.53	3.30	3.46
lemp_f2	3.31	3.40	3.53	3.30	3.46
lemp_g2	3.31	3.40	3.53	3.30	3.46
lemp_a3	3.79	3.89	4.04	3.78	3.95
lemp_c3	3.79	3.89	4.04	3.78	3.95
lemp_f3	3.79	3.89	4.04	3.78	3.95
lemp_g3	3.79	3.89	4.04	3.78	3.95
lemp_a4	3.79	3.89	4.04	3.78	3.95
lemp_c4	3.79	3.89	4.04	3.78	3.95
lemp_f4	3.79	3.89	4.04	3.78	3.95
lemp_g4	3.79	3.89	4.04	3.78	3.95
lemp_a5	3.79	3.89	4.04	3.78	3.95
lemp_c5	3.79	3.89	4.04	3.78	3.95
lemp_f5	3.79	3.89	4.04	3.78	3.95
lemp_g5	3.79	3.89	4.04	3.78	3.95
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET					
Asub1nl	169,910	181,572	395,386	196,512	135,294
Csub1nl	14,134	117,998	200,622	-	-
Fsub1nl	-	31,771	231,980	32,089	30,287
Gsub1nl	72,230	62,041	337,142	138,015	131,577
Asub2nl	452,286	512,396	230,006	433,125	349,547
Csub2nl	278,550	202,866	-	203,217	198,458
Fsub2nl	527,967	565,407	205,558	409,193	352,834
Gsub2nl	636,210	736,995	323,697	527,197	470,454
Asub3nl	-	141,891	90,601	90,756	57,289
Csub3nl	56,447	81,332	93,399	93,534	79,084
Fsub3nl	29,691	165,256	105,003	105,153	93,617
Gsub3nl	36,383	228,658	125,047	125,204	123,826
asub4nl	144,959	-	133,096	104,315	77,513
Csub4nl	139,048	139,392	121,325	92,701	99,621
fsub4nl	317,549	183,501	275,228	246,432	230,725
gsub4nl	326,333	122,526	252,788	223,946	222,726
asub5nl	179,867	115,187	139,643	164,833	253,292
Csub5nl	58,948	-	27,626	53,932	142,497
fsub5nl	123,787	58,769	77,274	102,903	187,064
gsub5nl	141,726	73,750	118,461	143,646	224,502
TOTAL SALES IN EACH SEGMENT AFTER LSET					
tseg1nl	256,274	393,381	1,165,130	366,616	297,159
tseg2nl	1,895,013	2,017,665	759,261	1,572,731	1,371,294
tseg3nl	122,521	617,137	414,050	414,646	353,816
tseg4nl	927,890	445,419	782,437	667,394	630,585
tseg5nl	504,327	247,706	363,004	465,313	807,356
tsumnl	3,706,025	3,721,308	3,483,882	3,486,701	3,460,210
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1l	390,819	253,712	(541,754)	256,760	231,146
lostsales2l	(24,480)	(147,132)	974,911	161,441	180,938
lostsales3l	343,572	(151,044)	13,105	12,509	123,004
lostsales4l	(223,629)	258,842	(128,374)	(13,331)	19,023
lostsales5l	(190,049)	66,572	(67,147)	(169,456)	(519,850)
lostsuml	296,233	280,950	250,741	247,922	34,261
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET					
CSlsetseg1	1,438,739,703	1,479,845,941	4,862,845,281	1,702,579,381	348,056,608
CSlsetseg2	9,122,589,597	9,691,231,573	3,736,665,402	15,874,856,470	6,735,893,447

QUARTER	26	26	27	27	28
CSlsetseg3	910,809,755	4,640,930,074	7,593,405,123	9,946,003,561	5,503,214,477
CSlsetseg4	8,353,248,817	3,279,122,010	6,488,408,481	5,857,682,192	4,241,016,556
CSlsetseg5	11,990,213,761	6,816,906,807	9,854,370,841	4,190,899,740	4,470,538,721
Cslsetsum	31,815,601,633	25,908,036,406	32,535,695,128	37,572,021,343	21,298,719,809
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET					
PSlsetseg1	879,803,025	760,828,517	2,650,204,330	1,118,463,221	250,079,650
PSlsetseg2	4,898,028,750	5,403,036,873	2,254,238,128	8,659,174,008	3,627,058,761
PSlsetseg3	466,662,979	2,498,667,504	3,862,964,910	5,057,381,957	2,896,535,089
PSlsetseg4	4,718,471,690	1,813,985,346	3,648,099,921	3,366,060,692	2,509,247,337
PSlsetseg5	11,241,561,538	3,814,592,347	7,380,865,722	2,350,510,249	6,191,571,062
Pslsetsum	22,204,527,982	14,291,110,587	19,796,373,012	20,551,590,127	15,474,491,898
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSlsetseg1	2,318,542,729	2,240,674,459	7,513,049,611	2,821,042,602	598,136,258
TSlsetseg2	14,020,618,347	15,094,268,446	5,990,903,530	24,534,030,478	10,362,952,208
TSlsetseg3	1,377,472,734	7,139,597,578	11,456,370,033	15,003,385,517	8,399,749,565
TSlsetseg4	13,071,720,507	5,093,107,356	10,136,508,402	9,223,742,884	6,750,263,892
TSlsetseg5	23,231,775,299	10,631,499,153	17,235,236,563	6,541,409,989	10,662,109,783
Tslsetsum	54,020,129,615	40,199,146,993	52,332,068,139	58,123,611,470	36,773,211,707
dwllset	(2,945,993,115)	6,779,109,674	1,400,731,263	4,517,787,520	(417,901,768)
surpluslset	85,287,770,240	71,466,787,618	81,508,810,327	87,300,353,658	64,073,766,395
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM					
LSET	152.99	145.63	135.07	154.03	140.67
ABATEMENT CONSTANT FROM ABATEMENT EQUATION					
Abate1	840	840	840	840	840
Abate2	1680	1680	1680	1680	1680
Abate3	2200	2200	2200	2200	2200
Abate4	2200	2200	2200	2200	2200
Abate5	1680	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER					
max emis1	7.5	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES					
cur_emis1	4.2	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET					
taxrevlsetseg1	91,870,466	137,586,415	392,459,535	131,870,483	102,148,596
taxrevlsetseg2	960,723,904	997,989,086	361,681,446	800,028,570	666,636,686
taxrevlsetseg3	71,081,036	349,313,211	225,706,803	241,371,188	196,830,885
taxrevlsetseg4	538,318,743	252,116,845	426,521,917	388,499,198	350,799,754
taxrevlsetseg5	292,587,287	140,207,027	197,880,938	270,865,130	449,138,856
taxrevlsetsum	1,954,581,436	1,877,212,585	1,604,250,638	1,832,634,571	1,765,554,778
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET					
taxa1	358.49	349.75	336.84	359.70	343.75
taxc1	358.49	349.75	336.84	359.70	343.75
taxf1	358.49	349.75	336.84	359.70	343.75
taxg1	358.49	349.75	336.84	359.70	343.75
taxa2	506.97	494.63	476.36	508.69	486.14
taxc2	506.97	494.63	476.36	508.69	486.14

QUARTER	26	26	27	27	28
taxf2	506.97	494.63	476.36	508.69	486.14
taxg2	506.97	494.63	476.36	508.69	486.14
taxa3	580.15	566.02	545.12	582.11	556.31
taxc3	580.15	566.02	545.12	582.11	556.31
taxf3	580.15	566.02	545.12	582.11	556.31
taxg3	580.15	566.02	545.12	582.11	556.31
taxa4	580.15	566.02	545.12	582.11	556.31
taxc4	580.15	566.02	545.12	582.11	556.31
taxf4	580.15	566.02	545.12	582.11	556.31
taxg4	580.15	566.02	545.12	582.11	556.31
taxa5	580.15	566.02	545.12	582.11	556.31
taxc5	580.15	566.02	545.12	582.11	556.31
taxf5	580.15	566.02	545.12	582.11	556.31
taxg5	580.15	566.02	545.12	582.11	556.31
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET					
pollution reduction 1	(9,766,213,063)	(1,557,933,545)	45,309,038,677	(1,964,153,621)	(2,890,339,232)
pollution reduction 2	21,122,329,619	25,280,578,276	(32,472,368,360)	10,543,041,436	5,080,788,561
pollution reduction 3	(5,734,680,623)	15,572,035,566	6,960,450,404	8,261,414,553	3,609,181,794
pollution reduction 4	24,384,026,479	2,410,518,296	16,828,614,037	14,100,319,272	11,237,211,002
pollution reduction 5	9,994,537,594	(1,705,199,077)	3,374,261,125	9,059,378,381	22,963,158,041
Total reduction	40.00000001	39.99999952	39.99999588	40.00000002	40.00000016
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM					
PMET	0.00602	0.00470	0.00648	0.00399	0.00875
FIRST ORDER CONDITIONS UNDER LSET					
foc1p	-4.11963E-06	-0.000113019	0.002273899	1.07302E-05	2.30606E-06
foc2p	1.40768E-10	0.000802676	0.000581885	-3.34832E-07	-6.59022E-06
foc3p	8.00164E-06	0.000100313	-0.000305351	1.71244E-07	-4.70337E-07
foc4p	-3.8356E-06	-0.000304551	-0.000225817	1.27682E-05	7.54659E-06
foc5p	-2.69229E-06	-0.00010664	0.002297489	1.16258E-05	1.45526E-06
foc6p	6.8429E-11	0.000768512	-0.001864629	2.04724E-06	-5.05908E-06
foc7p	1.22514E-05	0.000110574	-0.000311972	1.54997E-07	-4.10566E-07
foc8p	-6.65521E-06	-0.000268512	-0.000223379	1.04253E-05	5.91393E-06
foc9p	-6.93417E-06	-0.00013546	0.002277319	1.09705E-05	2.17902E-06
foc10p	1.58993E-11	0.000779747	0.000586073	-1.10693E-07	-6.45249E-06
foc11p	-1.95705E-06	0.00012698	-0.000304833	1.61967E-07	-4.90192E-07
foc12p	2.72148E-06	-0.00029811	-0.000223416	1.261E-05	7.41264E-06
foc13p	-8.71696E-06	-0.000122211	0.002357719	1.0776E-05	2.30549E-06
foc14p	2.06224E-10	0.000809277	-0.009535035	-3.14172E-07	-6.65854E-06
foc15p	-7.5784E-06	0.000104654	-0.000297913	1.62423E-07	-4.86853E-07
foc16p	6.43964E-06	-0.000316324	-0.00022031	1.27557E-05	7.63056E-06
foc17p	7.04931E-06	0.000151603	-0.004716019	-1.50147E-06	1.36244E-05
foc18p	5.54198E-06	0.000608726	-0.004698228	2.22878E-06	1.08105E-05
foc19p	9.61089E-06	0.000191925	-0.004729654	-1.19438E-06	1.34867E-05
foc20p	1.14164E-05	0.000149377	-0.004943079	-1.48245E-06	1.382E-05
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET					
p1a1	15,730.66	15,809.05	15,720.12	15,702.15	15,557.26
p1c1	15,730.66	15,809.05	15,720.12	15,702.15	15,557.26
p1f1	15,730.66	15,809.05	15,720.12	15,702.15	15,557.26
p1g1	15,730.66	15,809.05	15,720.12	15,702.15	15,557.26
p2a2	20,099.52	20,084.27	19,451.13	19,502.13	20,069.20
p2c2	20,099.52	20,084.27	19,451.13	19,502.13	20,069.20
p2f2	20,099.52	20,084.27	19,451.13	19,502.13	20,069.20
p2g2	20,099.52	20,084.27	19,451.13	19,502.13	20,069.20
p3a3	28,203.25	28,326.11	27,720.95	27,393.34	26,961.83
p3c3	28,203.25	28,326.11	27,720.95	27,393.34	26,961.83
p3f3	28,203.25	28,326.11	27,720.95	27,393.34	26,961.83
p3g3	28,203.25	28,326.11	27,720.95	27,393.34	26,961.83
p4a4	18,968.74	18,732.61	18,817.66	18,835.89	21,360.32
p4c4	18,968.74	18,732.61	18,817.66	18,835.89	21,360.32

QUARTER	26	26	27	27	28
p4f4	18,968.74	18,732.61	18,817.66	18,835.89	21,360.32
p4g4	18,968.74	18,732.61	18,817.66	18,835.89	21,360.32
p5a5	32,889.80	33,032.79	35,232.17	35,724.75	38,227.02
p5c5	32889.7955	33032.78791	35232.16979	35724.75126	38227.0235
p5f5	32889.7955	33032.78791	35232.16979	35724.75126	38227.0235
p5g5	32889.7955	33032.78791	35232.16979	35724.75126	38227.0235
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST					
dp/dgas1	6,089	20,281	11,972	15,173	1,940
dp/dgas2	23,391	26,954	17,651	40,864	28,417
dp/dgas3	16,308	43,427	96,951	45,138	19,070
dp/dgas4	74,326	33,808	21,909	39,529	61,657
dp/dgas5	151,914	5,652	106,974	29,717	145,288
sum of dpdgas	272,029	130,122	255,457	170,421	256,372
MILES TRAVELED IN EACH SEGMENT UNDER PMET					
VMT1	11,735	11,871	11,803	11,863	11,433
VMT2	11,808	11,842	11,771	11,882	11,790
VMT3	11,737	11,858	11,888	11,871	11,707
VMT4	11,877	11,839	11,765	11,863	11,837
VMT5	11,877	11,839	11,765	11,863	11,837
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT					
tpma1	0.02881	0.01395	0.02132	0.01486	0.06156
tpmc1	0.02881	0.01395	0.02132	0.01486	0.06156
tpmf1	0.02881	0.01395	0.02132	0.01486	0.06156
tpmg1	0.02881	0.01395	0.02132	0.01486	0.06156
tpma2	0.02079	0.01711	0.02483	0.01281	0.02275
tpmc2	0.02079	0.01711	0.02483	0.01281	0.02275
tpmf2	0.02079	0.01711	0.02483	0.01281	0.02275
tpmg2	0.02079	0.01711	0.02483	0.01281	0.02275
tpma3	0.02849	0.01543	0.01213	0.01395	0.03177
tpmc3	0.02849	0.01543	0.01213	0.01395	0.03177
tpmf3	0.02849	0.01543	0.01213	0.01395	0.03177
tpmg3	0.02849	0.01543	0.01213	0.01395	0.03177
tpma4	0.01334	0.01749	0.02551	0.01490	0.01767
tpmc4	0.01334	0.01749	0.02551	0.01490	0.01767
tpmf4	0.01334	0.01749	0.02551	0.01490	0.01767
tpmg4	0.01334	0.01749	0.02551	0.01490	0.01767
tpma5	0.01334	0.01749	0.02551	0.01490	0.01767
tpmc5	0.01334	0.01749	0.02551	0.01490	0.01767
tpmf5	0.01334	0.01749	0.02551	0.01490	0.01767
tpmg5	0.01334	0.01749	0.02551	0.01490	0.01767
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET					
cstravelpmetseg1	4,815,191,648	4,941,638,788	4,619,775,161	4,801,533,500	3,761,715,555
cstravelpmetseg2	14,192,129,784	14,285,358,635	13,226,066,437	13,309,016,843	11,746,308,950
cstravelpmetseg3	3,465,175,180	3,585,910,394	3,278,555,351	3,268,293,314	3,542,292,002
cstravelpmetseg4	5,412,068,427	5,332,576,665	4,891,262,329	4,992,016,111	4,957,277,412
cstravelpmetseg5	2,408,230,817	2,388,674,602	2,223,631,955	2,226,409,779	2,206,452,944
cstravelpmetsum	30,292,795,855	30,534,159,084	28,239,291,232	28,597,269,547	26,214,046,863
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET					
epm_a1	4.79	2.97	3.29	3.72	7.03
epm_c1	4.79	2.97	3.29	3.72	7.03
epm_f1	4.79	2.97	3.29	3.72	7.03
epm_g1	4.79	2.97	3.29	3.72	7.03
epm_a2	3.46	3.64	3.83	3.21	2.60
epm_c2	3.46	3.64	3.83	3.21	2.60
epm_f2	3.46	3.64	3.83	3.21	2.60

QUARTER	26	26	27	27	28
epm_g2	3.46	3.64	3.83	3.21	2.60
epm_a3	4.74	3.28	1.87	3.49	3.63
epm_c3	4.74	3.28	1.87	3.49	3.63
epm_f3	4.74	3.28	1.87	3.49	3.63
epm_g3	4.74	3.28	1.87	3.49	3.63
epm_a4	2.22	3.72	3.94	3.73	2.02
epm_c4	2.22	3.72	3.94	3.73	2.02
epm_f4	2.22	3.72	3.94	3.73	2.02
epm_g4	2.22	3.72	3.94	3.73	2.02
epm_a5	2.22	3.72	3.94	3.73	2.02
epm_c5	2.22	3.72	3.94	3.73	2.02
epm_f5	2.22	3.72	3.94	3.73	2.02
epm_g5	2.22	3.72	3.94	3.73	2.02
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET					
Asub1n	282,995	253,334	350,069	179,597	188,598
Csub1n	121,290	192,639	158,002	70,909	49,897
Fsub1n	113,085	103,534	186,663	15,173	83,591
Gsub1n	185,314	133,804	291,805	121,100	184,881
Asub2n	403,652	411,282	314,113	421,012	358,774
Csub2n	232,556	97,205	79,877	230,813	205,777
Fsub2n	479,332	464,294	289,666	397,080	362,060
Gsub2n	587,575	635,882	407,833	515,085	479,680
Asub3n	100,863	63,704	88,239	90,032	91,071
Csub3n	152,419	0	91,011	94,716	109,430
Fsub3n	130,554	87,068	102,641	104,430	127,400
Gsub3n	137,246	150,470	122,685	124,480	157,609
asub4n	53,169	90,986	117,610	107,689	59,510
Csub4n	51,313	234,089	106,610	77,986	82,282
fsub4n	225,759	274,487	259,742	249,805	212,723
gsub4n	234,542	213,512	237,297	227,320	204,724
asub5n	126,719	132,912	121,081	187,003	94,485
Csub5n	9,518	18,770	9,829	-	-
fsub5n	70,639	76,494	58,713	125,074	28,256
gsub5n	88,578	91,475	99,899	165,816	65,694
TOTAL SALES IN EACH SEGMENT AFTER PMET					
tseg1n	702,684	683,311	986,540	386,778	506,966
tseg2n	1,703,115	1,608,664	1,091,489	1,563,991	1,406,291
tseg3n	521,083	301,243	404,576	413,658	485,510
tseg4n	564,783	813,074	721,259	662,801	559,238
tseg5n	295,453	319,651	289,523	477,893	188,435
tsumn	3,787,118	3,725,942	3,493,386	3,505,120	3,146,440
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET					
CSPMETseg1	4,047,836,483	2,607,053,027	4,181,857,697	1,837,729,105	684,784,182
CSPMETseg2	8,227,108,292	7,769,650,564	5,404,920,640	15,768,222,455	6,727,511,238
CSPMETseg3	3,921,863,708	2,240,313,397	7,215,610,349	9,906,607,510	7,532,281,558
CSPMETseg4	4,898,426,870	5,969,403,112	5,973,175,506	5,813,670,548	3,522,598,160
CSPMETseg5	7,765,497,275	8,531,941,826	7,969,863,934	4,326,270,829	1,208,743,905
CsPMETsum	28,860,732,627	27,118,361,925	30,745,428,126	37,652,500,447	19,675,919,041
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET					
PSpmetseg1	2,192,626,640	1,322,494,714	2,306,664,482	1,056,167,239	419,870,377
PSpmetseg2	4,447,536,511	4,447,630,827	3,094,056,006	8,507,556,872	3,624,798,399
PSpmetseg3	1,977,411,945	1,301,396,194	3,674,095,091	5,035,176,189	3,915,874,956
PSpmetseg4	2,985,199,034	3,154,998,501	3,388,991,288	3,383,786,719	2,149,255,805
PSpmetseg5	5,016,470,557	5,282,070,102	5,288,772,591	2,612,668,407	770,452,834
Pspmetsum	16,619,244,687	15,508,590,338	17,752,579,459	20,595,355,427	10,880,252,371
TOTAL SURPLUS IN AUTO MARKET AFTER LSET					
TSPMETseg1	6,240,463,123	3,929,547,741	6,488,522,179	2,893,896,344	1,104,654,559
TSPMETseg2	12,674,644,803	12,217,281,390	8,498,976,646	24,275,779,327	10,352,309,637
TSPMETseg3	5,899,275,652	3,541,709,591	10,889,705,440	14,941,783,699	11,448,156,514
TSPMETseg4	7,883,625,904	9,124,401,612	9,362,166,795	9,197,457,268	5,671,853,964

QUARTER	26	26	27	27	28
TSPMETseg5	12,781,967,832	13,814,011,928	13,258,636,525	6,938,939,236	1,979,196,738
TSPMETsum	45,479,977,314	42,626,952,263	48,498,007,585	58,247,855,874	30,556,171,412
dwlpmet	5,623,576,889	4,292,099,907	5,191,384,893	4,407,205,917	5,839,273,401
pmetsurplus	76,718,200,236	73,953,797,385	77,718,156,697	87,410,935,261	57,816,591,226
pmetsurplus10	85,227,043,837	81,087,971,725	86,545,877,619	92,503,223,832	67,233,947,780
TAX REVENUE IN EACH SEGMENT UNDER PMET					
taxrevpmetseg1	237,535,347	113,162,511	248,283,170	68,197,768	356,813,590
taxrevpmetseg2	390,709,129	345,350,103	341,887,436	213,684,142	335,345,442
taxrevpmetseg3	174,227,918	55,110,754	58,318,995	68,484,404	180,605,475
taxrevpmetseg4	89,507,261	168,316,835	216,442,497	117,172,782	116,980,362
taxrevpmetseg5	53,447,413	110,745,834	115,925,782	98,270,746	56,628,080
taxrevpmetsum	945,427,067	792,686,038	980,857,880	565,809,841	1,046,372,950
pmetrev10	9,454,270,668	7,926,860,378	9,808,578,802	5,658,098,411	10,463,729,504
SALES LOST IN EACH SEGMENT UNDER LSET					
lostsales1	(55,591)	(36,218)	(363,164)	236,598	21,339
lostsales2	167,418	261,869	642,683	170,181	145,941
lostsales3	(54,990)	164,850	22,579	13,497	(8,690)
lostsales4	139,478	(108,813)	(67,196)	(8,738)	90,370
lostsales5	18,825	(5,373)	6,334	(182,036)	99,071
lostsum	215,140	276,316	241,237	229,503	348,031
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET					
taxa1p	175.40	282.92	255.25	225.52	119.42
taxc1p	175.40	282.92	255.25	225.52	119.42
taxf1p	175.40	282.92	255.25	225.52	119.42
taxg1p	175.40	282.92	255.25	225.52	119.42
taxa2p	486.19	461.27	438.33	523.40	646.39
taxc2p	486.19	461.27	438.33	523.40	646.39
taxf2p	486.19	461.27	438.33	523.40	646.39
taxg2p	486.19	461.27	438.33	523.40	646.39
taxa3p	464.56	670.01	1,175.56	629.49	605.95
taxc3p	464.56	670.01	1,175.56	629.49	605.95
taxf3p	464.56	670.01	1,175.56	629.49	605.95
taxg3p	464.56	670.01	1,175.56	629.49	605.95
taxa4p	991.77	591.16	558.82	589.08	1,089.56
taxc4p	991.77	591.16	558.82	589.08	1,089.56
taxf4p	991.77	591.16	558.82	589.08	1,089.56
taxg4p	991.77	591.16	558.82	589.08	1,089.56
taxa5p	991.77	591.16	558.82	589.08	1,089.56
taxc5p	991.77	591.16	558.82	589.08	1,089.56
taxf5p	991.77	591.16	558.82	589.08	1,089.56
taxg5p	991.77	591.16	558.82	589.08	1,089.56
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET					
pollution reduction 1p	(1,871,698,601.04)	11,788,965,942.85	25,782,258,697.11	(6,966,187,067.12)	(16,064,183,204.31)
pollution reduction 2p	9,714,939,706.45	1,322,654,597.90	(19,682,216,252.21)	12,437,715,531.53	22,003,741,691.50
pollution reduction 3p	6,747,169,211.74	4,196,482,920.11	17,159,024,971.70	9,815,114,572.58	11,615,877,873.75
pollution reduction 4p	19,048,294,687.88	20,451,815,121.42	15,809,516,360.94	14,590,801,602.80	21,374,436,367.60
pollution reduction 5p	6,361,294,996.29	2,239,935,492.84	931,397,333.37	10,122,555,479.32	1,070,127,267.31
Total reductionp	40	39.99985408	39.99998111	40.00000012	40
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET					
Tsdiff	(8,570)	(2,487)	(3,791)	(111)	(6,257)

QUARTER	28	29	29	30
COEFFICIENTS OF DEMAND				
a P1/q1	-0.002567184	-0.005773608	-0.005582184	-0.011050715
b p2/q1	-0.000599332	2.64762E-17	-2.64762E-17	-0.001132304
c p3/q1	-1E-08	-1E-08	-0.002520742	-2.50345E-13
d p4/q1	0	-0.001525792	2.64762E-17	3.49077E-14
f P1/q2	-0.000599332	0	-1.17016E-14	-0.001132304
g p2/q2	-0.004453684	-0.012290961	-0.012551132	-0.003013801
h p3/q2	-0.003703708	-1E-08	-0.003528849	-0.00288186
i p4/q2	-0.000957843	-0.002392544	2.57111E-14	-0.00274957
k P1/q3	-1E-08	-1E-08	-0.002520742	-5.51348E-13
l p2/q3	-0.003703708	-1E-08	-0.003528849	-0.00288186
m p3/q3	-0.052055077	-0.036824096	-0.022023467	-0.036945692
n p4/q3	-1E-08	-0.003671119	-0.008284015	6.95754E-13
p P1/q4	-1.6388E-15	-0.001525792	8.39516E-18	2.65117E-15
q p2/q4	-0.000957843	-0.002392544	2.95445E-14	-0.00274957
r p3/q4	-9.99999E-09	-0.003671119	-0.008284015	2.8846E-16
s p4/q4	-0.019208717	-0.013436678	-0.014080719	-0.013371911
u P1/q5	-0.002567184	-0.005773608	-0.005582184	-0.002196215
v p2/q5	-0.003482986	-0.012290961	-0.010543003	-0.003013801
w p3/q5	-0.005187927	-0.011352888	-7.49245E-13	-9.99965E-09
x p4/q5	-0.001072003	-1E-08	-0.007278966	-1E-08
y p5/q5	-0.032342328	-0.152204438	-0.164910267	-0.120739471
e p5/q1	-0.002567184	-0.005773608	-0.005582184	-0.002196215
j p5/q2	-0.003482986	-0.012290961	-0.010543003	-0.003013801
o p5/q3	-0.005187927	-0.011352888	-1.13993E-12	-0.00000001
t p5/q4	-0.001072003	-0.00000001	-0.007278966	-0.00000001
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR				
aa	-0.002567184	-0.005773608	-0.005582184	-0.011050715
bb	-0.000599332	-0.00000001	-2.64762E-17	-0.001132304
cc	-1E-08	-1E-08	-0.002520742	-2.50345E-13
dd	-0.00000001	-0.001525792	-0.00000001	-0.00000001
ee	-0.002567184	-0.005773608	-0.005582184	-0.002196215
ff	-0.000599332	-0.00000001	-1.17016E-14	-0.001132304
gg	-0.004453684	-0.012290961	-0.012551132	-0.003013801
hh	-0.003703708	-1E-08	-0.003528849	-0.00288186
ii	-0.000957843	-0.002392544	-0.00000001	-0.00274957
jj	-0.003482986	-0.012290961	-0.010543003	-0.003013801
kk	-1E-08	-1E-08	-0.002520742	-5.51348E-13
ll	-0.003703708	-1E-08	-0.003528849	-0.00288186
mm	-0.052055077	-0.036824096	-0.022023467	-0.036945692
nn	-1E-08	-0.003671119	-0.008284015	-0.00000001
oo	-0.005187927	-0.011352888	-1.13993E-12	-0.00000001
pp	-1.6388E-15	-0.001525792	-0.00000001	-0.00000001
qq	-0.000957843	-0.002392544	-0.00000001	-0.00274957
rr	-9.99999E-09	-0.003671119	-0.008284015	-0.00000001
ss	-0.019208717	-0.013436678	-0.014080719	-0.013371911
tt	-0.001072003	-0.00000001	-0.007278966	-0.00000001
uu	-0.002567184	-0.005773608	-0.005582184	-0.002196215
vv	-0.003482986	-0.012290961	-0.010543003	-0.003013801
ww	-0.005187927	-0.011352888	-7.49245E-13	-9.99965E-09
xx	-0.001072003	-1E-08	-0.007278966	-1E-08
yy	-0.032342328	-0.152204438	-0.164910267	-0.120739471
KNOWN PRICE BEFORE TAXES				
P1	15,455	16,224	16,224	16,494
P2	19,656	21,842	21,842	21,192
P3	26,609	28,722	28,722	26,510
P4	20,731	19,324	19,324	20,517
P5	37,800	35,523	35,523	31,235

QUARTER	28	29	29	30
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM				
Asub1	197,449	193,201	193,201	242,655
Csub1	53,775	67,824	67,824	80,007
Fsub1	85,218	95,616	95,616	105,026
Gsub1	191,863	187,950	187,950	237,065
Asub2	394,156	430,983	430,983	473,116
Csub2	242,241	277,760	277,760	349,278
Fsub2	398,823	428,984	428,984	490,221
Gsub2	517,012	488,027	488,027	612,257
Asub3	88,309	78,976	78,976	88,507
Csub3	110,266	105,478	105,478	132,231
Fsub3	124,161	122,033	122,033	121,855
Gsub3	154,084	156,235	156,235	165,960
asub4	81,992	92,328	92,328	106,288
Csub4	105,204	125,861	125,861	133,808
fsub4	235,586	254,441	254,441	289,504
gsub4	226,826	224,352	224,352	246,046
asub5	122,106	110,789	110,789	136,449
Csub5	10,213	14,383	14,383	9,262
fsub5	58,268	61,222	61,222	61,419
gsub5	96,919	80,976	80,976	93,219
TOTAL SALES IN EACH SEGMENT BEFORE TAXES				
tseg1	528,305	544,591	544,591	664,753
tseg2	1,552,232	1,625,754	1,625,754	1,924,872
tseg3	476,820	462,722	462,722	508,553
tseg4	649,608	696,982	696,982	775,646
tseg5	287,506	267,370	267,370	300,349
tsum	3,494,471	3,597,419	3,597,419	4,174,173
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j				
Elasiticity11	(11.40)	(5.16)	(5.34)	(2.25)
Elasiticity21	1.95	0.00	0.00	1.08
Elasiticity31	0.00	0.00	1.08	0.00
Elasiticity41	0.00	0.70	0.00	0.00
Elasiticity51	2.21	0.43	0.40	0.08
Elasiticity12	0.52	0.00	0.00	0.29
Elasiticity22	(2.84)	(1.09)	(1.07)	(3.65)
Elasiticity32	0.00	0.00	0.00	0.00
Elasiticity42	0.15	0.17	0.00	0.73
Elasiticity52	0.59	0.14	0.11	0.13
Elasiticity13	0.00	0.00	0.72	0.00
Elasiticity23	0.66	0.00	0.60	1.08
Elasiticity33	(1.07)	(1.69)	(2.82)	(1.41)
Elasiticity43	0.00	0.31	1.12	0.00
Elasiticity53	0.24	0.16	0.00	0.00
Elasiticity14	0.00	0.46	0.00	0.00
Elasiticity24	0.34	0.45	0.00	1.86
Elasiticity34	0.00	0.31	1.10	0.00
Elasiticity44	(1.66)	(2.06)	(1.97)	(1.98)
Elasiticity54	0.10	0.00	0.16	0.00
Elasiticity15	1.66	0.40	0.37	0.09
Elasiticity25	1.65	0.54	0.42	0.58
Elasiticity35	0.29	0.22	0.00	0.00
Elasiticity45	0.12	0.00	0.23	0.00
Elasiticity55	(4.07)	(0.87)	(0.81)	(0.86)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM				
MCasub1	14,455	14,324	14,324	12,994
MCcsub1	15,163	15,556	15,498	15,202
MCfsub1	14,874	14,927	15,038	14,652

QUARTER	28	29	29	30
MCgsub1	14,455	14,324	14,324	12,994
MCasub2	16,978	14,978	15,001	18,583
MCcsub2	18,021	17,957	17,839	19,296
MCfsub2	16,978	15,215	15,389	18,291
MCgsub2	16,156	14,324	14,324	17,692
MCasub3	19,906	24,198	24,190	21,924
MCcsub3	19,906	24,198	24,190	20,646
MCfsub3	18,356	22,579	22,151	20,646
MCgsub3	16,156	21,204	21,204	18,672
MCasub4	18,614	16,502	16,598	17,762
MCcsub4	18,452	16,502	16,598	17,762
MCfsub4	15,731	14,324	14,324	15,294
MCgsub4	15,731	14,324	14,324	15,517
MCasub5	31,587	11,370	10,976	12,862
MCcsub5	35,927	28,308	28,905	28,931
MCfsub5	33,631	18,958	18,481	22,167
MCgsub5	31,587	14,324	14,324	17,692
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM				
e	-0.002567184	-0.005773608	-0.005582184	-0.002196215
j	-0.003482986	-0.012290961	-0.010543003	-0.003013801
o	-0.005187927	-0.011352888	-1.13993E-12	-0.00000001
t	-0.001072003	-0.00000001	-0.00727896	-0.00000001
y	-0.032342328	-0.152204438	-0.164910267	-0.120739471
MARKUP FOR EACH FIRM BY SEGMENT				
XMCasub1	1,000	1,900	1,900	3,500
XMCcsub1	292	668	726	1,293
XMCfsub1	582	1,297	1,186	1,843
XMCgsub1	1,000	1,900	1,900	3,500
XMCasub2	2,677	6,864	6,841	2,609
XMCcsub2	1,635	3,885	4,003	1,896
XMCfsub2	2,677	6,627	6,453	2,901
XMCgsub2	3,500	7,518	7,518	3,500
XMCasub3	6,703	4,524	4,532	4,586
XMCcsub3	6,703	4,524	4,532	5,864
XMCfsub3	8,253	6,143	6,571	5,864
XMCgsub3	10,453	7,518	7,518	7,838
XMCasub4	2,117	2,822	2,726	2,754
XMCcsub4	2,279	2,822	2,726	2,754
XMCfsub4	5,000	5,000	5,000	5,223
XMCgsub4	5,000	5,000	5,000	5,000
XMCasub5	6,214	24,154	24,547	18,374
XMCcsub5	1,874	7,215	6,618	2,304
XMCfsub5	4,170	16,565	17,042	9,068
XMCgsub5	6,214	21,199	21,199	13,544
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT				
constant1	18,480	21,975	21,923	26,680
constant2	30,275	46,778	46,699	32,249
constant3	58,670	51,355	51,796	50,846
constant4	35,004	35,109	34,918	36,181
constant5	57,032	104,598	104,869	74,761
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES				
TSseg1	1,253,574,645	2,459,522,292	2,438,589,038	5,361,300,413
TSseg2	12,570,415,966	30,818,910,114	30,702,807,910	16,103,623,792
TSseg3	11,610,352,831	7,995,235,421	8,150,893,730	9,384,815,937
TSseg4	7,361,409,474	8,510,393,295	8,422,877,947	9,478,714,291
TSseg5	4,387,581,421	14,744,692,447	14,845,147,399	10,884,244,990
Tssum	37,183,334,337	64,528,753,569	64,560,316,023	51,212,699,424
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES				
CSseg1	798,967,174	1,566,080,024	1,551,789,916	3,385,310,218

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CSseg2	8,241,874,307	20,269,801,396	20,205,530,747	10,641,988,567
CSseg3	7,643,779,447	5,236,512,871	5,338,508,416	6,188,087,626
CSseg4	4,635,973,938	5,500,751,720	5,434,152,343	6,075,030,866
CSseg5	2,764,565,759	9,234,220,742	9,270,479,800	6,536,362,161
Cssum	24,085,160,625	41,807,366,753	41,800,461,222	32,826,779,438
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES				
PSseg1	454,607,471	893,442,268	886,799,122	1,975,990,195
PSseg2	4,328,541,659	10,549,108,718	10,497,277,163	5,461,635,226
PSseg3	3,966,573,384	2,758,722,549	2,812,385,314	3,196,728,311
PSseg4	2,725,435,536	3,009,641,576	2,988,725,604	3,403,683,425
PSseg5	1,623,015,661	5,510,471,704	5,574,667,599	4,347,882,829
Pssum	13,098,173,711	22,721,386,816	22,759,854,801	18,385,919,986
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES				
CStravseg1	4,127,382,813	4,254,617,188	4,254,617,188	5,193,382,813
CStravseg2	12,126,812,500	12,701,203,125	12,701,203,125	15,038,062,500
CStravseg3	3,725,156,250	3,615,015,625	3,615,015,625	3,973,070,313
CStravseg4	5,075,062,500	5,445,171,875	5,445,171,875	6,059,734,375
CStravseg5	2,246,140,625	2,088,828,125	2,088,828,125	2,346,476,563
Cstravsum	27,300,554,688	28,104,835,938	28,104,835,938	32,610,726,563
FIRST ORDER CONDITIONS UNDER LSET				
foc1l	-1.20312E-08	3.23562E-05	-3.43044E-08	-0.267033896
foc2l	1.38758E-06	4.57325E-05	4.7304E-05	0.085979397
foc3l	7.11729E-06	5.23796E-05	2.40509E-07	-0.031341877
foc4l	-4.6101E-06	5.23834E-05	2.91091E-07	-0.000140191
foc5l	-6.42922E-09	3.23572E-05	1.92304E-07	-0.25030769
foc6l	1.44523E-06	4.57333E-05	4.73878E-05	0.080531681
foc7l	7.21645E-06	5.23773E-05	1.17094E-07	-0.03080383
foc8l	-4.71537E-06	5.23824E-05	1.95758E-07	-0.00013226
foc9l	-1.06049E-08	3.23569E-05	8.91239E-08	-0.251756409
foc10l	1.23579E-06	4.57313E-05	4.59897E-05	0.08092413
foc11l	8.06535E-06	5.23806E-05	1.7997E-07	-0.031886424
foc12l	-4.8168E-06	5.23831E-05	1.50837E-07	-0.000133592
foc13l	-1.51994E-08	3.23573E-05	3.08695E-07	-0.265494897
foc14l	1.15744E-06	4.57327E-05	4.64095E-05	0.085424238
foc15l	8.22749E-06	5.23793E-05	8.75102E-08	-0.031992131
foc16l	-4.79691E-06	5.23831E-05	1.53069E-07	-0.000140126
foc17l	-1.35756E-05	5.24632E-05	-0.000513027	0.210191706
foc18l	-1.37443E-05	5.24635E-05	-0.000511536	0.197088776
foc19l	-1.3364E-05	5.24646E-05	-0.000503598	0.198231754
foc20l	-1.31806E-05	5.24607E-05	-0.000505639	0.208991381
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET				
p1a1l	16,101	16,839	16,764	17,047
p1c1l	16,101	16,839	16,764	17,047
p1f1l	16,101	16,839	16,764	17,047
p1g1l	16,101	16,839	16,764	17,047
p2a2l	20,552	22,724	22,618	21,989
p2c2l	20,552	22,724	22,618	21,989
p2f2l	20,552	22,724	22,618	21,989
p2g2l	20,552	22,724	22,618	21,989
p3a3l	27,595	29,707	29,584	27,425
p3c3l	27,595	29,707	29,584	27,425
p3f3l	27,595	29,707	29,584	27,425
p3g3l	27,595	29,707	29,584	27,425
p4a4l	21,703	20,352	20,231	21,381
p4c4l	21,703	20,352	20,231	21,381
p4f4l	21,703	20,352	20,231	21,381
p4g4l	21,703	20,352	20,231	21,381
p5a5l	38,614	41,434	34,156	31,352
p5c5l	38,614	41,434	34,156	31,352
p5f5l	38,614	41,434	34,156	31,352

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p5g5l	38,614	41,434	34,156	31,352
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET				
lemp_a1	2.18	2.18	2.48	2.48
lemp_c1	2.18	2.18	2.48	2.48
lemp_f1	2.18	2.18	2.48	2.48
lemp_g1	2.18	2.18	2.48	2.48
lemp_a2	3.09	3.08	3.50	3.50
lemp_c2	3.09	3.08	3.50	3.50
lemp_f2	3.09	3.08	3.50	3.50
lemp_g2	3.09	3.08	3.50	3.50
lemp_a3	3.53	3.52	4.01	4.01
lemp_c3	3.53	3.52	4.01	4.01
lemp_f3	3.53	3.52	4.01	4.01
lemp_g3	3.53	3.52	4.01	4.01
lemp_a4	3.53	3.52	4.01	4.01
lemp_c4	3.53	3.52	4.01	4.01
lemp_f4	3.53	3.52	4.01	4.01
lemp_g4	3.53	3.52	4.01	4.01
lemp_a5	3.53	3.52	4.01	4.01
lemp_c5	3.53	3.52	4.01	4.01
lemp_f5	3.53	3.52	4.01	4.01
lemp_g5	3.53	3.52	4.01	4.01
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET				
Asub1nl	144,582	126,407	186,936	236,898
Csub1nl	16,335	-	61,201	73,747
Fsub1nl	47,876	28,421	88,648	98,780
Gsub1nl	144,919	121,293	181,309	231,117
Asub2nl	363,637	372,651	429,379	417,255
Csub2nl	211,175	219,644	276,893	307,406
Fsub2nl	365,544	371,052	427,623	447,596
Gsub2nl	484,117	429,858	486,257	557,871
Asub3nl	86,772	59,807	71,787	86,643
Csub3nl	108,767	85,999	97,613	129,798
Fsub3nl	123,051	102,823	115,217	118,863
Gsub3nl	153,075	137,134	149,635	163,689
asub4nl	71,608	96,452	88,030	102,765
Csub4nl	93,869	130,895	122,584	125,353
fsub4nl	225,300	258,222	249,411	281,153
gsub4nl	217,257	227,831	218,998	241,787
asub5nl	111,851	149,969	96,237	129,324
Csub5nl	-	53,876	-	1,941
fsub5nl	45,209	100,749	47,047	54,009
gsub5nl	83,386	120,364	66,710	85,916
TOTAL SALES IN EACH SEGMENT AFTER LSET				
tseg1nl	353,712	276,121	518,094	640,542
tseg2nl	1,424,474	1,393,205	1,620,151	1,730,127
tseg3nl	471,666	385,764	434,252	498,994
tseg4nl	608,035	713,400	679,024	751,058
tseg5nl	240,446	424,958	209,994	271,190
tsumnl	3,098,331	3,193,448	3,461,514	3,891,911
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1l	174,593	268,470	26,497	24,211
lostsales2l	127,758	232,549	5,603	194,745
lostsales3l	5,154	76,958	28,470	9,559
lostsales4l	41,573	(16,418)	17,958	24,588
lostsales5l	47,060	(157,588)	57,376	29,159
lostsuml	396,140	403,971	135,905	282,262
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET				
CSlsetseg1	420,748,586	709,114,551	1,336,412,431	3,085,196,985
CSlsetseg2	6,925,028,196	16,755,950,273	19,507,514,344	8,875,533,820

QUARTER	28	29	29	30
CSlsetseg3	7,328,704,484	4,175,689,711	4,822,811,920	5,843,625,977
CSlsetseg4	4,043,962,893	5,263,664,087	4,986,417,866	5,557,894,439
CSlsetseg5	2,214,231,304	13,420,874,489	7,424,659,516	5,886,044,537
Cslsetsum	20,932,675,462	40,325,293,110	38,077,816,077	29,248,295,758
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET				
PSlsetseg1	278,357,017	464,099,004	777,591,722	1,834,785,947
PSlsetseg2	3,718,949,083	8,809,181,665	10,163,608,835	4,643,185,034
PSlsetseg3	3,804,155,105	2,220,001,789	2,547,615,721	3,047,354,687
PSlsetseg4	2,411,937,366	2,913,594,626	2,786,336,065	3,130,820,699
PSlsetseg5	1,297,888,799	10,212,392,405	4,060,616,987	3,767,957,957
Pslsetsum	11,511,287,371	24,619,269,491	20,335,769,331	16,424,104,325
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSlsetseg1	699,105,603	1,173,213,555	2,114,004,153	4,919,982,931
TSlsetseg2	10,643,977,279	25,565,131,938	29,671,123,179	13,518,718,855
TSlsetseg3	11,132,859,589	6,395,691,500	7,370,427,641	8,890,980,664
TSlsetseg4	6,455,900,259	8,177,258,713	7,772,753,932	8,688,715,139
TSlsetseg5	3,512,120,103	23,633,266,894	11,485,276,503	9,654,002,494
Tslsetsum	32,443,962,833	64,944,562,601	58,413,585,407	45,672,400,083
dwllset	4,739,371,503	(415,809,032)	6,146,730,616	5,540,299,341
surpluslset	59,744,517,521	93,049,398,539	86,518,421,345	78,283,126,645
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM				
LSET	176.16	177.46	136.89	136.80
ABATEMENT CONSTANT FROM ABATEMENT EQUATION				
Abate1	840	840	840	840
Abate2	1680	1680	1680	1680
Abate3	2200	2200	2200	2200
Abate4	2200	2200	2200	2200
Abate5	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER				
max emis1	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES				
cur_emis1	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET				
taxrevlsetseg1	136,063,100	106,609,161	175,682,823	217,137,006
taxrevlsetseg2	774,926,410	760,720,367	776,946,714	829,428,586
taxrevlsetseg3	293,627,646	241,039,450	238,305,713	273,748,983
taxrevlsetseg4	378,521,959	445,758,707	372,629,477	412,031,858
taxrevlsetseg5	149,685,672	265,529,131	115,238,706	148,775,636
taxrevlsetsum	1,732,824,788	1,819,656,815	1,678,803,433	1,881,122,070
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET				
taxa1	384.67	386.10	339.09	338.99
taxc1	384.67	386.10	339.09	338.99
taxf1	384.67	386.10	339.09	338.99
taxg1	384.67	386.10	339.09	338.99
taxa2	544.01	546.02	479.55	479.40
taxc2	544.01	546.02	479.55	479.40

QUARTER	28	29	29	30
taxf2	544.01	546.02	479.55	479.40
taxg2	544.01	546.02	479.55	479.40
taxa3	622.53	624.84	548.77	548.60
taxc3	622.53	624.84	548.77	548.60
taxf3	622.53	624.84	548.77	548.60
taxg3	622.53	624.84	548.77	548.60
taxa4	622.53	624.84	548.77	548.60
taxc4	622.53	624.84	548.77	548.60
taxf4	622.53	624.84	548.77	548.60
taxg4	622.53	624.84	548.77	548.60
taxa5	622.53	624.84	548.77	548.60
taxc5	622.53	624.84	548.77	548.60
taxf5	622.53	624.84	548.77	548.60
taxg5	622.53	624.84	548.77	548.60
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET				
pollution reduction 1	1,644,467,383	(3,923,741,422)	9,661,677,684	12,277,781,283
pollution reduction 2	13,945,791,613	9,569,239,271	13,323,826,601	6,730,722,426
pollution reduction 3	11,004,133,427	7,314,497,410	7,086,644,100	8,691,432,070
pollution reduction 4	13,347,385,815	17,336,555,361	11,718,519,044	12,837,061,437
pollution reduction 5	58,221,761	9,703,433,235	(1,790,667,479)	(536,991,251)
Total reduction	40	39.99998385	39.99999995	40.00000597
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM				
PMET	0.00803	0.01036	0.00437	0.15614
FIRST ORDER CONDITIONS UNDER LSET				
foc1p	7.95854E-05	-4.718E-11	-4.51752E-05	-0.08312783
foc2p	0.000263694	-3.57431E-10	2.00038E-05	0.30505689
foc3p	0.002386908	-7.66704E-10	0.008538091	-0.040448147
foc4p	0.000254592	-1.4071E-09	4.00505E-05	0.007239471
foc5p	7.95832E-05	-6.21014E-11	-4.52146E-05	-0.053776033
foc6p	0.000264493	-3.48905E-10	4.15539E-06	-0.768375924
foc7p	0.002388621	-7.55676E-10	0.008537961	-0.039969155
foc8p	0.000252829	-1.40561E-09	3.9971E-05	0.00724689
foc9p	7.95702E-05	-5.40581E-11	-4.54044E-05	-0.067842528
foc10p	0.000263551	-3.36513E-10	1.85474E-05	0.299998937
foc11p	0.002387829	-7.59655E-10	0.008538158	-0.040989954
foc12p	0.000254379	-1.40659E-09	3.99089E-05	0.007246535
foc13p	7.95845E-05	-4.76348E-11	-4.53107E-05	-0.081575464
foc14p	0.000263476	-3.44016E-10	1.84693E-05	0.304496162
foc15p	0.002387981	-7.62157E-10	0.008538263	-0.041096855
foc16p	0.000254418	-1.40737E-09	3.99379E-05	0.007239975
foc17p	0.000203651	3.59765E-06	-0.000734929	0.205977176
foc18p	0.000188306	3.59808E-06	-0.000713026	0.315537126
foc19p	0.000203869	3.59765E-06	-0.000726751	0.194014565
foc20p	0.000204064	3.59765E-06	-0.000727498	0.204772618
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET				
p1a1	15,581.97	16,310.97	16,428.78	17,866.92
p1c1	15,581.97	16,310.97	16,428.78	17,866.92
p1f1	15,581.97	16,310.97	16,428.78	17,866.92
p1g1	15,581.97	16,310.97	16,428.78	17,866.92
p2a2	20,053.20	22,111.92	22,154.67	23,276.03
p2c2	20,053.20	22,111.92	22,154.67	23,276.03
p2f2	20,053.20	22,111.92	22,154.67	23,276.03
p2g2	20,053.20	22,111.92	22,154.67	23,276.03
p3a3	26,976.28	29,064.36	28,997.71	32,224.91
p3c3	26,976.28	29,064.36	28,997.71	32,224.91
p3f3	26,976.28	29,064.36	28,997.71	32,224.91
p3g3	26,976.28	29,064.36	28,997.71	32,224.91
p4a4	21,110.63	20,144.58	19,726.64	22,168.76
p4c4	21,110.63	20,144.58	19,726.64	22,168.76

QUARTER	28	29	29	30
p4f4	21,110.63	20,144.58	19,726.64	22,168.76
p4g4	21,110.63	20,144.58	19,726.64	22,168.76
p5a5	38,444.28	36,358.49	35,970.80	33,172.23
p5c5	38444.28137	36358.49217	35970.79968	33172.23479
p5f5	38444.28137	36358.49217	35970.79968	33172.23479
p5g5	38444.28137	36358.49217	35970.79968	33172.23479
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST				
dp/dgas1	3,837	2,559	32,538	39,321
dp/dgas2	28,417	10,918	35,045	44,672
dp/dgas3	22,422	15,587	24,554	260,713
dp/dgas4	25,659	76,519	40,471	22,431
dp/dgas5	6,887	9,419	5,136	18,613
sum of dpdgas	87,222	115,001	137,744	385,750
MILES TRAVELED IN EACH SEGMENT UNDER PMET				
VMT1	11,613	11,463	11,902	11,468
VMT2	11,799	11,632	11,867	11,294
VMT3	11,741	11,648	11,818	11,665
VMT4	11,758	11,841	11,858	10,860
VMT5	11,758	11,841	11,858	10,860
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT				
tpma1	0.04194	0.05831	0.01062	0.05775
tpmc1	0.04194	0.05831	0.01062	0.05775
tpmf1	0.04194	0.05831	0.01062	0.05775
tpmg1	0.04194	0.05831	0.01062	0.05775
tpma2	0.02179	0.03992	0.01447	0.07663
tpmc2	0.02179	0.03992	0.01447	0.07663
tpmf2	0.02179	0.03992	0.01447	0.07663
tpmg2	0.02179	0.03992	0.01447	0.07663
tpma3	0.02808	0.03823	0.01978	0.03630
tpmc3	0.02808	0.03823	0.01978	0.03630
tpmf3	0.02808	0.03823	0.01978	0.03630
tpmg3	0.02808	0.03823	0.01978	0.03630
tpma4	0.02625	0.01726	0.01541	0.12375
tpmc4	0.02625	0.01726	0.01541	0.12375
tpmf4	0.02625	0.01726	0.01541	0.12375
tpmg4	0.02625	0.01726	0.01541	0.12375
tpma5	0.02625	0.01726	0.01541	0.12375
tpmc5	0.02625	0.01726	0.01541	0.12375
tpmf5	0.02625	0.01726	0.01541	0.12375
tpmg5	0.02625	0.01726	0.01541	0.12375
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET				
cstravelpmetseg1	3,899,363,300	3,879,574,064	4,200,938,596	4,866,363,039
cstravelpmetseg2	11,778,544,150	11,945,411,464	12,434,624,834	14,612,437,073
cstravelpmetseg3	3,567,808,898	3,409,881,306	3,499,385,119	3,882,583,948
cstravelpmetseg4	4,886,440,297	5,333,302,800	5,334,477,341	5,009,852,852
cstravelpmetseg5	2,155,046,352	2,034,681,826	2,037,782,887	1,915,510,500
cstravelpmetsum	26,287,202,998	26,602,851,460	27,507,208,778	30,286,747,412
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET				
epm_a1	5.22	5.63	2.43	0.37
epm_c1	5.22	5.63	2.43	0.37
epm_f1	5.22	5.63	2.43	0.37
epm_g1	5.22	5.63	2.43	0.37
epm_a2	2.71	3.85	3.31	0.49
epm_c2	2.71	3.85	3.31	0.49
epm_f2	2.71	3.85	3.31	0.49

QUARTER	28	29	29	30
epm_g2	2.71	3.85	3.31	0.49
epm_a3	3.49	3.69	4.53	0.23
epm_c3	3.49	3.69	4.53	0.23
epm_f3	3.49	3.69	4.53	0.23
epm_g3	3.49	3.69	4.53	0.23
epm_a4	3.27	1.67	3.53	0.79
epm_c4	3.27	1.67	3.53	0.79
epm_f4	3.27	1.67	3.53	0.79
epm_g4	3.27	1.67	3.53	0.79
epm_a5	3.27	1.67	3.53	0.79
epm_c5	3.27	1.67	3.53	0.79
epm_f5	3.27	1.67	3.53	0.79
epm_g5	3.27	1.67	3.53	0.79
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET				
Asub1n	171,694	196,360	163,429	197,327
Csub1n	41,773	62,319	36,620	34,474
Fsub1n	74,988	98,373	65,141	59,209
Gsub1n	172,031	191,245	157,802	191,546
Asub2n	343,542	426,777	410,516	101,979
Csub2n	189,878	266,334	257,181	-
Fsub2n	345,449	425,178	408,760	132,319
Gsub2n	464,022	483,984	467,394	242,594
Asub3n	86,908	77,413	85,796	14,716
Csub3n	108,794	101,199	112,162	57,258
Fsub3n	123,187	120,429	129,227	46,936
Gsub3n	153,211	154,740	163,644	91,762
asub4n	70,856	53,355	69,018	100,969
Csub4n	93,068	90,646	102,826	121,938
fsub4n	224,547	215,125	230,400	279,357
gsub4n	216,504	184,734	199,987	239,991
asub5n	124,293	107,818	112,958	139,090
Csub5n	14,397	18,606	17,552	6,142
fsub5n	57,651	58,599	63,769	63,775
gsub5n	95,829	78,213	83,432	95,682
TOTAL SALES IN EACH SEGMENT AFTER PMET				
tseg1n	460,487	548,296	422,992	482,556
tseg2n	1,342,891	1,602,273	1,543,851	476,893
tseg3n	472,100	453,781	490,829	210,673
tseg4n	604,975	543,861	602,231	742,255
tseg5n	292,170	263,237	277,710	304,688
tsumn	3,172,623	3,411,447	3,337,612	2,217,065
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET				
CSPMETseg1	630,188,649	1,512,006,632	1,088,928,936	1,578,376,345
CSPMETseg2	6,447,494,802	19,411,627,876	18,554,800,325	1,323,363,145
CSPMETseg3	7,332,800,282	4,922,433,687	5,475,906,617	964,647,801
CSPMETseg4	3,998,970,000	3,710,132,662	4,386,441,630	4,170,218,344
CSPMETseg5	2,688,933,804	8,960,129,441	9,555,860,938	5,984,838,054
CsPMETsum	21,098,387,537	38,516,330,298	39,061,938,445	14,021,443,688
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET				
PSpmetseg1	383,790,720	871,447,981	654,603,782	1,081,136,533
PSpmetseg2	3,481,369,904	10,154,407,649	9,689,119,930	860,436,531
PSpmetseg3	3,806,348,942	2,596,147,595	2,873,489,118	607,979,598
PSpmetseg4	2,389,505,965	2,133,727,118	2,487,196,929	2,438,895,504
PSpmetseg5	1,626,482,667	5,239,483,777	5,695,479,543	4,188,292,647
Pspmetsum	11,687,498,199	20,995,214,120	21,399,889,302	9,176,740,813
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSPMETseg1	1,013,979,369	2,383,454,613	1,743,532,718	2,659,512,877
TSPMETseg2	9,928,864,705	29,566,035,525	28,243,920,254	2,183,799,676
TSPMETseg3	11,139,149,224	7,518,581,282	8,349,395,735	1,572,627,399
TSPMETseg4	6,388,475,966	5,843,859,780	6,873,638,559	6,609,113,848

QUARTER	28	29	29	30
TSPMETseg5	4,315,416,471	14,199,613,218	15,251,340,481	10,173,130,701
TSPMETsum	32,785,885,735	59,511,544,418	60,461,827,747	23,198,184,501
dwlpmet	4,422,490,031	5,121,745,279	4,124,336,304	27,924,545,266
pmetsurplus	60,061,398,993	87,511,844,228	88,540,815,656	55,898,880,721
pmetsurplus10	68,956,191,335	100,088,879,375	93,686,827,841	77,624,419,994
TAX REVENUE IN EACH SEGMENT UNDER PMET				
taxrevpmetseg1	224,287,194	366,453,663	53,458,821	319,602,734
taxrevpmetseg2	307,243,483	649,289,623	227,217,033	442,556,500
taxrevpmetseg3	155,632,404	202,077,801	114,745,414	89,207,277
taxrevpmetseg4	186,701,780	111,122,872	110,035,672	997,501,432
taxrevpmetseg5	114,445,399	68,504,391	66,322,191	565,080,865
taxrevpmetsum	988,310,260	1,397,448,350	571,779,132	2,413,948,808
pmetrev10	9,883,102,602	13,974,483,497	5,717,791,316	24,139,488,081
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1	67,818	(3,705)	121,599	182,197
lostsales2	209,341	23,481	81,903	1,447,979
lostsales3	4,720	8,941	(28,107)	297,880
lostsales4	44,633	153,121	94,751	33,391
lostsales5	(4,664)	4,133	(10,340)	(4,339)
lostsum	321,848	185,972	259,807	1,957,108
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET				
taxa1p	160.92	149.20	345.50	2,270.98
taxc1p	160.92	149.20	345.50	2,270.98
taxf1p	160.92	149.20	345.50	2,270.98
taxg1p	160.92	149.20	345.50	2,270.98
taxa2p	619.33	435.83	507.09	3,423.20
taxc2p	619.33	435.83	507.09	3,423.20
taxf2p	619.33	435.83	507.09	3,423.20
taxg2p	619.33	435.83	507.09	3,423.20
taxa3p	629.55	595.93	485.72	9,463.52
taxc3p	629.55	595.93	485.72	9,463.52
taxf3p	629.55	595.93	485.72	9,463.52
taxg3p	629.55	595.93	485.72	9,463.52
taxa4p	673.45	1,320.38	623.59	2,775.83
taxc4p	673.45	1,320.38	623.59	2,775.83
taxf4p	673.45	1,320.38	623.59	2,775.83
taxg4p	673.45	1,320.38	623.59	2,775.83
taxa5p	673.45	1,320.38	623.59	2,775.83
taxc5p	673.45	1,320.38	623.59	2,775.83
taxf5p	673.45	1,320.38	623.59	2,775.83
taxg5p	673.45	1,320.38	623.59	2,775.83
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET				
pollution reduction 1p	(7,392,667,357.37)	(7,603,876,807.56)	4,263,440,860.96	15,058,934,303.78
pollution reduction 2p	16,410,813,388.17	7,981,700,063.15	13,871,569,733.06	(35,947,828,553.88)
pollution reduction 3p	11,674,686,480.49	10,222,346,920.71	6,796,958,211.22	6,183,945,699.01
pollution reduction 4p	15,619,536,215.09	21,489,871,660.85	12,279,250,085.62	41,799,017,577.11
pollution reduction 5p	3,687,558,180.57	7,909,958,160.57	2,788,236,900.98	12,905,747,881.47
Total reductionp	39.99992691	40	39.99945579	39.99981691
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET				
Tsdiff	(317)	(5,538)	(2,022)	(22,384)

QUARTER	30	31	31	32
COEFFICIENTS OF DEMAND				
a P1/q1	-0.008091774	-0.004332488	-0.001882563	-0.011491184
b p2/q1	-1E-08	-0.003665194	-0.001063133	-0.006929916
c p3/q1	-0.005006156	-0.003347684	-1E-08	-1E-08
d p4/q1	-5.84687E-05	-1E-08	-0.000464091	-0.000933641
f P1/q2	-1E-08	-0.003665194	-0.001063133	-0.006929916
g p2/q2	-0.005295176	-0.005390602	-0.004811234	-0.007160466
h p3/q2	-0.000810704	-0.001063353	-0.003623334	-0.003635094
i p4/q2	-1E-08	0	-1E-08	-0.000277632
k P1/q3	-0.005006156	-0.003347684	-1E-08	-1E-08
l p2/q3	-0.000810704	-0.001063353	-0.003623334	-0.003635094
m p3/q3	-0.020414212	-0.051704183	-0.052058905	-0.011094435
n p4/q3	-1E-08	-0.005322518	-0.003268438	-0.007725221
p P1/q4	-5.84687E-05	-1E-08	-0.000464091	-0.000933641
q p2/q4	-1E-08	-6.6255E-18	-1E-08	-0.000277632
r p3/q4	-1E-08	-0.005322518	-0.003268438	-0.007725221
s p4/q4	-0.018733007	-0.020048584	-0.022858554	-0.01319587
u P1/q5	-0.008091774	-0.003192143	-1E-08	-1E-08
v p2/q5	-0.00185802	-1E-08	-0.004811234	-0.004674042
w p3/q5	-1E-08	-0.002793172	-0.002302404	-5.37629E-16
x p4/q5	-0.003762599	-1E-08	-0.006255685	-0.003605346
y p5/q5	-0.016525545	-0.16841175	-0.144220005	-0.027739566
e p5/q1	-0.008091774	-0.003192143	-0.00000001	-1E-08
j p5/q2	-0.00185802	-1E-08	-0.004811234	-0.004674042
o p5/q3	-0.00000001	-0.002793172	-0.002302404	0
t p5/q4	-0.003762599	-1E-08	-0.006255685	-0.003605346
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR				
aa	-0.008091774	-0.004332488	-0.001882563	-0.011491184
bb	-1E-08	-0.003665194	-0.001063133	-0.006929916
cc	-0.005006156	-0.003347684	-1E-08	-1E-08
dd	-5.84687E-05	-1E-08	-0.000464091	-0.000933641
ee	-0.008091774	-0.003192143	-0.00000001	-1E-08
ff	-1E-08	-0.003665194	-0.001063133	-0.006929916
gg	-0.005295176	-0.005390602	-0.004811234	-0.007160466
hh	-0.000810704	-0.001063353	-0.003623334	-0.003635094
ii	-1E-08	-0.00000001	-1E-08	-0.000277632
jj	-0.00185802	-1E-08	-0.004811234	-0.004674042
kk	-0.005006156	-0.003347684	-1E-08	-1E-08
ll	-0.000810704	-0.001063353	-0.003623334	-0.003635094
mm	-0.020414212	-0.051704183	-0.052058905	-0.011094435
nn	-1E-08	-0.005322518	-0.003268438	-0.007725221
oo	-0.00000001	-0.002793172	-0.002302404	-0.00000001
pp	-5.84687E-05	-1E-08	-0.000464091	-0.000933641
qq	-1E-08	-6.6255E-18	-1E-08	-0.000277632
rr	-1E-08	-0.005322518	-0.003268438	-0.007725221
ss	-0.018733007	-0.020048584	-0.022858554	-0.01319587
tt	-0.003762599	-1E-08	-0.006255685	-0.003605346
uu	-0.008091774	-0.003192143	-1E-08	-1E-08
vv	-0.00185802	-1E-08	-0.004811234	-0.004674042
ww	-1E-08	-0.002793172	-0.002302404	-5.37629E-16
xx	-0.003762599	-1E-08	-0.006255685	-0.003605346
yy	-0.016525545	-0.16841175	-0.144220005	-0.027739566
KNOWN PRICE BEFORE TAXES				
P1	16,494	15,454	15,454	14,116
P2	21,192	20,369	20,369	24,113
P3	26,510	28,754	28,754	28,667
P4	20,517	23,205	23,205	21,997
P5	31,235	32,567	32,567	34,491

QUARTER	30	31	31	32
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM				
Asub1	242,655	245,592	245,592	180,842
Csub1	80,007	64,828	64,828	48,537
Fsub1	105,026	97,984	97,984	71,174
Gsub1	237,065	222,454	222,454	172,171
Asub2	473,116	462,501	462,501	413,497
Csub2	349,278	271,333	271,333	253,276
Fsub2	490,221	437,254	437,254	394,302
Gsub2	612,257	461,979	461,979	403,534
Asub3	88,507	91,579	91,579	95,547
Csub3	132,231	141,461	141,461	130,013
Fsub3	121,855	119,011	119,011	172,453
Gsub3	165,960	178,577	178,577	183,830
asub4	106,288	127,139	127,139	97,559
Csub4	133,808	105,029	105,029	124,016
fsub4	289,504	240,545	240,545	248,092
gsub4	246,046	224,815	224,815	227,754
asub5	136,449	139,791	139,791	133,615
Csub5	9,262	7,458	7,458	8,983
fsub5	61,419	63,528	63,528	61,766
gsub5	93,219	80,918	80,918	83,338
TOTAL SALES IN EACH SEGMENT BEFORE TAXES				
tseg1	664,753	630,858	630,858	472,724
tseg2	1,924,872	1,633,067	1,633,067	1,464,609
tseg3	508,553	530,628	530,628	581,843
tseg4	775,646	697,528	697,528	697,421
tseg5	300,349	291,695	291,695	287,702
tsum	4,174,173	3,783,776	3,783,776	3,504,299
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j				
Elasiticity11	(3.07)	(5.65)	(13.01)	(2.60)
Elasiticity21	0.00	5.07	3.79	4.30
Elasiticity31	1.21	0.68	0.00	0.00
Elasiticity41	0.01	0.00	0.40	0.29
Elasiticity51	2.84	0.23	0.00	0.00
Elasiticity12	0.00	1.49	1.11	0.81
Elasiticity22	(2.08)	(2.31)	(2.59)	(2.30)
Elasiticity32	0.00	0.00	0.00	0.00
Elasiticity42	0.00	0.00	0.00	0.04
Elasiticity52	0.34	0.00	0.14	0.55
Elasiticity13	0.98	0.44	0.00	0.00
Elasiticity23	0.31	0.15	0.56	1.90
Elasiticity33	(2.55)	(1.05)	(1.04)	(4.44)
Elasiticity43	0.00	0.22	0.12	1.99
Elasiticity53	0.00	0.02	0.02	0.00
Elasiticity14	0.01	0.00	0.24	0.12
Elasiticity24	0.00	0.00	0.00	0.10
Elasiticity34	0.00	0.21	0.11	2.17
Elasiticity44	(1.41)	(1.66)	(1.46)	(2.39)
Elasiticity54	0.49	0.00	0.09	0.49
Elasiticity15	3.32	0.23	0.00	0.00
Elasiticity25	1.50	0.00	0.48	1.97
Elasiticity35	0.00	0.03	0.03	0.00
Elasiticity45	0.83	0.00	0.15	0.75
Elasiticity55	(6.29)	(0.66)	(0.77)	(4.32)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM				
MCasub1	12,994	11,954	14,454	9,076
MCcsub1	15,109	13,687	15,001	11,680
MCfsub1	14,529	12,835	14,703	10,323

QUARTER	30	31	31	32
MCgsub1	12,994	11,954	14,454	9,116
MCasub2	18,411	16,869	16,869	18,897
MCcsub2	19,242	18,516	18,443	21,405
MCfsub2	18,411	17,523	17,421	19,794
MCgsub2	17,692	16,869	16,869	18,897
MCasub3	23,162	21,648	21,583	25,376
MCcsub3	23,162	20,356	20,047	25,376
MCfsub3	23,162	20,356	20,047	23,451
MCgsub3	21,510	16,869	16,869	23,451
MCasub4	17,966	20,167	19,009	19,207
MCcsub4	17,966	20,347	20,266	19,207
MCfsub4	14,852	17,744	16,869	16,997
MCgsub4	15,517	17,744	16,869	16,997
MCasub5	25,819	8,000	9,189	28,527
MCcsub5	29,343	30,710	29,204	32,617
MCfsub5	27,445	21,235	19,534	30,058
MCgsub5	25,819	17,744	16,869	29,491
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM				
e	-0.008091774	-0.003192143	-0.00000001	-1E-08
j	-0.00185802	-1E-08	-0.004811234	-0.004674042
o	-0.00000001	-0.002793172	-0.002302404	0
t	-0.003762599	-1E-08	-0.006255685	-0.003605346
y	-0.016525545	-0.16841175	-0.144220005	-0.027739566
MARKUP FOR EACH FIRM BY SEGMENT				
XMCasub1	3,500	3,500	1,000	5,041
XMCcsub1	1,385	1,767	453	2,437
XMCfsub1	1,966	2,619	751	3,793
XMCgsub1	3,500	3,500	1,000	5,000
XMCasub2	2,780	3,500	3,500	5,216
XMCcsub2	1,950	1,854	1,926	2,708
XMCfsub2	2,780	2,846	2,948	4,319
XMCgsub2	3,500	3,500	3,500	5,216
XMCasub3	3,348	7,106	7,170	3,291
XMCcsub3	3,348	8,398	8,707	3,291
XMCfsub3	3,348	8,398	8,707	5,216
XMCgsub3	5,000	11,885	11,885	5,216
XMCasub4	2,551	3,038	4,196	2,790
XMCcsub4	2,551	2,858	2,939	2,790
XMCfsub4	5,664	5,461	6,336	5,000
XMCgsub4	5,000	5,461	6,336	5,000
XMCasub5	5,416	24,567	23,378	5,964
XMCcsub5	1,893	1,857	3,363	1,873
XMCfsub5	3,790	11,332	13,033	4,432
XMCgsub5	5,416	14,823	15,698	5,000
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT				
constant1	26,895	26,880	18,701	30,349
constant2	32,355	32,049	32,223	41,530
constant3	41,780	64,565	65,246	45,834
constant4	36,216	40,014	43,001	37,580
constant5	48,073	85,188	88,077	51,831
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES				
TSseg1	5,453,228,090	5,613,437,632	1,595,332,332	5,997,519,300
TSseg2	16,245,888,775	14,520,093,737	14,726,484,760	19,404,853,884
TSseg3	5,859,760,780	14,461,773,771	14,728,738,277	7,594,911,019
TSseg4	9,571,026,564	9,089,954,322	10,694,846,609	8,431,405,307
TSseg5	4,022,808,401	13,041,991,938	13,487,323,592	3,998,636,533
Tssum	41,152,712,610	56,727,251,400	55,232,725,571	45,427,326,044
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES				
CSseg1	3,456,932,686	3,604,156,961	1,024,362,604	3,836,846,804

QUARTER	30	31	31	32
CSseg2	10,743,568,399	9,536,849,377	9,679,038,000	12,754,271,898
CSseg3	3,882,821,782	9,501,288,836	9,681,969,288	4,994,233,956
CSseg4	6,088,497,825	5,862,281,593	6,904,254,197	5,434,020,006
CSseg5	2,528,542,556	7,674,614,051	8,096,076,882	2,494,494,590
Cssum	26,700,363,248	36,179,190,818	35,385,700,971	29,513,867,254
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES				
PSseg1	1,996,295,405	2,009,280,671	570,969,728	2,160,672,497
PSseg2	5,502,320,376	4,983,244,360	5,047,446,760	6,650,581,986
PSseg3	1,976,938,999	4,960,484,934	5,046,768,989	2,600,677,063
PSseg4	3,482,528,738	3,227,672,730	3,790,592,413	2,997,385,301
PSseg5	1,494,265,844	5,367,377,887	5,391,246,710	1,504,141,943
Pssum	14,452,349,362	20,548,060,582	19,847,024,600	15,913,458,789
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES				
CStravseg1	5,193,382,813	4,928,578,125	4,928,578,125	3,693,156,250
CStravseg2	15,038,062,500	12,758,335,938	12,758,335,938	11,442,257,813
CStravseg3	3,973,070,313	4,145,531,250	4,145,531,250	4,545,648,438
CStravseg4	6,059,734,375	5,449,437,500	5,449,437,500	5,448,601,563
CStravseg5	2,346,476,563	2,278,867,188	2,278,867,188	2,247,671,875
Cstravsum	32,610,726,563	29,560,750,000	29,560,750,000	27,377,335,938
FIRST ORDER CONDITIONS UNDER LSET				
foc1l	-1.01181E-10	5.55852E-06	1.67018E-11	-4.9226E-06
foc2l	-1.30569E-10	-4.50609E-06	-2.08047E-11	-2.77834E-06
foc3l	-2.77118E-10	6.62153E-06	1.76954E-10	-3.37734E-08
foc4l	-3.06045E-10	5.09271E-08	-8.79936E-11	2.60011E-06
foc5l	-8.98694E-11	4.51852E-06	1.4893E-11	-4.71889E-06
foc6l	-1.35636E-10	-2.12593E-06	-2.16005E-11	-2.7315E-06
foc7l	-2.73134E-10	3.60302E-06	1.78261E-10	-3.57161E-08
foc8l	-2.93682E-10	5.08786E-08	-7.63976E-11	2.49519E-06
foc9l	-1.09708E-10	4.87543E-06	1.85289E-11	-4.49165E-06
foc10l	-1.1795E-10	-2.94506E-06	-2.26805E-11	-2.80017E-06
foc11l	-2.6873E-10	4.64256E-06	1.83206E-10	-3.64255E-08
foc12l	-2.99167E-10	5.0992E-08	-8.5663E-11	2.37698E-06
foc13l	-1.19144E-10	5.24495E-06	1.83932E-11	-4.51549E-06
foc14l	-1.17552E-10	-3.809E-06	-2.143E-11	-2.79272E-06
foc15l	-2.57707E-10	5.74355E-06	1.85963E-10	-3.64182E-08
foc16l	-2.97916E-10	5.09516E-08	-8.99831E-11	2.39786E-06
foc17l	-1.1778E-10	1.42797E-05	3.01952E-10	1.63581E-05
foc18l	-1.14369E-10	1.02145E-05	2.72848E-10	1.61101E-05
foc19l	-1.09821E-10	1.16148E-05	9.85892E-10	1.64586E-05
foc20l	-1.04592E-10	1.31001E-05	1.82808E-09	1.6391E-05
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET				
p1a1l	17,053	16,007	16,061	14,657
p1c1l	17,053	16,007	16,061	14,657
p1f1l	17,053	16,007	16,061	14,657
p1g1l	17,053	16,007	16,061	14,657
p2a2l	21,999	21,136	21,211	24,880
p2c2l	21,999	21,136	21,211	24,880
p2f2l	21,999	21,136	21,211	24,880
p2g2l	21,999	21,136	21,211	24,880
p3a3l	27,443	29,640	29,727	29,585
p3c3l	27,443	29,640	29,727	29,585
p3f3l	27,443	29,640	29,727	29,585
p3g3l	27,443	29,640	29,727	29,585
p4a4l	21,392	24,085	24,171	22,886
p4c4l	21,392	24,085	24,171	22,886
p4f4l	21,392	24,085	24,171	22,886
p4g4l	21,392	24,085	24,171	22,886
p5a5l	32,272	39,777	32,554	35,236
p5c5l	32,272	39,777	32,554	35,236
p5f5l	32,272	39,777	32,554	35,236

QUARTER	30	31	31	32
p5g5l	32,272	39,777	32,554	35,236
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET				
lemp_a1	2.45	2.47	2.25	2.45
lemp_c1	2.45	2.47	2.25	2.45
lemp_f1	2.45	2.47	2.25	2.45
lemp_g1	2.45	2.47	2.25	2.45
lemp_a2	3.46	3.49	3.18	3.47
lemp_c2	3.46	3.49	3.18	3.47
lemp_f2	3.46	3.49	3.18	3.47
lemp_g2	3.46	3.49	3.18	3.47
lemp_a3	3.96	3.99	3.64	3.97
lemp_c3	3.96	3.99	3.64	3.97
lemp_f3	3.96	3.99	3.64	3.97
lemp_g3	3.96	3.99	3.64	3.97
lemp_a4	3.96	3.99	3.64	3.97
lemp_c4	3.96	3.99	3.64	3.97
lemp_f4	3.96	3.99	3.64	3.97
lemp_g4	3.96	3.99	3.64	3.97
lemp_a5	3.96	3.99	3.64	3.97
lemp_c5	3.96	3.99	3.64	3.97
lemp_f5	3.96	3.99	3.64	3.97
lemp_g5	3.96	3.99	3.64	3.97
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET				
Asub1nl	213,577	175,068	175,485	186,774
Csub1nl	49,248	-	-	58,549
Fsub1nl	79,576	31,054	30,540	100,912
Gsub1nl	214,319	153,110	152,346	199,741
Asub2nl	428,619	475,893	444,851	385,580
Csub2nl	308,712	279,697	250,720	219,270
Fsub2nl	450,635	447,172	417,602	329,803
Gsub2nl	569,935	473,659	443,168	342,453
Asub3nl	85,951	90,580	88,813	95,137
Csub3nl	131,011	140,383	139,084	132,996
Fsub3nl	117,938	117,919	116,462	193,156
Gsub3nl	161,062	177,593	175,950	201,317
asub4nl	92,925	116,403	120,460	83,182
Csub4nl	118,566	94,186	98,014	107,069
fsub4nl	274,962	230,000	233,908	217,836
gsub4nl	233,354	214,158	218,179	200,163
asub5nl	149,386	177,321	132,135	126,087
Csub5nl	24,281	44,963	-	3,550
fsub5nl	72,686	101,009	55,952	62,773
gsub5nl	101,161	118,435	73,308	83,404
TOTAL SALES IN EACH SEGMENT AFTER LSET				
tseg1nl	556,720	359,233	358,371	545,974
tseg2nl	1,757,900	1,676,421	1,556,341	1,277,106
tseg3nl	495,962	526,475	520,308	622,606
tseg4nl	719,806	654,747	670,561	608,249
tseg5nl	347,514	441,728	261,396	275,814
tsumnl	3,877,901	3,658,603	3,366,977	3,329,750
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1l	108,033	271,625	272,487	(73,250)
lostsales2l	166,972	(43,354)	76,726	187,503
lostsales3l	12,591	4,153	10,320	(40,763)
lostsales4l	55,840	42,781	26,967	89,172
lostsales5l	(47,165)	(150,033)	30,299	11,888
lostsuml	296,272	125,173	416,799	174,549
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET				
CSlsetseg1	2,739,568,795	1,953,024,849	473,132,827	4,283,723,227
CSlsetseg2	9,102,557,310	9,147,734,531	8,569,064,079	10,631,585,446

QUARTER	30	31	31	32
CSlsetseg3	3,555,259,393	9,193,535,874	9,240,512,227	5,058,281,264
CSlsetseg4	5,335,289,139	5,214,707,963	6,313,399,749	4,469,070,678
CSlsetseg5	2,745,424,460	10,029,647,620	7,256,761,671	2,288,623,361
Cslsetsum	23,478,099,097	35,538,650,837	31,852,870,553	26,731,283,976
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET				
PSlsetseg1	1,651,429,738	1,183,961,914	300,304,005	2,386,621,529
PSlsetseg2	4,753,799,413	4,785,034,713	4,486,613,114	5,557,163,132
PSlsetseg3	1,838,856,344	4,810,097,240	4,829,427,916	2,689,237,640
PSlsetseg4	3,094,270,966	2,902,853,460	3,494,146,359	2,486,217,222
PSlsetseg5	1,653,004,663	10,037,850,381	4,649,353,122	1,353,432,576
Pslsetsum	12,991,361,123	23,719,797,709	17,759,844,516	14,472,672,099
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSlsetseg1	4,390,998,533	3,136,986,763	773,436,832	6,670,344,757
TSlsetseg2	13,856,356,723	13,932,769,244	13,055,677,193	16,188,748,578
TSlsetseg3	5,394,115,737	14,003,633,114	14,069,940,143	7,747,518,904
TSlsetseg4	8,429,560,105	8,117,561,424	9,807,546,108	6,955,287,900
TSlsetseg5	4,398,429,123	20,067,498,001	11,906,114,793	3,642,055,937
Tslsetsum	36,469,460,220	59,258,448,546	49,612,715,069	41,203,956,075
dwllset	4,683,252,390	(2,531,197,146)	5,620,010,501	4,223,369,968
surpluslset	69,080,186,783	88,819,198,546	79,173,465,069	68,581,292,013
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM				
LSET	140.10	137.98	166.45	139.89
ABATEMENT CONSTANT FROM ABATEMENT EQUATION				
Abate1	840	840	840	840
Abate2	1680	1680	1680	1680
Abate3	2200	2200	2200	2200
Abate4	2200	2200	2200	2200
Abate5	1680	1680	1680	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER				
max emis1	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES				
cur_emis1	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET				
taxrevlsetseg1	190,980,219	122,300,692	134,004,788	187,156,249
taxrevlsetseg2	852,826,951	807,144,456	823,013,405	619,118,838
taxrevlsetseg3	275,341,304	290,069,689	314,861,704	345,395,909
taxrevlsetseg4	399,612,041	360,743,332	405,786,278	337,431,283
taxrevlsetseg5	192,928,351	243,377,045	158,182,225	153,009,994
taxrevlsetsum	1,911,688,866	1,823,635,214	1,835,848,400	1,642,112,273
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET				
taxa1	343.05	340.45	373.93	342.79
taxc1	343.05	340.45	373.93	342.79
taxf1	343.05	340.45	373.93	342.79
taxg1	343.05	340.45	373.93	342.79
taxa2	485.14	481.47	528.81	484.78
taxc2	485.14	481.47	528.81	484.78

QUARTER	30	31	31	32
taxf2	485.14	481.47	528.81	484.78
taxg2	485.14	481.47	528.81	484.78
taxa3	555.17	550.97	605.14	554.76
taxc3	555.17	550.97	605.14	554.76
taxf3	555.17	550.97	605.14	554.76
taxg3	555.17	550.97	605.14	554.76
taxa4	555.17	550.97	605.14	554.76
taxc4	555.17	550.97	605.14	554.76
taxf4	555.17	550.97	605.14	554.76
taxg4	555.17	550.97	605.14	554.76
taxa5	555.17	550.97	605.14	554.76
taxc5	555.17	550.97	605.14	554.76
taxf5	555.17	550.97	605.14	554.76
taxg5	555.17	550.97	605.14	554.76
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET				
pollution reduction 1	7,421,988,567	(3,287,159,211)	(2,389,221,458)	14,363,180,753
pollution reduction 2	8,936,453,277	16,013,555,916	16,068,665,274	3,831,746,805
pollution reduction 3	8,846,664,210	9,421,174,891	11,393,734,637	12,441,555,854
pollution reduction 4	11,937,874,988	10,813,804,180	14,355,960,265	9,058,781,905
pollution reduction 5	2,857,018,959	7,038,624,205	570,861,282	304,734,683
Total reduction	40	39.99999998	40	40
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM				
PMET	0.00345	0.01789	0.00354	0.06821
FIRST ORDER CONDITIONS UNDER LSET				
foc1p	-8.24201E-05	1.95458E-06	-0.000166958	-3.21194E-06
foc2p	-0.000406634	0.000316068	-0.001053595	-5.69408E-06
foc3p	-0.000190759	1.47059E-05	-0.000513986	-1.47107E-06
foc4p	-0.000430831	-1.06295E-06	-0.001819296	6.90844E-07
foc5p	-8.24199E-05	2.46223E-06	-0.000166955	-2.04657E-06
foc6p	-0.000406634	0.000317158	-0.001053595	-4.66111E-06
foc7p	-0.000190761	1.29177E-05	-0.000513792	-1.47319E-06
foc8p	-0.000430832	-1.06301E-06	-0.001819088	7.45058E-09
foc9p	-8.242E-05	1.27148E-06	-0.000166954	-2.77865E-06
foc10p	-0.000406634	0.000317629	-0.001053583	-5.71526E-06
foc11p	-0.000190759	1.27269E-05	-0.000513981	-1.47067E-06
foc12p	-0.000430832	-1.06287E-06	-0.001819295	4.64926E-07
foc13p	-8.24199E-05	1.64102E-06	-0.000166956	-2.80082E-06
foc14p	-0.000406634	0.000316765	-0.001053596	-5.70852E-06
foc15p	-0.000190766	1.38279E-05	-0.000513985	-1.47491E-06
foc16p	-0.000430832	-1.06292E-06	-0.001819298	4.86296E-07
foc17p	-0.000210919	0.00014838	-0.000876828	2.34874E-05
foc18p	-0.000198821	0.000311108	-0.000495084	1.85841E-05
foc19p	-0.00021092	0.000145715	-0.000876831	2.35877E-05
foc20p	-0.00021092	0.0001472	-0.000876831	2.35224E-05
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET				
p1a1	16,664.44	15,540.55	15,587.96	14,239.48
p1c1	16,664.44	15,540.55	15,587.96	14,239.48
p1f1	16,664.44	15,540.55	15,587.96	14,239.48
p1g1	16,664.44	15,540.55	15,587.96	14,239.48
p2a2	21,502.18	21,243.28	20,705.24	26,073.02
p2c2	21,502.18	21,243.28	20,705.24	26,073.02
p2f2	21,502.18	21,243.28	20,705.24	26,073.02
p2g2	21,502.18	21,243.28	20,705.24	26,073.02
p3a3	26,915.98	30,723.86	29,111.75	32,645.87
p3c3	26,915.98	30,723.86	29,111.75	32,645.87
p3f3	26,915.98	30,723.86	29,111.75	32,645.87
p3g3	26,915.98	30,723.86	29,111.75	32,645.87
p4a4	20,854.12	24,334.53	23,554.06	24,142.52
p4c4	20,854.12	24,334.53	23,554.06	24,142.52

QUARTER	30	31	31	32
p4f4	20,854.12	24,334.53	23,554.06	24,142.52
p4g4	20,854.12	24,334.53	23,554.06	24,142.52
p5a5	31,725.14	33,478.53	33,029.34	36,219.73
p5c5	31725.13766	33478.52793	33029.34188	36219.73419
p5f5	31725.13766	33478.52793	33029.34188	36219.73419
p5g5	31725.13766	33478.52793	33029.34188	36219.73419
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST				
dp/dgas1	24,564	1,141	14,691	827
dp/dgas2	37,573	71,284	54,070	93,936
dp/dgas3	47,701	272,591	44,496	288,605
dp/dgas4	45,059	90,343	44,010	85,132
dp/dgas5	7,191	124,785	3,733	129,317
sum of dpdgas	162,088	560,143	161,001	597,816
MILES TRAVELED IN EACH SEGMENT UNDER PMET				
VMT1	11,900	10,942	11,869	9,574
VMT2	11,886	11,811	11,903	11,678
VMT3	11,884	11,889	11,878	11,790
VMT4	11,880	11,808	11,877	11,613
VMT5	11,880	11,808	11,877	11,613
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT				
tpma1	0.01086	0.11475	0.01422	0.26328
tpmc1	0.01086	0.11475	0.01422	0.26328
tpmf1	0.01086	0.11475	0.01422	0.26328
tpmg1	0.01086	0.11475	0.01422	0.26328
tpma2	0.01241	0.02053	0.01048	0.03493
tpmc2	0.01241	0.02053	0.01048	0.03493
tpmf2	0.01241	0.02053	0.01048	0.03493
tpmg2	0.01241	0.02053	0.01048	0.03493
tpma3	0.01261	0.01201	0.01322	0.02280
tpmc3	0.01261	0.01201	0.01322	0.02280
tpmf3	0.01261	0.01201	0.01322	0.02280
tpmg3	0.01261	0.01201	0.01322	0.02280
tpma4	0.01297	0.02087	0.01330	0.04199
tpmc4	0.01297	0.02087	0.01330	0.04199
tpmf4	0.01297	0.02087	0.01330	0.04199
tpmg4	0.01297	0.02087	0.01330	0.04199
tpma5	0.01297	0.02087	0.01330	0.04199
tpmc5	0.01297	0.02087	0.01330	0.04199
tpmf5	0.01297	0.02087	0.01330	0.04199
tpmg5	0.01297	0.02087	0.01330	0.04199
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET				
cstravelpmetseg1	5,114,540,103	2,787,901,441	4,834,277,021	(25,756,797)
cstravelpmetseg2	14,774,892,556	12,624,331,987	12,575,293,711	11,413,962,245
cstravelpmetseg3	3,900,930,044	4,087,982,270	4,062,367,528	4,465,081,504
cstravelpmetseg4	5,947,861,610	5,304,963,962	5,345,040,355	5,252,089,237
cstravelpmetseg5	2,296,604,310	2,215,741,873	2,231,930,710	2,096,972,921
cstravelpmetsum	32,034,828,622	27,020,921,534	29,048,909,325	23,202,349,110
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET				
epm_a1	3.15	6.42	4.02	3.86
epm_c1	3.15	6.42	4.02	3.86
epm_f1	3.15	6.42	4.02	3.86
epm_g1	3.15	6.42	4.02	3.86
epm_a2	3.60	1.15	2.96	0.51
epm_c2	3.60	1.15	2.96	0.51
epm_f2	3.60	1.15	2.96	0.51

QUARTER	30	31	31	32
epm_g2	3.60	1.15	2.96	0.51
epm_a3	3.66	0.67	3.74	0.33
epm_c3	3.66	0.67	3.74	0.33
epm_f3	3.66	0.67	3.74	0.33
epm_g3	3.66	0.67	3.74	0.33
epm_a4	3.76	1.17	3.76	0.62
epm_c4	3.76	1.17	3.76	0.62
epm_f4	3.76	1.17	3.76	0.62
epm_g4	3.76	1.17	3.76	0.62
epm_a5	3.76	1.17	3.76	0.62
epm_c5	3.76	1.17	3.76	0.62
epm_f5	3.76	1.17	3.76	0.62
epm_g5	3.76	1.17	3.76	0.62
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET				
Asub1n	232,799	492,972	224,780	395,275
Csub1n	42,600	313,269	49,397	196,590
Fsub1n	98,798	348,957	79,834	309,413
Gsub1n	233,541	471,014	201,641	408,242
Asub2n	435,081	193,065	421,051	55,778
Csub2n	306,513	-	226,757	-
Fsub2n	457,097	164,343	393,802	-
Gsub2n	576,397	190,831	419,368	12,651
Asub3n	80,075	59,191	90,422	30,946
Csub3n	131,823	109,092	140,701	-
Fsub3n	112,061	86,530	118,072	128,964
Gsub3n	155,185	146,205	177,560	137,125
asub4n	94,613	98,112	117,243	18,528
Csub4n	115,963	75,869	94,756	89,216
fsub4n	276,650	211,709	230,690	153,182
gsub4n	235,042	195,867	214,961	135,509
asub5n	137,562	129,766	140,672	136,671
Csub5n	34,221	-	8,671	-
fsub5n	60,862	53,455	64,489	73,356
gsub5n	89,337	70,880	81,845	93,987
TOTAL SALES IN EACH SEGMENT AFTER PMET				
tseg1n	607,739	1,626,212	555,652	1,309,521
tseg2n	1,775,088	548,239	1,460,978	68,428
tseg3n	479,144	401,018	526,755	297,035
tseg4n	722,268	581,557	657,650	396,436
tseg5n	321,983	254,102	295,676	304,014
tsumn	3,906,221	3,411,128	3,496,710	2,375,434
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET				
CSPMETseg1	3,027,757,240	9,113,751,514	806,939,569	10,405,639,143
CSPMETseg2	9,218,133,490	2,560,865,593	7,999,598,244	416,577,539
CSPMETseg3	3,416,977,276	6,128,850,419	9,362,055,824	981,217,416
CSPMETseg4	5,336,585,954	4,010,951,418	6,202,342,005	1,955,158,059
CSPMETseg5	2,616,818,593	6,238,821,954	8,130,866,610	1,547,788,844
CsPMETsum	23,616,272,553	28,053,240,898	32,501,802,253	15,306,381,002
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET				
PSpmetseg1	1,826,637,947	4,769,329,455	467,171,828	5,562,480,730
PSpmetseg2	4,818,541,542	1,488,245,083	4,202,048,531	266,531,056
PSpmetseg3	1,766,953,653	3,277,700,551	4,890,196,199	716,927,505
PSpmetseg4	3,100,886,157	2,301,010,359	3,438,696,778	1,177,541,663
PSpmetseg5	1,493,874,505	4,596,907,199	5,406,715,818	1,049,203,464
Pspmetsum	13,006,893,804	16,433,192,647	18,404,829,154	8,772,684,417
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSPMETseg1	4,854,395,187	13,883,080,969	1,274,111,397	15,968,119,873
TSPMETseg2	14,036,675,032	4,049,110,676	12,201,646,775	683,108,595
TSPMETseg3	5,183,930,929	9,406,550,970	14,252,252,023	1,698,144,921
TSPMETseg4	8,437,472,112	6,311,961,777	9,641,038,783	3,132,699,722

QUARTER	30	31	31	32
TSPMETseg5	4,110,693,098	10,835,729,152	13,537,582,429	2,596,992,308
TSPMETsum	36,623,166,357	44,486,433,545	50,906,631,407	24,079,065,419
dwlpmet	4,558,639,573	12,247,845,999	4,337,088,769	21,649,618,688
pmetsurplus	69,204,799,599	74,040,155,401	80,456,386,802	51,155,043,293
pmetsurplus10	74,126,041,174	96,835,358,305	84,964,001,431	86,017,702,171
TAX REVENUE IN EACH SEGMENT UNDER PMET				
taxrevpmetseg1	78,512,656	2,041,999,124	93,783,334	3,300,654,807
taxrevpmetseg2	222,969,680	208,901,692	160,171,227	108,097,393
taxrevpmetseg3	71,789,311	57,282,246	82,739,268	79,855,237
taxrevpmetseg4	111,312,701	143,306,398	103,861,374	193,292,189
taxrevpmetseg5	62,220,272	81,310,862	60,290,866	191,729,138
taxrevpmetsum	546,804,619	2,532,800,323	500,846,070	3,873,628,764
pmetrev10	5,468,046,195	25,328,003,227	5,008,460,699	38,736,287,641
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1	57,014	(995,354)	75,206	(836,797)
lostsales2	149,784	1,084,828	172,089	1,396,181
lostsales3	29,409	129,610	3,873	284,808
lostsales4	53,378	115,971	39,878	300,985
lostsales5	(21,634)	37,593	(3,981)	(16,312)
lostsum	267,952	372,648	287,066	1,128,865
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET				
taxa1p	266.68	130.92	208.92	217.63
taxc1p	266.68	130.92	208.92	217.63
taxf1p	266.68	130.92	208.92	217.63
taxg1p	266.68	130.92	208.92	217.63
taxa2p	466.43	1,463.51	566.81	3,280.94
taxc2p	466.43	1,463.51	566.81	3,280.94
taxf2p	466.43	1,463.51	566.81	3,280.94
taxg2p	466.43	1,463.51	566.81	3,280.94
taxa3p	601.41	3,275.00	588.40	6,581.00
taxc3p	601.41	3,275.00	588.40	6,581.00
taxf3p	601.41	3,275.00	588.40	6,581.00
taxg3p	601.41	3,275.00	588.40	6,581.00
taxa4p	584.51	1,885.40	585.18	3,574.25
taxc4p	584.51	1,885.40	585.18	3,574.25
taxf4p	584.51	1,885.40	585.18	3,574.25
taxg4p	584.51	1,885.40	585.18	3,574.25
taxa5p	584.51	1,885.40	585.18	3,574.25
taxc5p	584.51	1,885.40	585.18	3,574.25
taxf5p	584.51	1,885.40	585.18	3,574.25
taxg5p	584.51	1,885.40	585.18	3,574.25
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET				
pollution reduction 1p	5,592,130,217.22	7,203,325,412.20	(1,490,153,428.43)	50,748,381,895.69
pollution reduction 2p	7,541,081,356.37	(22,760,924,077.86)	15,273,328,210.49	(52,249,173,527.13)
pollution reduction 3p	10,088,279,385.61	20,153,767,911.07	11,278,709,564.62	11,598,213,062.71
pollution reduction 4p	14,091,699,021.69	27,586,798,165.05	13,081,479,204.18	16,107,412,311.93
pollution reduction 5p	2,686,867,744.69	7,817,030,341.15	1,856,780,444.72	13,795,166,280.51
Total reductionp	40.00005773	39.99999775	40.000144	40.00000002
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET				
Tsdiff	(125)	(14,779)	(1,283)	(17,426)

QUARTER	32
COEFFICIENTS OF DEMAND	
a P1/q1	-0.005612639
b p2/q1	-0.004783422
c p3/q1	-0.002234233
d p4/q1	5.65554E-16
f P1/q2	-0.004783422
g p2/q2	-0.004783422
h p3/q2	1.59994E-14
i p4/q2	-0.001947449
k P1/q3	-0.002234233
l p2/q3	-3.9835E-16
m p3/q3	-0.023522848
n p4/q3	-1E-08
p P1/q4	1.622E-15
q p2/q4	-0.001947449
r p3/q4	-1E-08
s p4/q4	-0.044023225
u P1/q5	-0.002148325
v p2/q5	-0.003472396
w p3/q5	-0.004098369
x p4/q5	-0.006857154
y p5/q5	-0.117677126
e p5/q1	-0.002148325
j p5/q2	-0.003472396
o p5/q3	-0.004098369
t p5/q4	-0.006857154
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR	
aa	-0.005612639
bb	-0.004783422
cc	-0.002234233
dd	-0.00000001
ee	-0.002148325
ff	-0.004783422
gg	-0.004783422
hh	-0.00000001
ii	-0.001947449
jj	-0.003472396
kk	-0.002234233
ll	-3.9835E-16
mm	-0.023522848
nn	-1E-08
oo	-0.004098369
pp	-0.00000001
qq	-0.001947449
rr	-1E-08
ss	-0.044023225
tt	-0.006857154
uu	-0.002148325
vv	-0.003472396
ww	-0.004098369
xx	-0.006857154
yy	-0.117677126
KNOWN PRICE BEFORE TAXES	
P1	14,116
P2	24,113
P3	28,667
P4	21,997
P5	34,491

QUARTER	32
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM	
Asub1	180,842
Csub1	48,537
Fsub1	71,174
Gsub1	172,171
Asub2	413,497
Csub2	253,276
Fsub2	394,302
Gsub2	403,534
Asub3	95,547
Csub3	130,013
Fsub3	172,453
Gsub3	183,830
asub4	97,559
Csub4	124,016
fsub4	248,092
gsub4	227,754
asub5	133,615
Csub5	8,983
fsub5	61,766
gsub5	83,338
TOTAL SALES IN EACH SEGMENT BEFORE TAXES	
tseg1	472,724
tseg2	1,464,609
tseg3	581,843
tseg4	697,421
tseg5	287,702
tsum	3,504,299
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j	
Elasiticity11	(5.32)
Elasiticity21	9.09
Elasiticity31	1.03
Elasiticity41	0.00
Elasiticity51	0.24
Elasiticity12	1.72
Elasiticity22	(3.44)
Elasiticity32	0.00
Elasiticity42	0.14
Elasiticity52	0.15
Elasiticity13	0.41
Elasiticity23	0.00
Elasiticity33	(2.09)
Elasiticity43	0.00
Elasiticity53	0.09
Elasiticity14	0.00
Elasiticity24	0.32
Elasiticity34	0.00
Elasiticity44	(0.72)
Elasiticity54	0.07
Elasiticity15	0.16
Elasiticity25	0.52
Elasiticity35	0.15
Elasiticity45	0.10
Elasiticity55	(1.02)
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS BY PROGRAM	
MCasub1	10,616
MCcsub1	12,314
MCfsub1	11,301

QUARTER	32
MCgsub1	10,616
MCasub2	20,613
MCcsub2	22,387
MCfsub2	21,169
MCgsub2	20,613
MCasub3	25,494
MCcsub3	25,494
MCfsub3	24,246
MCgsub3	23,667
MCasub4	15,985
MCcsub4	15,985
MCfsub4	9,891
MCgsub4	10,616
MCasub5	15,903
MCcsub5	31,072
MCfsub5	23,308
MCgsub5	20,613
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM	
e	-0.002148325
j	-0.003472396
o	-0.004098369
t	-0.006857154
y	-0.117677126
MARKUP FOR EACH FIRM BY SEGMENT	
XMCasub1	3,500
XMCcsub1	1,803
XMCfsub1	2,816
XMCgsub1	3,500
XMCasub2	3,500
XMCcsub2	1,726
XMCfsub2	2,944
XMCgsub2	3,500
XMCasub3	3,173
XMCcsub3	3,173
XMCfsub3	4,421
XMCgsub3	5,000
XMCasub4	6,013
XMCcsub4	6,013
XMCfsub4	12,106
XMCgsub4	11,381
XMCasub5	18,588
XMCcsub5	3,419
XMCfsub5	11,183
XMCgsub5	13,878
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT	
constant1	25,694
constant2	35,737
constant3	44,589
constant4	57,525
constant5	81,615
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES	
TSseg1	4,259,835,542
TSseg2	12,970,084,004
TSseg3	7,029,308,419
TSseg4	19,316,705,526
TSseg5	11,140,390,784
Tssum	54,716,324,275
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES	
CSseg1	2,736,391,882

QUARTER	32
CSseg2	8,512,518,618
CSseg3	4,632,021,939
CSseg4	12,388,915,220
CSseg5	6,778,855,032
Cssum	35,048,702,690
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES	
PSseg1	1,523,443,660
PSseg2	4,457,565,386
PSseg3	2,397,286,480
PSseg4	6,927,790,307
PSseg5	4,361,535,752
Pssum	19,667,621,585
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES	
CStravseg1	3,693,156,250
CStravseg2	11,442,257,813
CStravseg3	4,545,648,438
CStravseg4	5,448,601,563
CStravseg5	2,247,671,875
Cstravsum	27,377,335,938
FIRST ORDER CONDITIONS UNDER LSET	
foc1l	-4.43337E-05
foc2l	6.77224E-05
foc3l	0.0006298
foc4l	-0.000537343
foc5l	-4.4587E-05
foc6l	6.58439E-05
foc7l	0.000624242
foc8l	-0.000531296
foc9l	-4.55042E-05
foc10l	6.2561E-05
foc11l	0.000618127
foc12l	-0.000523378
foc13l	-4.49402E-05
foc14l	6.64475E-05
foc15l	0.00063469
foc16l	-0.0005397
foc17l	-0.000359046
foc18l	-0.000353627
foc19l	-0.000344006
foc20l	-0.000355928
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET	
p1a1l	14,650
p1c1l	14,650
p1f1l	14,650
p1g1l	14,650
p2a2l	24,870
p2c2l	24,870
p2f2l	24,870
p2g2l	24,870
p3a3l	29,574
p3c3l	29,574
p3f3l	29,574
p3g3l	29,574
p4a4l	22,877
p4c4l	22,877
p4f4l	22,877
p4g4l	22,877
p5a5l	34,216
p5c5l	34,216
p5f5l	34,216

QUARTER	32
p5g5l	34,216
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET	
lemp_a1	2.48
lemp_c1	2.48
lemp_f1	2.48
lemp_g1	2.48
lemp_a2	3.51
lemp_c2	3.51
lemp_f2	3.51
lemp_g2	3.51
lemp_a3	4.02
lemp_c3	4.02
lemp_f3	4.02
lemp_g3	4.02
lemp_a4	4.02
lemp_c4	4.02
lemp_f4	4.02
lemp_g4	4.02
lemp_a5	4.02
lemp_c5	4.02
lemp_f5	4.02
lemp_g5	4.02
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET	
Asub1nl	296,755
Csub1nl	156,840
Fsub1nl	168,701
Gsub1nl	286,333
Asub2nl	261,533
Csub2nl	110,484
Fsub2nl	264,781
Gsub2nl	255,514
Asub3nl	76,994
Csub3nl	111,998
Fsub3nl	154,771
Gsub3nl	164,410
asub4nl	100,691
Csub4nl	126,785
fsub4nl	250,197
gsub4nl	230,725
asub5nl	124,630
Csub5nl	-
fsub5nl	52,526
gsub5nl	74,353
TOTAL SALES IN EACH SEGMENT AFTER LSET	
tseg1nl	908,630
tseg2nl	892,312
tseg3nl	508,173
tseg4nl	708,398
tseg5nl	251,509
tsumnl	3,269,022
SALES LOST IN EACH SEGMENT UNDER LSET	
lostsales1l	(435,906)
lostsales2l	572,297
lostsales3l	73,670
lostsales4l	(10,977)
lostsales5l	36,193
lostsuml	235,277
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET	
CSlsetseg1	5,017,368,805
CSlsetseg2	4,848,634,194

QUARTER	32
CSlsetseg3	3,814,988,178
CSlsetseg4	12,272,419,869
CSlsetseg5	5,960,562,473
Cslsetsum	31,913,973,518
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET	
PSlsetseg1	2,668,040,071
PSlsetseg2	2,600,834,583
PSlsetseg3	2,010,362,015
PSlsetseg4	6,869,504,173
PSlsetseg5	3,591,294,500
Pslsetsum	17,740,035,342
TOTAL SURPLUS IN AUTO MARKET AFTER LSET	
TSlsetseg1	7,685,408,876
TSlsetseg2	7,449,468,776
TSlsetseg3	5,825,350,193
TSlsetseg4	19,141,924,042
TSlsetseg5	9,551,856,973
Tslsetsum	49,654,008,861
dwllset	5,062,315,414
surpluslset	77,031,344,798
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET BY PROGRAM	
LSET	136.38
ABATEMENT CONSTANT FROM ABATEMENT EQUATION	
Abate1	840
Abate2	1680
Abate3	2200
Abate4	2200
Abate5	1680
EMISSIONS OF OLDEST NON-GROSS POLLUTER	
max emis1	7.5
max emis2	7.5
max emis3	7.5
max emis4	7.5
max emis5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES	
cur_emis1	4.2
cur_emis2	4.2
cur_emis3	5.5
cur_emis4	5.5
cur_emis5	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET	
taxrevlsetseg1	307,541,164
taxrevlsetseg2	427,118,320
taxrevlsetseg3	278,355,136
taxrevlsetseg4	388,030,299
taxrevlsetseg5	137,765,916
taxrevlsetsum	1,538,810,835
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET	
taxa1	338.47
taxc1	338.47
taxf1	338.47
taxg1	338.47
taxa2	478.66
taxc2	478.66

QUARTER	32
taxf2	478.66
taxg2	478.66
taxa3	547.76
taxc3	547.76
taxf3	547.76
taxg3	547.76
taxa4	547.76
taxc4	547.76
taxf4	547.76
taxg4	547.76
taxa5	547.76
taxc5	547.76
taxf5	547.76
taxg5	547.76
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET	
pollution reduction 1	35,996,591,457
pollution reduction 2	(15,272,081,070)
pollution reduction 3	7,279,137,490
pollution reduction 4	12,875,400,322
pollution reduction 5	(879,048,236)
Total reduction	39.9999999€
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM	
PMET	0.00429
FIRST ORDER CONDITIONS UNDER LSET	
foc1p	-0.000257432
foc2p	-0.000148682
foc3p	-0.000385269
foc4p	-0.000868126
foc5p	-0.000238017
foc6p	-0.000126239
foc7p	-0.000382013
foc8p	-0.000890101
foc9p	-0.000258597
foc10p	-0.000153853
foc11p	-0.00039692
foc12p	-0.000854194
foc13p	-0.00025805
foc14p	-0.000149958
foc15p	-0.000380363
foc16p	-0.000870482
foc17p	-0.000362575
foc18p	-0.000140895
foc19p	-0.000347565
foc20p	-0.00035943
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET	
p1a1	14,278.64
p1c1	14,278.64
p1f1	14,278.64
p1g1	14,278.64
p2a2	24,409.81
p2c2	24,409.81
p2f2	24,409.81
p2g2	24,409.81
p3a3	29,007.98
p3c3	29,007.98
p3f3	29,007.98
p3g3	29,007.98
p4a4	22,349.94
p4c4	22,349.94

QUARTER	32
p4f4	22,349.94
p4g4	22,349.94
p5a5	34,940.52
p5c5	34940.52421
p5f5	34940.52421
p5g5	34940.52421
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE IN PER MILE TRAVEL COST	
dp/dgas1	22,383
dp/dgas2	36,083
dp/dgas3	28,349
dp/dgas4	35,979
dp/dgas5	4,090
sum of dpdgas	126,884
MILES TRAVELED IN EACH SEGMENT UNDER PMET	
VMT1	11,883
VMT2	11,870
VMT3	11,832
VMT4	11,851
VMT5	11,851
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN EACH SEGMENT	
tpma1	0.01269
tpmc1	0.01269
tpmf1	0.01269
tpmg1	0.01269
tpma2	0.01413
tpmc2	0.01413
tpmf2	0.01413
tpmg2	0.01413
tpma3	0.01825
tpmc3	0.01825
tpmf3	0.01825
tpmg3	0.01825
tpma4	0.01620
tpmc4	0.01620
tpmf4	0.01620
tpmg4	0.01620
tpma5	0.01620
tpmc5	0.01620
tpmf5	0.01620
tpmg5	0.01620
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET	
cstravelpmetseg1	3,497,217,038
cstravelpmetseg2	11,365,112,778
cstravelpmetseg3	4,444,515,594
cstravelpmetseg4	5,309,785,127
cstravelpmetseg5	2,189,553,719
cstravelpmetsum	26,806,184,255
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET	
epm_a1	2.96
epm_c1	2.96
epm_f1	2.96
epm_g1	2.96
epm_a2	3.29
epm_c2	3.29
epm_f2	3.29

QUARTER	32
epm_g2	3.29
epm_a3	4.25
epm_c3	4.25
epm_f3	4.25
epm_g3	4.25
epm_a4	3.78
epm_c4	3.78
epm_f4	3.78
epm_g4	3.78
epm_a5	3.78
epm_c5	3.78
epm_f5	3.78
epm_g5	3.78
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET	
Asub1n	392,412
Csub1n	254,337
Fsub1n	264,358
Gsub1n	381,989
Asub2n	153,371
Csub2n	-
Fsub2n	156,619
Gsub2n	147,351
Asub3n	66,305
Csub3n	101,018
Fsub3n	144,082
Gsub3n	153,720
asub4n	103,261
Csub4n	129,355
fsub4n	252,767
gsub4n	233,295
asub5n	136,809
Csub5n	12,842
fsub5n	64,705
gsub5n	86,531
TOTAL SALES IN EACH SEGMENT AFTER PMET	
tseg1n	1,293,095
tseg2n	457,341
tseg3n	465,125
tseg4n	718,677
tseg5n	300,888
tsumn	3,235,126
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET	
CSPMETseg1	7,196,677,582
CSPMETseg2	2,473,631,708
CSPMETseg3	3,503,160,709
CSPMETseg4	12,430,364,647
CSPMETseg5	7,011,890,367
CsPMETsum	32,615,725,014
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET	
PSpmetseg1	3,755,666,283
PSpmetseg2	1,416,098,888
PSpmetseg3	1,854,671,004
PSpmetseg4	6,948,478,138
PSpmetseg5	4,471,310,057
Pspmetsum	18,446,224,370
TOTAL SURPLUS IN AUTO MARKET AFTER LSET	
TSPMETseg1	10,952,343,866
TSPMETseg2	3,889,730,596
TSPMETseg3	5,357,831,713
TSPMETseg4	19,378,842,785

QUARTER	32
TSPMETseg5	11,483,200,423
TSPMETsum	51,061,949,384
dwlpmet	3,592,669,357
pmetsurplus	78,500,990,856
pmetsurplus10	84,196,705,803
TAX REVENUE IN EACH SEGMENT UNDER PMET	
taxrevpmetseg1	194,979,801
taxrevpmetseg2	119,391,994
taxrevpmetseg3	100,419,215
taxrevpmetseg4	137,947,641
taxrevpmetseg5	80,118,565
taxrevpmetsum	632,857,216
pmetrev10	6,328,572,163
SALES LOST IN EACH SEGMENT UNDER LSET	
lostsales1	(820,371)
lostsales2	1,007,268
lostsales3	116,718
lostsales4	(21,256)
lostsales5	(13,186)
lostsum	269,173
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET	
taxa1p	284.02
taxc1p	284.02
taxf1p	284.02
taxg1p	284.02
taxa2p	509.99
taxc2p	509.99
taxf2p	509.99
taxg2p	509.99
taxa3p	517.28
taxc3p	517.28
taxf3p	517.28
taxg3p	517.28
taxa4p	582.75
taxc4p	582.75
taxf4p	582.75
taxg4p	582.75
taxa5p	582.75
taxc5p	582.75
taxf5p	582.75
taxg5p	582.75
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET	
pollution reduction 1p	52,213,197,501.37
pollution reduction 2p	(34,720,556,130.29)
pollution reduction 3p	4,491,528,848.64
pollution reduction 4p	15,790,259,208.66
pollution reduction 5p	2,225,622,283.43
Total reductionp	40.00005171
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET	
Tsdiff	(1,470)

Appendix 17:Allowing Elasticities to Change Holding dP_dGas Constant

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
COEFFICIENTS OF DEMAND				
a P1/q1	-0.00470115	-0.00667881	-0.00697158	-0.00437226
b p2/q1	-0.00000001	-0.00188376	-0.00352074	-0.00180299
c p3/q1	-0.00140709	-0.00000001	-0.00000001	-0.00000001
d p4/q1	-0.00470115	-0.003413	-0.00000001	-0.00000001
f P1/q2	-0.00000001	-0.00188376	-0.00352074	-0.00180299
g p2/q2	-0.00844847	-0.01113257	-0.0046596	-0.00402155
h p3/q2	0	-0.00404175	-0.00000001	-0.00231144
i p4/q2	-0.00384649	-0.00000001	-0.00425269	-0.00194834
k P1/q3	-0.00140709	-0.00000001	-0.00000001	-0.00000001
l p2/q3	0	-0.00404175	-0.00000001	-0.00231144
m p3/q3	-0.10593103	-0.0946776	-0.05451897	-0.05414638
n p4/q3	-0.00000001	-0.00000001	-0.00346778	-0.00000001
p P1/q4	-0.00470115	-0.003413	-0.00000001	-0.00000001
q p2/q4	-0.00384649	-0.00000001	-0.00425269	-0.00194834
r p3/q4	-0.00000001	-0.00000001	-0.00346778	-0.00000001
s p4/q4	-0.00644816	-0.02475303	-0.00695937	-0.01513335
u P1/q5	-0.00392537	-0.00291749	-0.00000001	-0.00437226
v p2/q5	-0.00060501	-0.00000001	-0.0038786	-0.00000001
w p3/q5	0	-0.00000001	-0.00000001	-0.00000001
x p4/q5	-0.00246687	-0.00000001	-0.00421382	-0.00372543
y p5/q5	-0.13121267	-0.1649666	-0.11750952	-0.1199266
e p5/q1	-0.00392537	-0.00291749	-0.00000001	-0.00437226
j p5/q2	-0.00060501	-0.00000001	-0.0038786	-0.00000001
o p5/q3	0	-0.00000001	-0.00000001	-0.00000001
t p5/q4	-0.00246687	-0.00000001	-0.00421382	-0.00372543
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR				
aa	-0.00470115	-0.00667881	-0.00697158	-0.00437226
bb	-0.00000001	-0.00188376	-0.00352074	-0.00180299
cc	-0.00140709	-0.00000001	-0.00000001	-0.00000001
dd	-0.00470115	-0.003413	-0.00000001	-0.00000001
ee	-0.00392537	-0.00291749	-0.00000001	-0.00437226
ff	-0.00000001	-0.00188376	-0.00352074	-0.00180299
gg	-0.00844847	-0.01113257	-0.0046596	-0.00402155
hh	-0.00000001	-0.00404175	-0.00000001	-0.00231144
ii	-0.00384649	-0.00000001	-0.00425269	-0.00194834
jj	-0.00060501	-0.00000001	-0.0038786	-0.00000001
kk	-0.00140709	-0.00000001	-0.00000001	-0.00000001
ll	0	-0.00404175	-0.00000001	-0.00231144
mm	-0.10593103	-0.0946776	-0.05451897	-0.05414638
nn	-0.00000001	-0.00000001	-0.00346778	-0.00000001
oo	-0.00000001	-0.00000001	-0.00000001	-0.00000001
pp	-0.00470115	-0.003413	-0.00000001	-0.00000001
qq	-0.00384649	-0.00000001	-0.00425269	-0.00194834
rr	-0.00000001	-0.00000001	-0.00346778	-0.00000001
ss	-0.00644816	-0.02475303	-0.00695937	-0.01513335

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
tt	-0.00246687	-0.00000001	-0.00421382	-0.00372543
uu	-0.00392537	-0.00291749	-0.00000001	-0.00437226
vv	-0.00060501	-0.00000001	-0.0038786	-0.00000001
ww	0	-0.00000001	-0.00000001	-0.00000001
xx	-0.00246687	-0.00000001	-0.00421382	-0.00372543
yy	-0.13121267	-0.1649666	-0.11750952	-0.1199266
KNOWN PRICE BEFORE TAXES				
P1	11,487	11,487	11,487	11,487
P2	15,746	15,746	15,746	15,746
P3	17,927	17,927	17,927	17,927
P4	14,044	14,044	14,044	14,044
P5	28,041	28,041	28,041	28,041
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM				
Asub1	336,769	336,769	336,769	336,769
Csub1	85,031	85,031	85,031	85,031
Fsub1	169,238	169,238	169,238	169,238
Gsub1	180,062	180,062	180,062	180,062
Asub2	323,708	323,708	323,708	323,708
Csub2	245,399	245,399	245,399	245,399
Fsub2	355,644	355,644	355,644	355,644
Gsub2	636,437	636,437	636,437	636,437
Asub3	48,106	48,106	48,106	48,106
Csub3	51,453	51,453	51,453	51,453
Fsub3	39,112	39,112	39,112	39,112
Gsub3	77,682	77,682	77,682	77,682
asub4	108,388	108,388	108,388	108,388
Csub4	55,791	55,791	55,791	55,791
fsub4	210,264	210,264	210,264	210,264
gsub4	219,400	219,400	219,400	219,400
asub5	88,574	88,574	88,574	88,574
Csub5	14,366	14,366	14,366	14,366
fsub5	91,591	91,591	91,591	91,591
gsub5	118,393	118,393	118,393	118,393
TOTAL SALES IN EACH SEGMENT BEFORE TAXES				
tseg1	771,100	771,100	771,100	771,100
tseg2	1,561,188	1,561,188	1,561,188	1,561,188
tseg3	216,353	216,353	216,353	216,353
tseg4	593,843	593,843	593,843	593,843
tseg5	312,924	312,924	312,924	312,924
tsum	3,455,408	3,455,408	3,455,408	3,455,408
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j				
Elasiticity11	-3.17	-2.23	-2.14	-3.41
Elasiticity21	0	0.52	2.21	2.09
Elasiticity31	0.07	0	0	0
Elasiticity41	2.82	0.38	0	0

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
Elasiticity51	0.23	0.1	0	0.3
Elasiticity12	0	0.19	0.8	0.75
Elasiticity22	-1.19	-0.91	-2.16	-2.51
Elasiticity32	0	0	0	0
Elasiticity42	0.64	0	1.18	0.29
Elasiticity52	0.01	0	0.13	0
Elasiticity13	0.15	0	0	0
Elasiticity23	0	0.28	0	0.77
Elasiticity33	-0.78	-0.88	-1.52	-1.53
Elasiticity43	0	0	0.59	0
Elasiticity53	0	0	0	0
Elasiticity14	3	0.4	0	0
Elasiticity24	1.87	0	3.48	0.85
Elasiticity34	0	0	0.28	0
Elasiticity44	-3.67	-0.96	-3.4	-1.56
Elasiticity54	0.14	0	0.24	0.1
Elasiticity15	0.23	0.1	0	0.31
Elasiticity25	0.03	0	0.36	0
Elasiticity35	0	0	0	0
Elasiticity45	0.13	0	0.23	0.09
Elasiticity55	-0.68	-0.54	-0.76	-0.75
COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN CONSTRAINTS				
MCasub1	8,979	8,000	8,000	9,044
MCcsub1	10,697	10,225	10,031	10,611
MCfsub1	9,297	8,711	9,064	9,714
MCgsub1	9,044	8,000	8,000	9,044
MCasub2	12,531	11,304	12,237	13,504
MCcsub2	13,442	12,639	14,002	14,369
MCfsub2	11,871	11,304	12,237	13,504
MCgsub2	9,445	8,000	10,746	12,246
MCasub3	12,357	12,064	14,926	14,571
MCcsub3	12,357	12,064	14,926	14,571
MCfsub3	13,546	12,786	15,063	14,985
MCgsub3	9,445	8,000	12,927	12,246
MCasub4	10,301	10,215	11,377	11,447
MCcsub4	12,305	12,373	12,373	12,668
MCfsub4	10,301	8,264	10,550	9,831
MCgsub4	9,044	8,000	9,044	9,044
MCasub5	14,637	12,453	15,924	15,544
MCcsub5	25,533	25,422	25,163	25,734
MCfsub5	14,637	12,453	15,025	15,544
MCgsub5	10,883	8,000	10,746	12,246
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM				
e	-0.00392537	-0.00291749	-0.00000001	-0.00437226
j	-0.00060501	-0.00000001	-0.0038786	-0.00000001
o	0	-0.00000001	-0.00000001	-0.00000001
t	-0.00246687	-0.00000001	-0.00421382	-0.00372543

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
y	-0.13121267	-0.1649666	-0.11750952	-0.1199266
MARKUP FOR EACH FIRM BY SEGMENT				
XMCasub1	2,508	3,487	3,487	2,443
XMCcsub1	790	1,262	1,456	876
XMCfsub1	2,190	2,776	2,423	1,772
XMCgsub1	2,443	3,487	3,487	2,443
XMCasub2	3,215	4,441	3,508	2,242
XMCcsub2	2,304	3,107	1,744	1,376
XMCfsub2	3,875	4,441	3,508	2,242
XMCgsub2	6,301	7,746	5,000	3,500
XMCasub3	5,570	5,863	3,001	3,356
XMCcsub3	5,570	5,863	3,001	3,356
XMCfsub3	4,381	5,141	2,864	2,942
XMCgsub3	8,482	9,927	5,000	5,681
XMCasub4	3,742	3,829	2,667	2,597
XMCcsub4	1,738	1,671	1,670	1,375
XMCfsub4	3,742	5,779	3,494	4,213
XMCgsub4	5,000	6,044	5,000	5,000
XMCasub5	13,404	15,589	12,118	12,497
XMCcsub5	2,508	2,619	2,878	2,307
XMCfsub5	13,404	15,589	13,017	12,497
XMCgsub5	17,158	20,041	17,296	15,796
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT				
constant1	19,436	22,518	22,359	19,041
constant2	31,409	35,453	29,474	25,071
constant3	41,931	44,721	31,782	33,250
constant4	28,275	31,375	26,885	27,238
constant5	74,537	81,913	73,370	71,153
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES				
TSseg1	4,787,322,516	6,632,111,649	6,527,767,628	4,549,791,909
TSseg2	19,220,570,500	24,092,514,475	16,709,855,943	11,367,993,044
TSseg3	3,981,428,615	4,454,412,273	2,297,989,367	2,548,153,680
TSseg4	6,612,071,990	8,195,355,330	6,026,634,166	6,258,778,152
TSseg5	11,757,217,761	13,647,767,009	11,446,817,141	10,900,066,817
Tssum	46,358,611,383	57,022,160,737	43,009,064,245	35,624,783,602
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES				
CSseg1	3,064,962,734	4,252,880,006	4,191,830,434	2,912,618,315
CSseg2	12,226,590,866	15,383,216,502	10,716,378,593	7,279,648,504
CSseg3	2,596,615,517	2,898,452,202	1,498,751,207	1,657,625,878
CSseg4	4,225,577,514	5,146,005,533	3,812,738,457	3,917,682,787
CSseg5	7,274,844,253	8,428,874,741	7,092,285,145	6,745,343,475
Cssum	29,388,590,884	36,109,428,984	27,311,983,836	22,512,918,958
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES				

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
PSseg1	1,722,359,783	2,379,231,643	2,335,937,193	1,637,173,594
PSseg2	6,993,979,635	8,709,297,974	5,993,477,350	4,088,344,540
PSseg3	1,384,813,098	1,555,960,071	799,238,160	890,527,802
PSseg4	2,386,494,476	3,049,349,798	2,213,895,709	2,341,095,365
PSseg5	4,482,373,508	5,218,892,268	4,354,531,996	4,154,723,342
Pssum	16,970,020,499	20,912,731,753	15,697,080,409	13,111,864,643
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES				
CStravseg1	6,024,218,750	6,024,218,750	6,024,218,750	6,024,218,750
CStravseg2	12,196,781,250	12,196,781,250	12,196,781,250	12,196,781,250
CStravseg3	1,690,257,813	1,690,257,813	1,690,257,813	1,690,257,813
CStravseg4	4,639,398,438	4,639,398,438	4,639,398,438	4,639,398,438
CStravseg5	2,444,718,750	2,444,718,750	2,444,718,750	2,444,718,750
Cstravsum	26,995,375,000	26,995,375,000	26,995,375,000	26,995,375,000
FIRST ORDER CONDITIONS UNDER LSET				
foc1l	1.77E-05	-0.000202276	-3.34E-09	8.33E-06
foc2l	3.13E-05	1.64E-07	-4.71E-05	1.61E-05
foc3l	4.38E-07	1.88E-07	0.000248853	-8.08E-08
foc4l	3.32E-05	-0.00041182	6.00E-05	6.54E-06
foc5l	1.98E-05	-0.000202301	-3.22E-09	8.30E-06
foc6l	2.86E-05	1.64E-07	-4.24E-05	1.63E-05
foc7l	4.38E-07	1.88E-07	0.000220517	-8.08E-08
foc8l	3.43E-05	-0.000411871	5.69E-05	6.44E-06
foc9l	1.96E-05	-0.000203615	-3.55E-09	8.43E-06
foc10l	2.93E-05	1.64E-07	-4.75E-05	1.61E-05
foc11l	4.38E-07	1.88E-07	0.000251897	-8.08E-08
foc12l	3.49E-05	-0.000414549	5.99E-05	6.70E-06
foc13l	1.92E-05	-0.000203601	-3.53E-09	8.46E-06
foc14l	2.96E-05	1.64E-07	-4.95E-05	1.61E-05
foc15l	4.37E-07	1.88E-07	0.000263676	-8.07E-08
foc16l	3.47E-05	-0.00041452	6.10E-05	6.79E-06
foc17l	-0.000140158	0.001071804	-2.13E-05	-0.000112228
foc18l	-0.000138233	0.001071937	-2.24E-05	-0.000112683
foc19l	-0.000141302	0.0010789	-2.07E-05	-0.000112719
foc20l	-0.000141522	0.001078825	-1.99E-05	-0.000112521
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET				
p1a1l	12,075	12,047	12,070	12,075
p1c1l	12,075	12,047	12,070	12,075
p1f1l	12,075	12,047	12,070	12,075
p1g1l	12,075	12,047	12,070	12,075
p2a2l	16,566	16,527	16,558	16,565
p2c2l	16,566	16,527	16,558	16,565
p2f2l	16,566	16,527	16,558	16,565
p2g2l	16,566	16,527	16,558	16,565
p3a3l	18,873	18,827	18,862	18,871
p3c3l	18,873	18,827	18,862	18,871
p3f3l	18,873	18,827	18,862	18,871
p3g3l	18,873	18,827	18,862	18,871

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
p4a4l	14,991	14,946	14,983	14,991
p4c4l	14,991	14,946	14,983	14,991
p4f4l	14,991	14,946	14,983	14,991
p4g4l	14,991	14,946	14,983	14,991
p5a5l	28,991	28,948	28,983	28,990
p5c5l	28,991	28,948	28,983	28,990
p5f5l	28,991	28,948	28,983	28,990
p5g5l	28,991	28,948	28,983	28,990
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET				
lemp_a1	2.3	2.42	2.32	2.3
lemp_c1	2.3	2.42	2.32	2.3
lemp_f1	2.3	2.42	2.32	2.3
lemp_g1	2.3	2.42	2.32	2.3
lemp_a2	3.25	3.42	3.28	3.25
lemp_c2	3.25	3.42	3.28	3.25
lemp_f2	3.25	3.42	3.28	3.25
lemp_g2	3.25	3.42	3.28	3.25
lemp_a3	3.72	3.91	3.76	3.72
lemp_c3	3.72	3.91	3.76	3.72
lemp_f3	3.72	3.91	3.76	3.72
lemp_g3	3.72	3.91	3.76	3.72
lemp_a4	3.72	3.91	3.76	3.72
lemp_c4	3.72	3.91	3.76	3.72
lemp_f4	3.72	3.91	3.76	3.72
lemp_g4	3.72	3.91	3.76	3.72
lemp_a5	3.72	3.91	3.76	3.72
lemp_c5	3.72	3.91	3.76	3.72
lemp_f5	3.72	3.91	3.76	3.72
lemp_g5	3.72	3.91	3.76	3.72
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET				
Asub1nl	150,923	324,959	286,692	320,115
Csub1nl	-	73,100	45,345	68,459
Fsub1nl	220,637	156,129	118,103	150,574
Gsub1nl	242,315	166,842	124,816	161,057
Asub2nl	229,265	308,951	382,696	287,584
Csub2nl	196,118	230,507	283,699	208,569
Fsub2nl	368,195	340,784	414,346	319,373
Gsub2nl	654,140	621,796	703,233	600,906
Asub3nl	48,346	46,362	48,218	45,289
Csub3nl	50,351	49,710	50,712	48,662
Fsub3nl	36,198	37,370	39,193	36,293
Gsub3nl	74,621	75,929	78,101	74,863
asub4nl	262,796	100,851	39,197	97,523
Csub4nl	110,709	48,392	-	45,231
fsub4nl	129,177	202,931	141,411	199,471
gsub4nl	127,635	212,133	145,716	208,616
asub5nl	89,875	87,426	87,126	87,558
Csub5nl	14,361	13,260	13,172	13,388

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
fsub5nl	89,661	90,412	90,065	90,572
gsub5nl	116,330	117,213	116,790	117,412
TOTAL SALES IN EACH SEGMENT AFTER LSET				
tseg1nl	613,874	721,030	574,956	700,206
tseg2nl	1,447,718	1,502,037	1,783,974	1,416,432
tseg3nl	209,517	209,371	216,224	205,107
tseg4nl	630,317	564,306	326,324	550,841
tseg5nl	310,227	308,311	307,153	308,931
tsumnl	3,211,654	3,305,055	3,208,631	3,181,516
SALES LOST IN EACH SEGMENT UNDER LSET				
lostsales1l	157,226	50,070	196,144	70,894
lostsales2l	113,470	59,151	-222,786	144,756
lostsales3l	6,836	6,982	129	11,246
lostsales4l	-36,474	29,537	267,519	43,002
lostsales5l	2,697	4,613	5,771	3,993
lostsuml	273,892	273,892	273,892	273,892
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET				
CSlsetseg1	2,259,582,299	3,774,798,949	2,957,939,427	2,438,826,003
CSlsetseg2	10,744,394,267	14,213,798,664	11,520,861,337	6,024,109,881
CSlsetseg3	2,415,526,387	2,710,683,336	1,396,802,664	1,474,698,015
CSlsetseg4	4,186,640,542	4,635,544,411	1,941,922,594	3,372,978,086
CSlsetseg5	7,064,831,922	8,164,788,389	6,816,923,109	6,512,667,750
Cslsetsum	26,670,975,417	33,499,613,750	24,634,449,131	19,823,279,735
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET				
PSlsetseg1	1,366,310,750	2,143,000,647	1,706,094,232	1,402,868,220
PSlsetseg2	6,429,000,619	8,114,195,572	6,430,529,142	3,448,519,422
PSlsetseg3	1,291,761,843	1,462,012,265	748,503,337	798,396,865
PSlsetseg4	2,149,586,653	2,795,829,119	1,251,391,532	2,069,646,816
PSlsetseg5	4,366,545,246	5,088,785,132	4,215,286,591	4,039,453,091
Pslsetsum	15,603,205,111	19,603,822,734	14,351,804,834	11,758,884,414
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSlsetseg1	3,625,893,049	5,917,799,596	4,664,033,659	3,841,694,223
TSlsetseg2	17,173,394,886	22,327,994,235	17,951,390,479	9,472,629,304
TSlsetseg3	3,707,288,230	4,172,695,601	2,145,306,002	2,273,094,880
TSlsetseg4	6,336,227,195	7,431,373,530	3,193,314,125	5,442,624,902
TSlsetseg5	11,431,377,168	13,253,573,521	11,032,209,700	10,552,120,841
Tslsetsum	42,274,180,528	53,103,436,484	38,986,253,965	31,582,164,149
dwllset	4,084,430,854	3,918,724,253	4,022,810,280	4,042,619,453
surpluslset	312,227,930,528	323,057,186,484	308,940,003,965	301,535,914,149
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET				
LSET	158.7	143.9	155.93	158.88
ABATEMENT CONSTANT FROM ABATEMENT EQUATION				

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
Abate1	840	840	840	840
Abate2	1,680	1,680	1,680	1,680
Abate3	2,200	2,200	2,200	2,200
Abate4	2,200	2,200	2,200	2,200
Abate5	1,680	1,680	1,680	1,680
EMISSIONS OF OLDEST NON-GROSS POLLUTER				
max emis1	7.5	7.5	7.5	7.5
max emis2	7.5	7.5	7.5	7.5
max emis3	7.5	7.5	7.5	7.5
max emis4	7.5	7.5	7.5	7.5
max emis5	7.5	7.5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES				
cur_emis1	4.2	4.2	4.2	4.2
cur_emis2	4.2	4.2	4.2	4.2
cur_emis3	5.5	5.5	5.5	5.5
cur_emis4	5.5	5.5	5.5	5.5
cur_emis5	4.2	4.2	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET				
taxrevlsetseg1	224,136,610	250,679,739	208,083,937	255,801,000
taxrevlsetseg2	747,536,450	738,519,325	913,077,200	731,791,367
taxrevlsetseg3	123,800,782	117,802,376	126,642,565	121,263,014
taxrevlsetseg4	372,446,699	317,506,501	191,128,227	325,667,391
taxrevlsetseg5	183,309,350	173,470,970	179,899,738	182,645,713
taxrevlsetsum	1,651,229,891	1,597,978,909	1,618,831,668	1,617,168,485
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET				
taxa1	365.12	347.67	361.91	365.32
taxc1	365.12	347.67	361.91	365.32
taxf1	365.12	347.67	361.91	365.32
taxg1	365.12	347.67	361.91	365.32
taxa2	516.35	491.68	511.82	516.64
taxc2	516.35	491.68	511.82	516.64
taxf2	516.35	491.68	511.82	516.64
taxg2	516.35	491.68	511.82	516.64
taxa3	590.89	562.65	585.7	591.22
taxc3	590.89	562.65	585.7	591.22
taxf3	590.89	562.65	585.7	591.22
taxg3	590.89	562.65	585.7	591.22
taxa4	590.89	562.65	585.7	591.22
taxc4	590.89	562.65	585.7	591.22
taxf4	590.89	562.65	585.7	591.22
taxg4	590.89	562.65	585.7	591.22
taxa5	590.89	562.65	585.7	591.22
taxc5	590.89	562.65	585.7	591.22
taxf5	590.89	562.65	585.7	591.22
taxg5	590.89	562.65	585.7	591.22

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET				
pollution reduction 1l	7,765,592,511	13,452,234,225	5,196,794,399	13,162,842,034
pollution reduction 2l	11,948,463,989	11,773,164,077	28,466,211,976	10,385,165,447
pollution reduction 3l	4,303,126,132	3,827,041,168	4,521,561,990	4,108,400,951
pollution reduction 4l	14,314,664,911	10,057,583,905	408,131,913	10,726,456,191
pollution reduction 5l	1,668,152,456	889,976,535	1,407,299,725	1,617,135,409
Total reductionl	40	40	40	40
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY PROGRAM				GRAM
PMET	0.0093679	0.0126226	0.0136514	0.0141817
FIRST ORDER CONDITIONS UNDER LSET				
foc1p	-3.28E-06	0.000360258	2.15E-09	5.47E-06
foc2p	2.34E-06	5.29E-07	-5.06E-06	2.19E-05
foc3p	1.07E-06	1.53E-06	5.52E-05	-7.48E-08
foc4p	-1.73E-06	0.0007343	-0.00010864	-5.35E-07
foc5p	-2.30E-06	0.000363772	2.37E-09	5.22E-06
foc6p	8.44E-07	5.29E-07	-3.38E-06	2.18E-05
foc7p	1.07E-06	1.53E-06	4.62E-05	-7.48E-08
foc8p	-1.21E-06	0.000741455	-0.000110934	-8.85E-07
foc9p	-1.41E-06	0.000358919	2.39E-09	5.58E-06
foc10p	3.21E-07	5.29E-07	-5.55E-06	2.19E-05
foc11p	1.07E-06	1.53E-06	5.84E-05	-7.48E-08
foc12p	-6.94E-08	0.00073157	-0.000108707	-3.72E-07
foc13p	-1.72E-06	0.000358933	2.32E-09	5.61E-06
foc14p	6.36E-07	5.29E-07	-7.48E-06	2.19E-05
foc15p	1.07E-06	1.53E-06	7.01E-05	-7.48E-08
foc16p	-2.18E-07	0.0007316	-0.000107644	-2.89E-07
foc17p	5.51E-06	-0.001902483	0.000192354	-0.000125565
foc18p	6.73E-06	-0.001921057	0.000193517	-0.000123774
foc19p	4.37E-06	-0.001895385	0.000193027	-0.000126056
foc20p	4.15E-06	-0.001895463	0.000193767	-0.000125857
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET				
p1a1	11,653	11,680	11,688	11,691
p1c1	11,653	11,680	11,688	11,691
p1f1	11,653	11,680	11,688	11,691
p1g1	11,653	11,680	11,688	11,691
p2a2	16,005	16,049	16,060	16,066
p2c2	16,005	16,049	16,060	16,066
p2f2	16,005	16,049	16,060	16,066
p2g2	16,005	16,049	16,060	16,066
p3a3	18,697	18,821	18,492	18,503
p3c3	18,697	18,821	18,492	18,503
p3f3	18,697	18,821	18,492	18,503
p3g3	18,697	18,821	18,492	18,503
p4a4	14,276	14,314	14,325	14,330
p4c4	14,276	14,314	14,325	14,330
p4f4	14,276	14,314	14,325	14,330

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
p4g4	14,276	14,314	14,325	14,330
p5a5	26,646	26,424	28,380	28,385
p5c5	26,646	26,424	28,380	28,385
p5f5	26,646	26,424	28,380	28,385
p5g5	26,646	26,424	28,380	28,385
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY 1 INCREASE IN				
dp/dgas1	9,369	9,369	9,369	9,369
dp/dgas2	12,488	12,488	12,488	12,488
dp/dgas3	79,938	79,938	29,794	29,794
dp/dgas4	7,202	7,202	7,202	7,202
dp/dgas5	160,669	160,669	3,987	3,987
sum of dpdgas	269,665	269,665	62,840	62,840
MILES TRAVELED IN EACH SEGMENT UNDER PMET				
VMT1	11,733	11,690	11,678	11,671
VMT2	11,673	11,620	11,605	11,597
VMT3	11,852	11,828	11,707	11,702
VMT4	11,507	11,428	11,405	11,393
VMT5	11,507	11,428	11,405	11,393
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN				
tpma1	0.028981	0.0336408	0.0349848	0.0356579
tpmc1	0.028981	0.0336408	0.0349848	0.0356579
tpmf1	0.028981	0.0336408	0.0349848	0.0356579
tpmg1	0.028981	0.0336408	0.0349848	0.0356579
tpma2	0.0354999	0.0412079	0.0428543	0.0436787
tpmc2	0.0354999	0.0412079	0.0428543	0.0436787
tpmf2	0.0354999	0.0412079	0.0428543	0.0436787
tpmg2	0.0354999	0.0412079	0.0428543	0.0436787
tpma3	0.0160567	0.0186385	0.0317492	0.03236
tpmc3	0.0160567	0.0186385	0.0317492	0.03236
tpmf3	0.0160567	0.0186385	0.0317492	0.03236
tpmg3	0.0160567	0.0186385	0.0317492	0.03236
tpma4	0.0534958	0.0620973	0.0645783	0.0658206
tpmc4	0.0534958	0.0620973	0.0645783	0.0658206
tpmf4	0.0534958	0.0620973	0.0645783	0.0658206
tpmg4	0.0534958	0.0620973	0.0645783	0.0658206
tpma5	0.0534958	0.0620973	0.0645783	0.0658206
tpmc5	0.0534958	0.0620973	0.0645783	0.0658206
tpmf5	0.0534958	0.0620973	0.0645783	0.0658206
tpmg5	0.0534958	0.0620973	0.0645783	0.0658206
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET				
cstravelpmetseg1	5,614,227,131	5,726,404,552	5,542,954,030	5,720,961,355
cstravelpmetseg2	11,486,510,397	11,466,806,312	11,874,541,550	11,477,632,334
cstravelpmetseg3	1,653,611,295	1,647,224,627	1,630,794,510	1,615,482,981
cstravelpmetseg4	4,553,444,389	4,226,137,541	3,826,649,455	4,204,022,918

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
cstravelpmetseg5	2,285,357,918	2,253,654,299	2,202,070,846	2,205,544,881
cstravelpmetsum	25,593,151,130	25,320,227,330	25,077,010,390	25,223,644,468
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PMET				
epm_a1	3.09	2.67	2.56	2.51
epm_c1	3.09	2.67	2.56	2.51
epm_f1	3.09	2.67	2.56	2.51
epm_g1	3.09	2.67	2.56	2.51
epm_a2	3.79	3.26	3.14	3.08
epm_c2	3.79	3.26	3.14	3.08
epm_f2	3.79	3.26	3.14	3.08
epm_g2	3.79	3.26	3.14	3.08
epm_a3	1.71	1.48	2.33	2.28
epm_c3	1.71	1.48	2.33	2.28
epm_f3	1.71	1.48	2.33	2.28
epm_g3	1.71	1.48	2.33	2.28
epm_a4	5.71	4.92	4.73	4.64
epm_c4	5.71	4.92	4.73	4.64
epm_f4	5.71	4.92	4.73	4.64
epm_g4	5.71	4.92	4.73	4.64
epm_a5	5.71	4.92	4.73	4.64
epm_c5	5.71	4.92	4.73	4.64
epm_f5	5.71	4.92	4.73	4.64
epm_g5	5.71	4.92	4.73	4.64
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET				
Asub1n	299,701	331,497	433,955	324,495
Csub1n	131,971	79,843	190,575	73,675
Fsub1n	369,414	162,667	265,366	154,954
Gsub1n	391,092	173,380	272,079	165,436
Asub2n	291,845	308,435	94,972	282,461
Csub2n	251,009	229,956	-	202,954
Fsub2n	430,775	340,268	126,622	314,251
Gsub2n	716,721	621,280	415,509	595,784
Asub3n	43,755	42,466	33,629	42,753
Csub3n	45,983	45,816	36,258	46,147
Fsub3n	31,607	33,474	24,603	33,757
Gsub3n	70,029	72,033	63,512	72,327
asub4n	135,162	101,816	227,014	101,135
Csub4n	-	49,328	185,685	49,062
fsub4n	1,542	203,895	329,228	203,083
gsub4n	-	213,097	333,533	212,228
asub5n	75,737	76,118	90,771	88,149
Csub5n	-	1,541	16,165	13,346
fsub5n	75,523	79,104	93,710	91,164
gsub5n	102,192	105,905	120,435	118,003
TOTAL SALES IN EACH SEGMENT AFTER PMET				
tseg1n	1,192,178	747,386	1,161,975	718,559
tseg2n	1,690,351	1,499,939	637,103	1,395,450

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
tseg3n	191,373	193,790	158,002	194,983
tseg4n	136,704	568,135	1,075,459	565,508
tseg5n	253,452	262,668	321,080	310,662
tsumn	3,464,057	3,271,917	3,353,620	3,185,162
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET				
CSPMETseg1	4,477,499,284	3,932,204,872	6,009,674,226	2,520,711,990
CSPMETseg2	12,643,867,532	14,166,421,356	4,102,498,566	5,902,698,431
CSPMETseg3	2,100,305,716	2,365,207,083	975,152,632	1,343,736,247
CSPMETseg4	930,489,826	4,719,468,959	6,503,742,940	3,515,816,148
CSPMETseg5	4,979,781,022	5,977,262,259	7,181,428,282	6,602,372,592
CsPMETsum	25,131,943,379	31,160,564,528	24,772,496,646	19,885,335,408
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET				
PSpmetseg1	2,495,314,838	2,221,399,197	3,234,517,602	1,442,968,215
PSpmetseg2	7,391,190,111	8,090,571,093	2,714,519,694	3,388,289,281
PSpmetseg3	1,134,055,341	1,289,272,886	537,615,190	732,905,911
PSpmetseg4	490,751,300	2,837,867,008	3,535,579,586	2,140,644,400
PSpmetseg5	3,329,727,380	4,003,917,080	4,408,683,787	4,095,216,029
Pspmetsum	14,841,038,971	18,443,027,264	14,430,915,860	11,800,023,835
TOTAL SURPLUS IN AUTO MARKET AFTER LSET				
TSPMETseg1	6,972,814,122	6,153,604,069	9,244,191,828	3,963,680,205
TSPMETseg2	20,035,057,643	22,256,992,448	6,817,018,260	9,290,987,712
TSPMETseg3	3,234,361,057	3,654,479,969	1,512,767,822	2,076,642,158
TSPMETseg4	1,421,241,126	7,557,335,967	10,039,322,526	5,656,460,548
TSPMETseg5	8,309,508,402	9,981,179,339	11,590,112,069	10,697,588,620
TSPMETsum	39,972,982,349	49,603,591,792	39,203,412,506	31,685,359,243
dwlpmet	6,454,758,979	7,487,245,451	3,625,537,372	4,013,037,624
pmetsurplus	309,235,432,894	318,870,576,739	310,958,306,173	300,902,976,586
TAX REVENUE IN EACH SEGMENT UNDER PMET				
taxrevpmetseg1	405,377,603	293,916,667	474,711,284	299,047,362
taxrevpmetseg2	651,127,324	646,357,321	411,626,100	641,393,706
taxrevpmetseg3	36,419,161	42,722,970	58,729,396	73,833,971
taxrevpmetseg4	84,151,315	403,165,812	792,081,864	424,086,004
taxrevpmetseg5	156,018,522	220,308,394	361,330,332	259,756,223
taxrevpmetsum	1,333,093,925	1,606,471,164	2,098,478,977	1,698,117,266
SALES LOST IN EACH SEGMENT UNDER PMET				
lostsales1	-421,078	23,714	-390,875	52,541
lostsales2	-129,163	61,249	924,085	165,738
lostsales3	24,980	22,563	58,351	21,370
lostsales4	457,139	25,708	-481,616	28,335
lostsales5	59,472	50,256	-8,156	2,262
lostsum	-8,649	183,491	101,788	270,246
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET				
taxa1p	271.52	315.18	327.78	334.08
taxc1p	271.52	315.18	327.78	334.08

Variable	Optimized for the PMET when dP_dGas is high	Optimized for the LSET when dP_dGas is high	Optimized for the PMET when dP_dGas is low	Optimized for the LSET when dP_dGas is low
taxf1p	271.52	315.18	327.78	334.08
taxg1p	271.52	315.18	327.78	334.08
taxa2p	443.33	514.61	535.17	545.47
taxc2p	443.33	514.61	535.17	545.47
taxf2p	443.33	514.61	535.17	545.47
taxg2p	443.33	514.61	535.17	545.47
taxa3p	1,283.54	1,489.92	945.95	964.14
taxc3p	1,283.54	1,489.92	945.95	964.14
taxf3p	1,283.54	1,489.92	945.95	964.14
taxg3p	1,283.54	1,489.92	945.95	964.14
taxa4p	385.25	447.2	465.06	474.01
taxc4p	385.25	447.2	465.06	474.01
taxf4p	385.25	447.2	465.06	474.01
taxg4p	385.25	447.2	465.06	474.01
taxa5p	385.25	447.2	465.06	474.01
taxc5p	385.25	447.2	465.06	474.01
taxf5p	385.25	447.2	465.06	474.01
taxg5p	385.25	447.2	465.06	474.01
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET				
pollution reduction 1p	33,487,439,233	13,444,215,087	39,268,331,494	13,047,883,348
pollution reduction 2p	15,536,703,367	16,270,478,443	-27,693,721,183	13,922,691,575
pollution reduction 3p	8,143,451,737	8,864,002,784	4,725,602,001	7,149,676,982
pollution reduction 4p	-10,931,857,161	4,939,916,306	24,516,956,109	6,739,638,596
pollution reduction 5p	-6,235,737,164	-3,518,612,927	-817,168,424	-859,890,481
Total reductionp	40	40	40	40
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET.				
Tsdiff	2,992	-4,187	-2,018	-633

Appendix 18: Total Gains from Trade for PMET DP_Dgas Held Constant

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
COEFFICIENTS OF DEMAND		
a P1/q1	-0.00458423	-0.00437064
b p2/q1	-0.00047104	-0.0003095
c p3/q1	-0.00085604	-0.00147377
d p4/q1	-0.00425421	-0.00381106
f P1/q2	-0.00047104	-0.0003095
g p2/q2	-0.00863867	-0.00862872
h p3/q2	-0.00000001	-0.00000001
i p4/q2	-0.00475787	-0.00423628
k P1/q3	-0.00085604	-0.00147377
l p2/q3	-0.00000001	-0.00000001
m p3/q3	-0.08299378	-0.11095094
n p4/q3	-0.00000001	-0.00000001
p P1/q4	-0.00425421	-0.00381106
q p2/q4	-0.00475887	-0.00423628
r p3/q4	0.00000002	-0.00000001
s p4/q4	-0.00549998	-0.00479304
u P1/q5	-0.00276126	-0.00437064
v p2/q5	-0.00056933	-0.00183554
w p3/q5	-0.00083612	-0.00000001
x p4/q5	-0.00000001	-0.00479304
y p5/q5	-0.15276511	-0.13517184
e p5/q1	-0.00276126	-0.00437064
j p5/q2	-0.0005702	-0.00183554
o p5/q3	-0.00083612	-0.00000001
t p5/q4	-0.00000001	-0.00479304
IF THEN STATEMENTS TO PREVENT DIVIDE BY ZERO ERROR		
aa	-0.00458423	-0.00437064
bb	-0.00047104	-0.0003095
cc	-0.00085604	-0.00147377
dd	-0.00425421	-0.00381106
ee	-0.00276126	-0.00437064
ff	-0.00047104	-0.0003095
gg	-0.00863867	-0.00862872
hh	-0.00000001	-0.00000001
ii	-0.00475787	-0.00423628
jj	-0.0005702	-0.00183554
kk	-0.00085604	-0.00147377
ll	-0.00000001	-0.00000001
mm	-0.08299378	-0.11095094
nn	-0.00000001	-0.00000001
oo	-0.00083612	-0.00000001
pp	-0.00425421	-0.00381106
qq	-0.00475887	-0.00423628
rr	-0.00000001	-0.00000001
ss	-0.00549998	-0.00479304

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
tt	-0.00000001	-0.00479304
uu	-0.00276126	-0.00437064
vv	-0.00056933	-0.00183554
ww	-0.00083612	-0.00000001
xx	-0.00000001	-0.00479304
yy	-0.15276511	-0.13517184
KNOWN PRICE BEFORE TAXES		
P1	11,487	11,487
P2	15,746	15,746
P3	17,927	17,927
P4	14,044	14,044
P5	28,041	28,041
KNOWN SALES IN EACH SEGMENT BEFORE TAXES FOR EACH FIRM		
Asub1	336,769	336,769
Csub1	85,031	85,031
Fsub1	169,238	169,238
Gsub1	180,062	180,062
Asub2	323,708	323,708
Csub2	245,399	245,399
Fsub2	355,644	355,644
Gsub2	636,437	636,437
Asub3	48,106	48,106
Csub3	51,453	51,453
Fsub3	39,112	39,112
Gsub3	77,682	77,682
asub4	108,388	108,388
Csub4	55,791	55,791
fsub4	210,264	210,264
gsub4	219,400	219,400
asub5	88,574	88,574
Csub5	14,366	14,366
fsub5	91,591	91,591
gsub5	118,393	118,393
TOTAL SALES IN EACH SEGMENT BEFORE TAXES		
tseg1	771,100	771,100
tseg2	1,561,188	1,561,188
tseg3	216,353	216,353
tseg4	593,843	593,843
tseg5	312,924	312,924
tsum	3,455,408	3,455,408
Elasiticity21	0.24	0.17
Elasiticity31	0.05	0.07
Elasiticity41	3.07	3.31
Elasiticity51	0.14	0.27
Elasiticity12	0.09	0.06
Elasiticity22	-1.17	-1.17
Elasiticity32	0	0
Elasiticity42	0.9	0.92

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
Elasiticity52	0.01	0.03
Elasiticity13	0.12	0.16
Elasiticity23	0	0
Elasiticity33	-1	-0.75
Elasiticity43	0	0
Elasiticity53	0.01	0
Elasiticity14	3.26	3.52
Elasiticity24	2.66	2.72
Elasiticity34	0	0
Elasiticity44	-4.3	-4.93
Elasiticity54	0	0.35
Elasiticity15	0.14	0.27
Elasiticity25	0.02	0.08
Elasiticity35	0	0
Elasiticity45	0	0.33
Elasiticity55	-0.59	-0.66
MARGINAL COST FOR EACH FIRM BY SEGMENT. VALUES SET WITHIN		
MCasub1	9,044	9,044
MCcsub1	10,661	10,689
MCfsub1	9,372	9,387
MCgsub1	9,044	9,044
MCasub2	12,215	12,217
MCcsub2	13,305	13,332
MCfsub2	11,536	11,560
MCgsub2	9,044	9,044
MCasub3	13,571	12,093
MCcsub3	13,571	12,093
MCfsub3	14,458	13,338
MCgsub3	11,225	9,044
MCasub4	10,478	10,448
MCcsub4	12,208	12,344
MCfsub4	10,478	10,448
MCgsub4	9,044	9,044
MCasub5	13,361	13,487
MCcsub5	25,427	25,008
MCfsub5	13,361	13,274
MCgsub5	9,044	9,044
EXOGENOUS COEFFICIENTS SET WITHIN CONSTRAINTS BY PROGRAM		
e	-0.00276126	-0.00437064
j	-0.0005702	-0.00183554
o	-0.00083612	-0.00000001
t	-0.00000001	-0.00479304
y	-0.15276511	-0.13517184
MARKUP FOR EACH FIRM BY SEGMENT		
XMCasub1	2,443	2,443
XMCcsub1	826	798
XMCfsub1	2,115	2,100

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
XMCgsub1	2,443	2,443
XMCasub2	3,531	3,529
XMCcsub2	2,441	2,414
XMCfsub2	4,210	4,186
XMCgsub2	6,702	6,702
XMCasub3	4,356	5,834
XMCcsub3	4,356	5,834
XMCfsub3	3,469	4,589
XMCgsub3	6,702	8,883
XMCasub4	3,566	3,595
XMCcsub4	1,836	1,699
XMCfsub4	3,566	3,595
XMCgsub4	5,000	5,000
XMCasub5	14,681	14,554
XMCcsub5	2,614	3,033
XMCfsub5	14,681	14,768
XMCgsub5	18,998	18,998
LINEARIZED DEMAND INTERCEPT IN EACH SEGMENT		
constant1	19,333	19,290
constant2	32,600	32,545
constant3	36,805	43,068
constant4	28,018	27,942
constant5	79,045	79,422
TOTAL SURPLUS IN AUTO MARKET BEFORE TAXES		
TSseg1	4,715,898,075	4,694,475,030
TSseg2	20,660,766,294	20,602,396,849
TSseg3	3,132,137,355	4,170,030,586
TSseg4	6,484,993,244	6,464,226,825
TSseg5	12,911,904,969	12,973,565,256
Tssum	47,905,699,938	48,904,694,546
CONSUMER SURPLUS IN AUTO MARKET BEFORE TAXES		
CSseg1	3,024,980,170	3,008,485,131
CSseg2	13,156,114,909	13,113,812,901
CSseg3	2,042,122,220	2,719,666,922
CSseg4	4,149,322,178	4,126,766,326
CSseg5	7,980,216,032	8,039,121,480
Cssum	30,352,755,509	31,007,852,760
PRODUCER SURPLUS IN AUTO MARKET BEFORE TAXES		
PSseg1	1,690,917,906	1,685,989,899
PSseg2	7,504,651,385	7,488,583,948
PSseg3	1,090,015,135	1,450,363,665
PSseg4	2,335,671,065	2,337,460,499
PSseg5	4,931,688,938	4,934,443,776
Pssum	17,552,944,429	17,896,841,786
CONSUMER SURPLUS IN TRAVEL MARKET BEFORE TAXES		

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
CStravseg1	6,024,218,750	6,024,218,750
CStravseg2	12,196,781,250	12,196,781,250
CStravseg3	1,690,257,813	1,690,257,813
CStravseg4	4,639,398,438	4,639,398,438
CStravseg5	2,444,718,750	2,444,718,750
Cstravsum	26,995,375,000	26,995,375,000
FIRST ORDER CONDITIONS UNDER LSET		
foc1l	-0.000334937	2.80E-06
foc2l	0.000221741	2.26E-07
foc3l	-0.000274693	0.000225491
foc4l	-0.000347916	-3.42E-07
foc5l	-0.000325623	2.78E-06
foc6l	0.000186003	2.20E-07
foc7l	-0.000166634	0.000225492
foc8l	-0.000341872	-3.65E-07
foc9l	-0.000271837	2.75E-06
foc10l	0.000178966	2.10E-07
foc11l	-0.000167985	0.000225622
foc12l	-0.000278491	-4.00E-07
foc13l	-0.000268956	2.74E-06
foc14l	0.000176658	2.09E-07
foc15l	-0.000168613	0.00022488
foc16l	-0.000275097	-4.01E-07
foc17l	-1.34E-05	-3.09E-07
foc18l	-1.43E-05	-2.38E-07
foc19l	-1.57E-05	-1.24E-07
foc20l	-1.59E-05	-1.16E-07
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER LSET		
p1a1l	12,074	12,105
p1c1l	12,074	12,105
p1f1l	12,074	12,105
p1g1l	12,074	12,105
p2a2l	16,565	16,608
p2c2l	16,565	16,608
p2f2l	16,565	16,608
p2g2l	16,565	16,608
p3a3l	18,871	18,921
p3c3l	18,871	18,921
p3f3l	18,871	18,921
p3g3l	18,871	18,921
p4a4l	14,990	15,039
p4c4l	14,990	15,039
p4f4l	14,990	15,039
p4g4l	14,990	15,039
p5a5l	28,992	29,041
p5c5l	28,992	29,041
p5f5l	28,992	29,041
p5g5l	28,992	29,041

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET		
lemp_a1	2.3	2.19
lemp_c1	2.3	2.19
lemp_f1	2.3	2.19
lemp_g1	2.3	2.19
lemp_a2	3.26	3.09
lemp_c2	3.26	3.09
lemp_f2	3.26	3.09
lemp_g2	3.26	3.09
lemp_a3	3.73	3.54
lemp_c3	3.73	3.54
lemp_f3	3.73	3.54
lemp_g3	3.73	3.54
lemp_a4	3.73	3.54
lemp_c4	3.73	3.54
lemp_f4	3.73	3.54
lemp_g4	3.73	3.54
lemp_a5	3.73	3.54
lemp_c5	3.73	3.54
lemp_f5	3.73	3.54
lemp_g5	3.73	3.54
SALES BY EACH FIRM IN EACH SEGMENT AFTER LSET		
Asub1nl	288,076	241,767
Csub1nl	42,395	-
Fsub1nl	131,930	94,153
Gsub1nl	143,271	106,124
Asub2nl	289,903	265,407
Csub2nl	214,918	192,457
Fsub2nl	329,032	308,988
Gsub2nl	610,398	590,684
Asub3nl	45,773	47,131
Csub3nl	49,055	50,342
Fsub3nl	36,660	37,870
Gsub3nl	75,232	76,419
asub4nl	131,981	183,873
Csub4nl	72,364	119,153
fsub4nl	218,903	259,649
gsub4nl	227,444	267,422
asub5nl	88,057	87,932
Csub5nl	13,770	13,805
fsub5nl	90,783	91,007
gsub5nl	117,577	117,812
TOTAL SALES IN EACH SEGMENT AFTER LSET		
tseg1nl	605,673	442,044
tseg2nl	1,444,252	1,357,537
tseg3nl	206,719	211,762
tseg4nl	650,692	830,097

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
tseg5nl	310,187	310,556
tsumnl	3,217,523	3,151,996
SALES LOST IN EACH SEGMENT UNDER LSET		
lostsales1l	165,427	329,056
lostsales2l	116,936	203,651
lostsales3l	9,634	4,591
lostsales4l	-56,849	-236,254
lostsales5l	2,737	2,368
lostsuml	273,892	273,892
CONSUMER SURPLUS IN AUTO MARKET AFTER LSET		
CSlsetseg1	2,198,135,598	1,588,074,448
CSlsetseg2	11,578,914,751	10,817,654,946
CSlsetseg3	1,853,674,616	2,556,680,770
CSlsetseg4	4,238,754,945	5,355,273,690
CSlsetseg5	7,762,955,817	7,823,065,722
Cslsetsum	27,632,435,727	28,140,749,576
PRODUCER SURPLUS IN AUTO MARKET AFTER LSET		
PSlsetseg1	1,281,803,355	981,457,257
PSlsetseg2	6,717,676,246	6,350,119,857
PSlsetseg3	995,414,615	1,368,706,723
PSlsetseg4	2,368,499,342	2,929,320,786
PSlsetseg5	4,823,858,483	4,828,309,784
Pslsetsum	16,187,252,040	16,457,914,408
TOTAL SURPLUS IN AUTO MARKET AFTER LSET		
TSlsetseg1	3,479,938,953	2,569,531,705
TSlsetseg2	18,296,590,997	17,167,774,803
TSlsetseg3	2,849,089,231	3,925,387,493
TSlsetseg4	6,607,254,287	8,284,594,476
TSlsetseg5	12,586,814,300	12,651,375,506
Tslsetsum	43,819,687,767	44,598,663,983
dwllset	4,086,012,170	4,306,030,563
surpluslset	313,773,437,767	314,552,413,983
TAX PER VEHICLE PER GRAM OF EMISSIONS PER MILE: VALUES SET B		
LSET	158.43	175.45
ABATEMENT CONSTANT FROM ABATEMENT EQUATION		
Abate1	840	840
Abate2	1,680	1,680
Abate3	2,200	2,200
Abate4	2,200	2,200
Abate5	1,680	1,680
EMISSIONS OF OLDEST NON-GROSS POLLUTER		
max emis1	7.5	7.5
max emis2	7.5	7.5

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
max emis3	7.5	7.5
max emis4	7.5	7.5
max emis5	7.5	7.5
EMISSIONS OF NEW VEHICLES BEFORE TAXES		
cur_emis1	4.2	4.2
cur_emis2	4.2	4.2
cur_emis3	5.5	5.5
cur_emis4	5.5	5.5
cur_emis5	4.2	4.2
TAX REVENUE IN EACH SEGMENT UNDER LSET		
taxrevlsetseg1	220,954,338	169,699,146
taxrevlsetseg2	745,113,195	737,022,894
taxrevlsetseg3	122,044,013	131,563,267
taxrevlsetseg4	384,159,407	515,721,458
taxrevlsetseg5	183,130,271	192,941,849
taxrevlsetsum	1,655,401,223	1,746,948,615
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER LSET		
taxa1	364.81	383.9
taxc1	364.81	383.9
taxf1	364.81	383.9
taxg1	364.81	383.9
taxa2	515.92	542.91
taxc2	515.92	542.91
taxf2	515.92	542.91
taxg2	515.92	542.91
taxa3	590.39	621.28
taxc3	590.39	621.28
taxf3	590.39	621.28
taxg3	590.39	621.28
taxa4	590.39	621.28
taxc4	590.39	621.28
taxf4	590.39	621.28
taxg4	590.39	621.28
taxa5	590.39	621.28
taxc5	590.39	621.28
taxf5	590.39	621.28
taxg5	590.39	621.28
'POLLUTION REDUCTION IN EACH SEGMENT UNDER LSET		
pollution reduction 1l	7,239,672,975	-2,358,394,810
pollution reduction 2l	11,723,891,964	9,945,718,595
pollution reduction 3l	4,168,486,985	4,867,708,256
pollution reduction 4l	15,213,371,212	25,183,173,851
pollution reduction 5l	1,654,576,330	2,361,794,108
Total reductionl	40	40
TAX PER GRAM OF EMISSIONS PER MILE TRAVELED: VALUES SET BY		

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
PMET	0.0119315	0.0114556
FIRST ORDER CONDITIONS UNDER LSET		
foc1p	0.000532627	7.59E-06
foc2p	-0.000324065	-5.83E-07
foc3p	-9.17E-05	0.000550634
foc4p	0.000561247	2.82E-07
foc5p	0.000550626	7.58E-06
foc6p	-0.000336498	-5.92E-07
foc7p	-9.31E-05	0.000550635
foc8p	0.000580842	2.67E-07
foc9p	0.000594299	7.54E-06
foc10p	-0.000367383	-5.99E-07
foc11p	-9.66E-05	0.000550764
foc12p	0.000630535	2.24E-07
foc13p	0.000597418	7.53E-06
foc14p	-0.000369304	-6.00E-07
foc15p	-9.60E-05	0.000550022
foc16p	0.00063414	2.22E-07
foc17p	-5.98E-05	1.67E-06
foc18p	-6.05E-05	1.74E-06
foc19p	-6.34E-05	1.86E-06
foc20p	-6.36E-05	1.87E-06
PRICE IN EACH SEGMENT FOR EACH FIRM AFTER PMET		
p1a1	11,674	11,671
p1c1	11,674	11,671
p1f1	11,674	11,671
p1g1	11,674	11,671
p2a2	16,040	16,034
p2c2	16,040	16,034
p2f2	16,040	16,034
p2g2	16,040	16,034
p3a3	18,795	18,779
p3c3	18,795	18,779
p3f3	18,795	18,779
p3g3	18,795	18,779
p4a4	14,306	14,301
p4c4	14,306	14,301
p4f4	14,306	14,301
p4g4	14,306	14,301
p5a5	28,360	26,500
p5c5	28,360	26,500
p5f5	28,360	26,500
p5g5	28,360	26,500
CHANGE IN VEHICLES PRICE BY SEGMENT CAUSED BY $1 INCREASE		
dp/dgas1	9,369	9,369
dp/dgas2	12,488	12,488
dp/dgas3	79,938	79,938

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
dp/dgas4	7,202	7,202
dp/dgas5	4,000	160,669
sum of dpdgas 112,996 269,665		
MILES TRAVELED IN EACH SEGMENT UNDER PMET		
VMT1	11,699	11,705
VMT2	11,631	11,638
VMT3	11,833	11,836
VMT4	11,444	11,455
VMT5	11,444	11,455
TAX PAID PER MILE BY CONSUMERS FOR EACH FIRMS' VEHICLES IN E		
tpma1	0.0327069	0.032048
tpmc1	0.0327069	0.032048
tpmf1	0.0327069	0.032048
tpmg1	0.0327069	0.032048
tpma2	0.040064	0.0392568
tpmc2	0.040064	0.0392568
tpmf2	0.040064	0.0392568
tpmg2	0.040064	0.0392568
tpma3	0.0181211	0.017756
tpmc3	0.0181211	0.017756
tpmf3	0.0181211	0.017756
tpmg3	0.0181211	0.017756
tpma4	0.0603736	0.0591572
tpmc4	0.0603736	0.0591572
tpmf4	0.0603736	0.0591572
tpmg4	0.0603736	0.0591572
tpma5	0.0603736	0.0591572
tpmc5	0.0603736	0.0591572
tpmf5	0.0603736	0.0591572
tpmg5	0.0603736	0.0591572
CONSUMER SURPLUS IN TRAVEL MARKET AFTER PMET		
cstravelpmetseg1	5,705,630,502	5,684,838,961
cstravelpmetseg2	11,460,257,785	11,466,223,494
cstravelpmetseg3	1,649,669,846	1,649,149,375
cstravelpmetseg4	4,333,692,188	4,363,085,964
cstravelpmetseg5	2,226,383,949	2,266,554,419
cstravelpmetsum	25,375,634,271	25,429,852,211
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER PME		
epm_a1	2.74	2.8
epm_c1	2.74	2.8
epm_f1	2.74	2.8
epm_g1	2.74	2.8
epm_a2	3.36	3.43
epm_c2	3.36	3.43
epm_f2	3.36	3.43
epm_g2	3.36	3.43

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
epm_a3	1.52	1.55
epm_c3	1.52	1.55
epm_f3	1.52	1.55
epm_g3	1.52	1.55
epm_a4	5.06	5.16
epm_c4	5.06	5.16
epm_f4	5.06	5.16
epm_g4	5.06	5.16
epm_a5	5.06	5.16
epm_c5	5.06	5.16
epm_f5	5.06	5.16
epm_g5	5.06	5.16
SALES BY EACH FIRM IN EACH SEGMENT AFTER PMET		
Asub1n	342,491	354,430
Csub1n	95,529	113,442
Fsub1n	186,344	206,815
Gsub1n	197,685	218,786
Asub2n	318,032	319,597
Csub2n	242,190	246,894
Fsub2n	357,161	363,178
Gsub2n	638,528	644,874
Asub3n	41,078	42,757
Csub3n	44,378	45,958
Fsub3n	31,966	33,496
Gsub3n	70,537	72,046
asub4n	76,869	76,006
Csub4n	18,986	10,939
fsub4n	163,792	151,782
gsub4n	172,333	159,555
asub5n	87,741	74,618
Csub5n	13,051	-
fsub5n	90,467	77,693
gsub5n	117,260	104,498
TOTAL SALES IN EACH SEGMENT AFTER PMET		
tseg1n	822,049	893,473
tseg2n	1,555,910	1,574,544
tseg3n	187,960	194,257
tseg4n	431,980	398,282
tseg5n	308,519	256,809
tsumn	3,306,418	3,317,365
CONSUMER SURPLUS IN AUTO MARKET AFTER PMET		
CSPMETseg1	3,021,806,434	3,269,649,825
CSPMETseg2	12,493,517,058	12,613,238,094
CSPMETseg3	1,556,416,835	2,221,302,553
CSPMETseg4	2,867,787,064	2,631,681,695
CSPMETseg5	7,781,438,753	5,575,022,393
CsPMETsum	27,720,966,145	26,310,894,560

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
PRODUCER SURPLUS IN AUTO MARKET AFTER PMET		
PSpmetseg1	1,695,087,755	1,821,349,702
PSpmetseg2	7,176,503,526	7,247,468,767
PSpmetseg3	846,779,455	1,201,022,347
PSpmetseg4	1,680,146,603	1,568,139,670
PSpmetseg5	4,842,235,101	3,713,229,103
Pspmetsum	16,240,752,442	15,551,209,590
TOTAL SURPLUS IN AUTO MARKET AFTER LSET		
TSPMETseg1	4,716,894,189	5,090,999,527
TSPMETseg2	19,670,020,584	19,860,706,861
TSPMETseg3	2,403,196,291	3,422,324,900
TSPMETseg4	4,547,933,668	4,199,821,365
TSPMETseg5	12,623,673,854	9,288,251,497
TSPMETsum	43,961,718,586	41,862,104,150
dwlpmet	4,036,503,536	7,122,405,619
pmetsurplus	312,990,246,738	311,017,701,916
taxrevpmetseg1	314,536,057	335,151,195
taxrevpmetseg2	656,675,174	658,404,853
taxrevpmetseg3	40,303,556	40,826,224
taxrevpmetseg4	298,450,716	269,889,753
taxrevpmetseg5	217,253,041	181,435,540
taxrevpmetsum	1,527,218,544	1,485,707,565
SALES LOST IN EACH SEGMENT UNDER PMET		
lostsales1	-50,949	-122,373
lostsales2	5,278	-13,356
lostsales3	28,393	22,096
lostsales4	161,863	195,561
lostsales5	4,405	56,115
lostsum	148,990	138,043
COST OF ABATEMENT PER VEHICLE BY FIRM UNDER PMET		
taxa1p	306.43	300.26
taxc1p	306.43	300.26
taxf1p	306.43	300.26
taxg1p	306.43	300.26
taxa2p	500.32	490.24
taxc2p	500.32	490.24
taxf2p	500.32	490.24
taxg2p	500.32	490.24
taxa3p	1,448.56	1,419.37
taxc3p	1,448.56	1,419.37
taxf3p	1,448.56	1,419.37
taxg3p	1,448.56	1,419.37
taxa4p	434.78	426.02
taxc4p	434.78	426.02
taxf4p	434.78	426.02
taxg4p	434.78	426.02

Variable	Optimized results holding dP_dGas at low value in segment 5	Optimized results holding dP_dGas at high value in segment 5
taxa5p	434.78	426.02
taxc5p	434.78	426.02
taxf5p	434.78	426.02
taxg5p	434.78	426.02
'POLLUTION REDUCTION IN EACH SEGMENT UNDER PMET		
pollution reduction 1p	17,087,115,242	20,620,546,994
pollution reduction 2p	17,444,282,026	17,089,108,370
pollution reduction 3p	8,346,005,359	8,726,776,370
pollution reduction 4p	-387,662,644	-1,966,435,863
pollution reduction 5p	-2,489,742,255	-4,469,995,829
Total reductionp	40	40
DIFFERENCE IN TOTAL GAINS FROM TRADE UNDER PMET AND LSET.		
Tsdiff	783	3,535

Appendix 19: Comparison of Results in Quarter 27

QUARTER	Results for LSET when Market Conditions are Optimized for LSET	Results for LSET when Market Conditions are Optimized for PMET
TOTAL SALES IN EACH SEGMENT BEFORE TAXES		
tseg1	623,376	623,376
tseg2	1,734,172	1,734,172
tseg3	427,155	427,155
tseg4	654,063	654,063
tseg5	295,857	295,857
tsum	3,734,623	3,734,623
ELASTICITES: CHANGE IN PRICE IN MARKET i ON QUANTITY IN MARKET j		
Elasiticity11	(3.98)	(3.36)
Elasiticity21	4.91	0.00
Elasiticity31	0.02	0.00
Elasiticity41	0.17	0.83
Elasiticity51	0.10	4.75
Elasiticity12	1.43	0.00
Elasiticity22	(3.38)	(1.04)
Elasiticity32	0.00	0.00
Elasiticity42	0.47	0.00
Elasiticity52	0.12	1.16
Elasiticity13	0.02	0.00
Elasiticity23	0.00	0.05
Elasiticity33	(0.73)	(0.59)
Elasiticity43	0.00	0.01
Elasiticity53	0.01	0.00
Elasiticity14	0.14	0.67
Elasiticity24	1.29	0.00
Elasiticity34	0.00	0.01
Elasiticity44	(1.38)	(1.22)
Elasiticity54	0.01	0.01
Elasiticity15	0.09	4.41
Elasiticity25	0.39	3.70
Elasiticity35	0.01	0.00
Elasiticity45	0.01	0.01
Elasiticity55	(0.71)	(11.11)

QUARTER	Results for LSET when Market Conditions are Optimized for LSET	Results for LSET when Market Conditions are Optimized for PMET
OPTIMAL EMISSIONS FOR EACH FIRM IN EACH SEGMENT AFTER LSET		
lemp_a1	2.42	2.34
lemp_c1	2.42	2.34
lemp_f1	2.42	2.34
lemp_g1	2.42	2.34
lemp_a2	3.42	3.30
lemp_c2	3.42	3.30
lemp_f2	3.42	3.30
lemp_g2	3.42	3.30
lemp_a3	3.91	3.78
lemp_c3	3.91	3.78
lemp_f3	3.91	3.78
lemp_g3	3.91	3.78
lemp_a4	3.91	3.78
lemp_c4	3.91	3.78
lemp_f4	3.91	3.78
lemp_g4	3.91	3.78
lemp_a5	3.91	3.78
lemp_c5	3.91	3.78
lemp_f5	3.91	3.78
lemp_g5	3.91	3.78
TOTAL SALES IN EACH SEGMENT AFTER LSET		
tseg1nl	699,966	376,479
tseg2nl	1,418,379	1,547,972
tseg3nl	416,560	420,731
tseg4nl	652,710	664,957
tseg5nl	295,956	476,018
tsumnl	3,483,571	3,486,157
SALES LOST IN EACH SEGMENT UNDER LSET		
lostsales1l	(76,590)	246,897
lostsales2l	315,793	186,200
lostsales3l	10,595	6,424
lostsales4l	1,353	(10,894)
lostsales5l	(99)	(180,161)
lostsuml	251,052	248,466
LSET	143.92	154.01

Vita

Robert Paul Culp was born in Katonah, NY on December 25, 1967. He spent his early childhood in Janesville, Wisconsin and his formative years in Bristol, Tennessee. He graduated from Bristol Tennessee High School in 1986. Robert attended his first year of college at Tennessee Technological University. From there, he transferred to Texas A&M where he earned his undergraduate degree in Economics with a minor in Political Science, and earned his Masters degree in Economics. While at Texas A&M, Robert tutored students for the Athletic Department.

Following graduation from Texas A&M, Robert returned to Tennessee teaching economics at Tennessee Technological University. Later, while continuing to teach at Tennessee Technological University, he began his doctoral degree studies. Upon completion of his class studies, he moved to Dallas, Texas.

Robert is currently an instructor at the University of Texas at Dallas.