

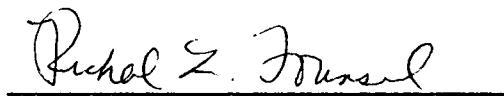
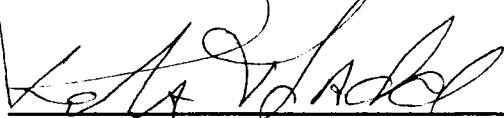
To the Graduate Council:

I am submitting herewith a dissertation written by Theresa Beth Walter entitled "Transfer Pricing Within an Organizational Context: An Expansion of the Theory and an Experiment in Bilateral Negotiation." I have examined the final 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 Accounting.



Harold P. Roth, Major Professor

We have read this dissertation
and recommend its acceptance:



Accepted for the Council:



Associate Vice Chancellor and
Dean of the The Graduate School

**TRANSFER PRICING WITHIN AN ORGANIZATIONAL CONTEXT:
AN EXPANSION OF THE THEORY AND
AN EXPERIMENT IN BILATERAL NEGOTIATION**

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Theresa Beth Walter

August 1995

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ABSTRACT

This study develops a comprehensive organizational theory of transfer pricing by expanding the existing theories of transfer pricing to include additional aspects of the environmental, organizational, and behavioral factors from the markets and hierarchies theory and other organizational theories. The impact of three of these factors is then studied within the context of a bilateral negotiated transfer pricing experiment with students as surrogates for divisional managers.

The three independent variables studied in this experiment are: (1) the degree of market uncertainty, (2) the performance evaluation basis, and (3) the previous negotiation history. The outcomes of the transfer pricing process include: (1) the decision to buy the product externally or make the product internally, (2) the negotiated transfer price for an internal transfer and the resulting profit allocation between the divisions, and (3) the post-negotiation attitudes of the negotiators. Since no participants chose an external transaction, the make-or-buy decision could not be tested. The profit allocation was tested with an ANOVA model and the attitudes were tested with both MANOVA and ANOVA.

Consistent with theory and prior research, the results of this study indicate a greater divergence in the profit allocation between the divisions and more negative attitudes between the negotiators with high market uncertainty than with low market uncertainty. In conditions of low market uncertainty, greater divergence was found in the profit allocation between the divisions with a divisional performance evaluation basis than

with a mixed scheme based on both divisional and corporate results. Contrary to the hypotheses, divisional performance evaluation resulted in more positive post-negotiation attitudes. Gender was a significant covariate in the analysis of the negotiators' attitudes toward opportunity for success. Female participants reported more positive responses (i.e., more equal opportunity for success in the negotiation) than male participants. The previous negotiation history was not a significant variable in the analysis of the profit allocation or the post-negotiation attitudes, except for conflict. As hypothesized, more conflict was reported with a negative negotiation history.

An increased understanding of the transfer pricing negotiation may enhance managerial decision-making, performance evaluation, job satisfaction, cooperation between divisions, and corporate profit.

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CHAPTER I

INTRODUCTION

Despite an extensive body of literature and research, the transfer pricing process remains "one of the most contentious activities in decentralized firms" [Kaplan and Atkinson, 1989, p. 538]. Transfer pricing is important because it affects managerial decision-making, corporate profits, performance evaluation, and the cooperation between organizational segments. Figure 1 illustrates some of the factors that affect the transfer pricing process and the potential impact of transfer pricing within an organization. Although transfer pricing should be considered within an organizational context,¹ no studies have developed and tested a comprehensive organizational theory of the transfer pricing process.

This study builds upon existing theories to develop a comprehensive organizational theory of transfer pricing to include the environmental, organizational, and behavioral factors that impact transfer pricing outcomes. The impact of three of these factors is then studied within the context of a negotiated transfer pricing experiment. Specifically, the objectives of this study are:

- (1) To expand the organizational theory of transfer pricing developed by Spicer [1988] to include additional aspects of the organizational

¹As suggested by Watson and Baumler [1975], Waterhouse and Tiessen [1978], Swieringa and Waterhouse [1982], Spicer [1988], Baiman [1990], and Antle [1989].

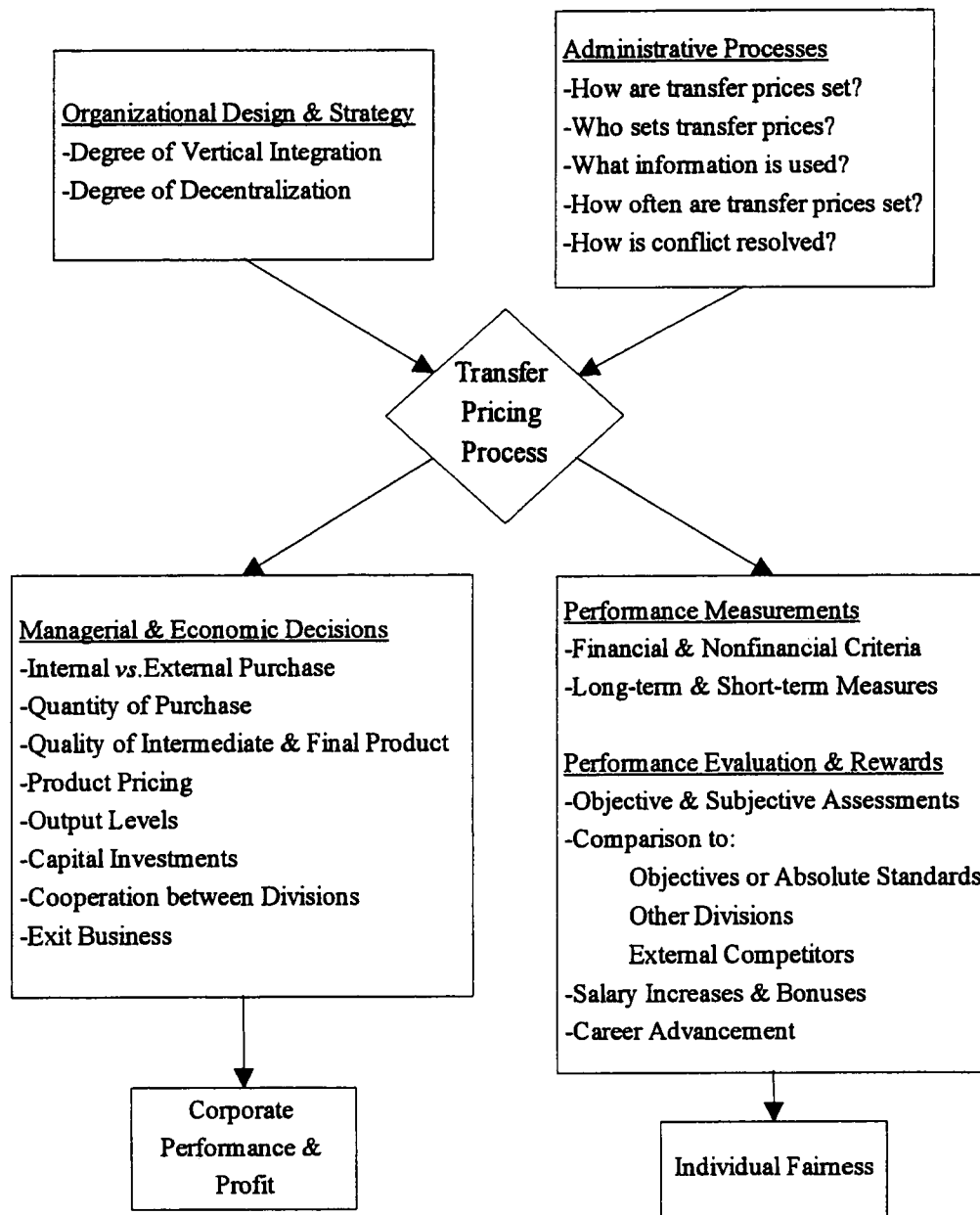


FIGURE 1
TRANSFER PRICING MODEL

Source: Adapted from R. G. Eccles, The Transfer Pricing Problem: A Theory for Practice (Lexington, MA: Lexington Books, 1985), p. 115.

design, strategy, human, and environmental factors from the markets and hierarchies theory [Williamson, 1964, 1970, 1975, 1981a, 1981b, 1986, 1993a, 1993b] and other organizational theories; and

- (2) To analyze the impact of an environmental variable (the degree of market uncertainty), an organizational variable (the basis for performance evaluation), and a behavioral variable (the negotiation history) on three outcomes of transfer price negotiations. These outcomes are:
 - (a) the decision to buy the product externally or make the product internally,
 - (b) the transfer price for an internal transfer and the resulting profit allocation between the divisions, and
 - (c) the post-negotiation attitudes of the negotiators.

An increased understanding of the domestic transfer pricing negotiation may enhance the outcomes of the process for the divisions and for the company as a whole. These transfer pricing outcomes may, in turn, impact managerial decision-making, production quality and output, performance evaluation, job satisfaction, cooperation between organizational segments, and corporate profit.

To accomplish these objectives, an experiment in bilateral negotiation was conducted with graduate and upper-level undergraduate students as surrogates for

divisional managers. Subjects were provided with a short case that included information on the three variables of interest (the degree of market uncertainty, the basis for performance evaluation, and the negotiation history). Each subject assumed the role of a divisional manager and participated in face-to-face negotiations with another subject. The negotiation ended when the two surrogate managers decided to either participate in an internal transfer, at a mutually-determined transfer price, or pursue external transactions. After the negotiation, all participants completed attitude questionnaires.

This dissertation is organized into six chapters and several appendices. Chapter I introduces the research problem. Chapter II reviews the transfer pricing literature. Chapter III shows the development of the theoretical foundation and the specific hypotheses. Chapter IV describes the research methodology. Chapter V presents the results of the analysis. Chapter VI presents conclusions from the analysis, contributions and limitations of the study, and implications for future research. Appendix A shows the theoretical model of transfer pricing within an organizational context. The case utilized in the experiment is presented in Appendices B through F. Additional information supporting the analysis is presented in Appendices G, H, I, and J.

CHAPTER II

LITERATURE REVIEW

This chapter provides a review of the relevant transfer pricing literature. This body of literature has been divided into three main sections: (1) traditional views of transfer pricing, (2) organizational views of transfer pricing, and (3) international transfer pricing.

TRADITIONAL VIEWS OF TRANSFER PRICING

The primary problem in domestic transfer pricing is to enable divisional managers to maintain autonomy while making decisions that coincide with global organizational goals [Abdel-khalik and Lusk, 1974]. Traditionally, academicians have concentrated on developing optimum transfer pricing models to deal simultaneously with these two objectives of divisional autonomy and goal congruence. However, the transfer pricing models that have been developed with traditional analytical or mathematical techniques still result in some form of suboptimization [Spicer, 1988].

Critical reviews of this traditional transfer pricing research are provided by Abdel-khalik and Lusk [1974], Grabski [1985], and Emmanuel and Mehafdi [1994]. Many authors provide a description and comparison of the different transfer pricing models which are utilized in practice and/or have been suggested by academicians [Solomons, 1965; Ackelsberg, 1977; Mays, 1979; Vancil, 1979; Benke and Edwards, 1980;

Horngren, 1982; Kaplan, 1982; Yunker, 1982; Eccles, 1985; Joy, 1985; Morse and Roth, 1986; Borkowski, 1988; Hirsch, 1988; Yost, 1989; Li, 1990; Colbert, 1991; Mahenthiran, 1991; Leitch and Barrett, 1992; Vaysman, 1993; Emmanuel and Mehafdi, 1994; Van der Meer-Kooistra, 1994].

The traditional views of transfer pricing can be divided into five general categories:

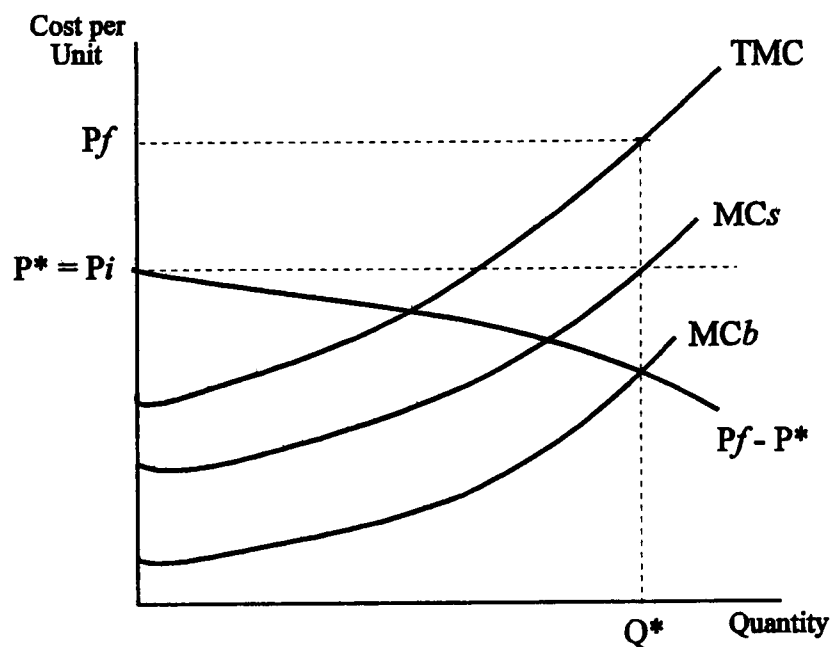
- (1) the classical economic perspective, (2) the mathematical programming approach,
- (3) other analytical approaches, (4) negotiation, and (5) transfer pricing in practice.

This section will provide an overview of these traditional approaches to transfer pricing.

Classical Economic Perspective

The classical economic, or theory of the firm, approach is based on the works of Cook [1955] and Hirshleifer [1956, 1957]. The Hirshleifer model assumes that a firm has two profit centers where the output of one profit center (the selling or manufacturing division) is the input for the other profit center (the buying or distribution division). There is an assumed competitive external market for both the firm's final product and the intermediate product transferred between the divisions. Additional assumptions include single product divisions, autonomous management, technological and demand independence, temporal stability, and complete information [Hirshleifer, 1956].

Given these assumptions, Hirshleifer states that, under perfect competition, the transfer price (P^*) will be equal to the external market price for the intermediate product (P_i). This model, also known as the market price rule, is shown graphically in Figure 2. Since the selling division is free to sell the product externally at P_i , it would have no



KEY:

P^* = Transfer Price

P_f = Price of Final Product

P_i = Price of Intermediate Product

Q^* = Quantity Transferred

MC_s = Marginal Cost (Selling Division)

MC_b = Marginal Cost (Buying Division)

TMC = Total Marginal Cost

FIGURE 2

**HIRSHLEIFER ECONOMIC MODEL
UNDER PERFECT COMPETITION**

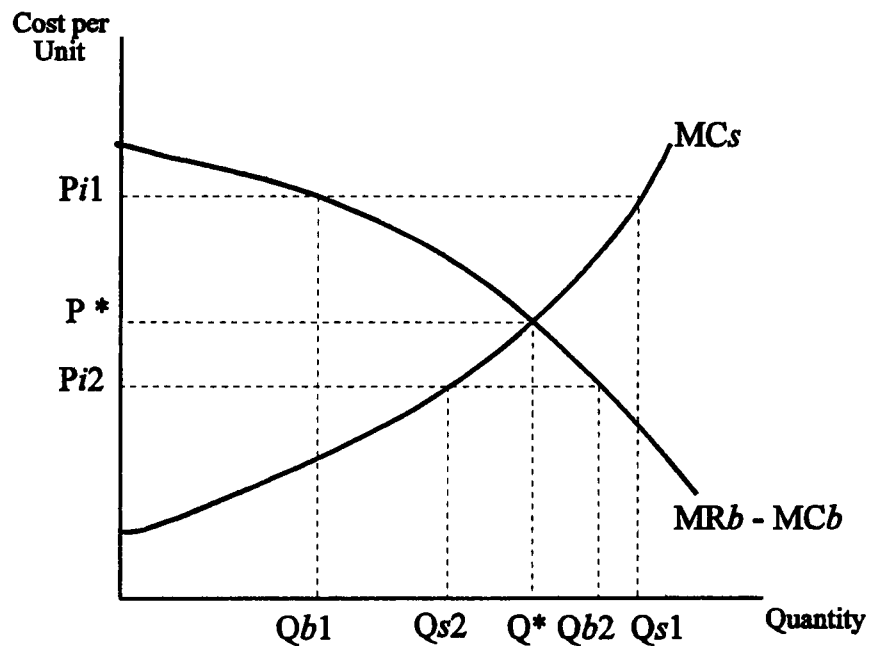
Source: Adapted from J. Hirshleifer, "On the Economics of Transfer Pricing," Journal of Business, July 1956, p. 174.

incentive to lower the price below P_i . The buying division would not be willing to pay more than P_i since it could purchase externally at that price. Solomons [1965] suggests a slight modification of this market price rule for the non-incurrence of selling and bad debt expenses due to the internal transfer. The market price rule may also be stated in terms of the contribution margin or opportunity cost:

The transfer price (TP) should equal the standard variable cost (SVC) plus the contribution margin per unit given up on the outside sale by the company when a segment sells internally. The contribution margin given up is referred to as the lost contribution margin (LCM) or $TP = SVC + LCM$ The lost contribution margin, which is sometimes known as the opportunity cost, is always the difference between the external market price of the intermediate product and its standard variable cost [Benke, Edwards, and Wheelock, 1982, pp. 43-44].

This market price rule is based on the work of Cook [1955] and is supported by the National Association of Cost Accountants in Research Series No. 30 [1956]. This rule generates a transfer price that would make the selling division indifferent to an internal or external sale since the contribution would be equivalent under each alternative [Horngren, 1982].

If the perfect competition assumption is relaxed, the Hirshleifer model advocates setting the transfer price along the marginal cost curve of the selling division. This marginal cost rule is "in the context of economic theory, i.e., the additional cost of producing an additional unit where cost includes returns to all factors of production including capital" [Abdel-khalik and Lusk, 1974, p. 13]. Figure 3 is a graphical representation of the marginal cost rule. This figure is similar to Figure 2; however, there may or may not be an external price for the intermediate product, and the market for the



KEY:

P^* = Transfer Price

P_i = Price of Intermediate Product

Q^* = Quantity Transferred

Q_s = Quantity to be Sold

Q_b = Quantity to be Bought

MC_s = Marginal Cost (Selling Division)

$MR_b - MC_b$ = Marginal Revenue Minus
Marginal Cost (Buying Division)

1, 2, 3 = Situation 1, 2, or 3

FIGURE 3

**HIRSHLEIFER ECONOMIC MODEL
UNDER IMPERFECT COMPETITION**

Source: Adapted from J. Hirshleifer, "On the Economics of Transfer Pricing,"
Journal of Business, July 1956, p. 174.

final product may be imperfect. Therefore, the relevant considerations are the marginal cost curve of the selling division and the curve representing the buying division's net marginal revenue.

Gould [1964] discusses three situations which may arise, as shown graphically in Figure 3. In the first situation, there is an external market price for the intermediate product of P_i1 . At this price, the selling division would be willing to produce quantity Q_s1 , but the buying division would be willing to purchase only Q_b1 . Therefore, the selling division would have a quantity of $(Q_s1 - Q_b1)$ to sell externally. In the second situation, there is an external market price for the intermediate product of P_i2 . At this price, the selling division would be willing to produce quantity Q_s2 . Since the buying division would be willing to purchase Q_b2 , it will be forced to purchase a quantity of $(Q_b2 - Q_s2)$ externally. In the third situation, there is no external market for the intermediate product, so the divisions should transfer a quantity Q^* at a transfer price of P^* , which is the intersection of the marginal cost curve of the selling division and the net marginal revenue curve of the buying division.

To reach the quantity and price decisions outlined above, Hirshleifer [1956] suggests a procedure where the selling division provides the buying division with a schedule of the quantity to be produced at any given transfer price. This schedule would actually be the selling division's marginal cost curve. The buying division would then use this information to determine the optimum level of final output, given the external market structure and the division's marginal costs and marginal revenues [Grabski, 1985]. Since the economic marginal cost is not a standard output of the accounting system,

modifications of the accounting system would be required for implementation of this method. In addition, divisional managers may engage in dysfunctional behavior, such as misstatement of the marginal curves [Abdel-khalik and Lusk, 1974].

Many authors have written articles in support of this basic marginal or incremental cost rule [Bierman, 1959; Dearden, 1960; Gould, 1964; Henderson and Dearden, 1966; Goetz, 1967; Ronen and McKinney, 1970; Ronen, 1974; Schwab, 1975; Kanodia, 1979; Benke and Edwards, 1980; Benke, Edwards, and Wheelock, 1982; Ronen and Balachandran, 1988; Yost, 1989, 1990; Aranoff, 1990; Amershi and Cheng, 1990; Garrett, 1992a, 1992b; Banker and Datar, 1992; Ronen, 1992; Mellman, Kerstein, and Lilien, 1995]. Although these articles may be strong analytically, they do not provide acceptable alternatives for actual implementation.

Kanodia [1979] extended the basic Hirshleifer model by incorporating uncertainty and risk-sharing between divisional managers. However, this model has many of the same limitations and implementation problems as Hirshleifer's model. Both Hirshleifer and Kanodia were criticized by Harris, Kriebel, and Raviv [1982] for not considering: (1) information asymmetries between the divisions and central management, and (2) the divergence of preferences both between the divisional managers and between the managers and the firm. Harris, Kriebel, and Raviv develop a linear model of optimal resource allocation, but they limit the generalizability of the model by assuming there are no binding capacity constraints on production.

Ronen and McKinney [1970] and Ronen [1974] suggest a system for supplying divisional information to central management for the marginal cost rule to be implemented

while still maintaining divisional autonomy. Their model involves the imposition of a tax or subsidy between the divisions. However, Bailey and Boe [1976] believe this alternative involves a partial recentralization since central management must administer the system and would, therefore, diminish the benefits inherent in decentralization. Groves and Loeb [1976] state that the benefits of decentralization are obscured in the Ronen and McKinney model due to the role of central management and the possibility of dysfunctional behavior (i.e., misstatement of marginal costs and revenues) by the divisional managers. Groves and Loeb [1976, 1979] recommend a fully-centralized cost-plus transfer pricing scheme. Ronen [1992] argues that the divisions would have incentives to supply correct information because only truthful reporting would result in an optimal transfer pricing outcome for the divisions and the firm. Ronen and Balachandran [1988] extended the Ronen and McKinney [1970] model by incorporating uncertainty and moral hazard.

Abdel-khalik and Lusk [1974] summarize the criticisms of the economic models:

- (1) The models are static, presuming temporal stability.
- (2) The independence of demand and technology may be difficult to justify.
- (3) The models assume a linear production function with constant proportions.
- (4) Marginal cost pricing may induce dysfunctional behavior of divisional managers.
- (5) Inefficiencies in one division may be passed on to other divisions in the form of higher prices.
- (6) The models do not incorporate cost-benefit criteria.
- (7) The models present solutions for two divisions only.

Kaplan [1982] also criticizes the economic models because marginal pricing may conflict with divisional autonomy and be difficult to implement. Grabski [1985, p. 39] states that "in general, the economic models are limited in scope, i.e., are able to deal with only the conceptually simple cases."

Mathematical Programming Approach

The inability of the economic models to deal with multidivision, multiproduct, decentralized organizations led to the development of mathematical programming techniques to achieve efficient transfer pricing rules while still maintaining divisional autonomy. The mathematical programming approach and the classical economic approach both suggest that the transfer price should be equal to the opportunity cost of producing the intermediate product. In the absence of an external market, the determination of this opportunity cost requires an examination of alternative uses for the transferred product. Mathematical programming techniques are used to provide a measure of these alternative uses. "The construct underlying the transfer pricing rationale is the use of shadow prices as they provide a measure for the internal opportunity cost" [Abdel-khalik and Lusk, 1974, p. 16].

Dopuch and Drake [1964] examined both linear and non-linear programming techniques for transfer pricing under production constraints. While linear programming provides shadow prices to measure opportunity costs, the authors recognized that the benefits of decentralization may be reduced by a centrally imposed programming method. The shadow prices are accurate measures of opportunity costs only as long as two

conditions exist: (1) the product mix does not change, and (2) all resources are utilized efficiently [Bernhard, 1968]. Solomons [1965] also discussed these deficiencies in the use of shadow prices. He recommended using the shadow prices only for long-run assessments of constraints and capacity and basing the transfer price on the variable costs of the intermediate product at the programmed output levels.

On the other hand, Onsi [1970] strongly advocated the opportunity cost method as a substantial improvement over the economic models. He suggested that the selling division be credited with the profits lost by the shift away from marginal cost pricing. This would, in effect, merge the opportunity cost and marginal cost methods into a transfer pricing framework that would motivate both the buying and selling divisions.

While some authors, such as Onsi [1970] and Manes [1970], suggest that the optimal solutions derived by programming techniques outweigh the results of decreased decentralization, others continue to develop new techniques for more efficient transfer prices while maintaining divisional autonomy. This goal led to the decomposition of mathematical programs. Baumol and Fabian [1964] first suggested the use of the Dantzig-Wolfe decomposition procedure in divisional transfer pricing. "This method finds an initial solution using linear programming with the solution applied to smaller problems for which new solutions are generated. This iterative process continues until optimality is achieved" [Borkowski, 1988, pp. 27-28].

Charnes, Clower, and Kortanek [1967] extended this basic decomposition procedure by incorporating additional information about specific divisional goals. This work was then further extended by Hass [1968]. The Hass decomposition model is based

upon quadratic programming and includes a linear adjustment of the divisional demand curves. The divisions do not formulate the problem independently, but must submit information to central management. Abdel-khalik and Lusk [1974, p. 20] state that "it is doubtful that divisional decision-makers will perceive these communication manipulations as representing decentralized decision-making."

Bailey and Boe [1976] attempt to integrate a decomposed, goal-programming model with a behavioral approach. While divisional managers have more autonomy in this model than in other programming approaches, the model still suffers from many of the same criticisms. Grabski [1985] states that the divisional managers may resort to dysfunctional gaming and that central management may still be required to specify the transfer price, negating divisional autonomy.

Gomaa [1982] also attempted a behavioral examination by investigating the behavior of divisional managers when the transfer price is determined by a decomposition model, such as the Hass model. His hypothesis was that "divisional managers, perceiving the transfer price as a factor affecting their performance evaluation, would have an incentive to engage in dysfunctional behavior by manipulating the information transmitted to the central unit" [Gomaa, 1982, p. x]. The results of his study, which included both a simulation and laboratory experiment, supported the proposed hypothesis. He found that this dysfunctional behavior, known as information inductance, was higher when there was no external market price for the transferred product, the product was important to divisional profitability, and divisional profits were emphasized in performance evaluation.

Langholtz, Gettys, and Foote [1993] studied the use of linear programming methods under conditions of certainty, risk, and uncertainty. Most of the previous work with mathematical programming models assumed certainty or perfect information, but this assumption is unrealistic. Langholtz, Gettys, and Foote defined risk as a condition where the resources, constraints, and objectives are random variables, but the decision maker is assumed to know the probability distribution of these variables. Uncertainty is the condition where resources, constraints, and objectives are random variables, but the decision maker does not know the probability distributions and must, therefore, rely on observation, experience, and inference. Langholtz, Gettys, and Foote conducted a laboratory experiment and found that subjects performed best under certainty and worst under uncertainty. They also found that performance under conditions of risk improved over time. They concluded that subjects could, after a period of learning, deal with risk in mathematical programming models, but not with uncertainty.

Overall, both the economic and programming models have serious limitations. "Both approaches have common shortcomings: the need for perfect information, the possibility of sabotage, and cheating" [Abdel-khalik and Lusk, 1974, p. 20]. Grabski [1985] believes that the economic and programming models are of limited value since they are applicable only to conceptually simple cases and result in central management control. Spicer [1988, p. 304] feels that the mathematical programming approach does not "lend itself to a deeper understanding of the dimensions of the entire transfer pricing process, in the wide variety of organizational contexts within firms."

Other Analytical Approaches

A variety of other analytical approaches have been developed to determine an optimal transfer price within a decentralized firm. Burton, Damon, and Loughridge [1974] suggested a decomposition model that employs mathematical programming, but it is based on a resource or quantity driven algorithm instead of a price-driven transfer pricing model. Their model still requires the participation of central management and, therefore, violates the principles of decentralization.

Emmanuel and Gee [1982] suggest a "fair and neutral" transfer pricing method. They define "fair" as a minimum of discrimination against either division involved in the transfer. They define "neutral" as a minimal inducement for managers to engage in dysfunctional behavior. Their method includes a two-payment system and a weighted average cost. While the objectives of this approach are reasonable, there are still a substantial number of limiting assumptions and required participation of central management [Grabski, 1985].

The contribution margin or opportunity cost rule advocated by some authors, such as Benke, Edwards, and Wheelock [1982], is synonymous with the market price rule developed by Hirshleifer [1956] in a perfectly competitive market. However, if there is no external market price for the intermediate product, the lost contribution margin is considered to be zero. Therefore, the transfer price under this model would be equal to the standard variable cost of the product.

Groves and Loeb [1976, 1979] recommend a control structure that provides incentives for truthful reporting of divisional information for a centralized cost-plus

transfer pricing scheme. Groves [1985] shows that any number of cost allocation decision rules (known as Groves-schemes) may be developed which are both incentive compatible and efficient. Groves defines a scheme as incentive compatible if it is always in every divisional manager's best interest to send correct information. Efficient schemes result in optimal decisions for the firm. The group of transfer pricing mechanisms known as Groves-schemes are cost-plus schemes with several variations, but Groves [1985] states that no full cost allocation scheme is incentive compatible.

Schroeder [1993] tested a modified Ronen-McKinney [1970] and Groves-Loeb [1976] truthful reporting model with technological dependence between the divisions under both product-line and functional organizational forms. He found this model was most efficient under the product-line form when there were interdependent products.

Amershi and Cheng [1990] utilized a formal agency model to develop a transfer pricing mechanism. They found the most efficient transfer pricing mechanism is a cost-plus Groves-like scheme. Banker and Datar [1992] also used an agency model to develop a transfer pricing mechanism for an environment with asymmetric information and divergence of preferences. The modified Groves-scheme transfer pricing mechanism is efficient only if agents are risk neutral, information asymmetry is postcontract, and collusion is precluded. With certainty, perfect external markets, or pure adverse selection, Amershi and Cheng [1990] and Banker and Datar [1992] found that the efficient Groves-scheme was a marginal cost transfer pricing system. However, they found that none of the Groves-scheme transfer pricing mechanisms were efficient in the case of precontract private information. These methods also do not allow for any interdivisional

communication, except through the central management. Penno [1990] criticized the Amershi and Cheng study and related research because the only goal is to develop a system where the divisions can make decisions as effectively as central management.

All cost-based systems require a clear definition of "cost." Cost-based systems may use either standard or actual cost and determine that cost with full absorption costing, direct costing, or incremental/marginal costing. The transfer price may be equal to this cost or it may be established as "cost-plus." There are a wide variety of separate variations and combinations of the cost-plus approach [Business International Corporation, 1973]. Emmanuel and Mehafdi [1994] suggest the use of activity-based costing (ABC) methods for the transfer pricing problem. They believe ABC would be especially useful if a longer-term perspective is taken because most costs are variable in a longer time frame.

Cost-based models usually have the advantage of simplicity, but they are generally criticized by academicians. Abdel-khalik and Lusk [1974] note the following limitations:

- (1) The allocation of joint and fixed costs to products is arbitrary.
- (2) Cost-based pricing incorporates inefficiencies that are passed on to other divisions and, ultimately, to the consumer.
- (3) Opportunity costs are ignored if there is not an external market price for the intermediate product.
- (4) "In the absence of opportunity cost concepts, the mark-up could be determined by the dictates of the central management. Accordingly, this will disregard responses of demand elasticity to different rates" [p. 21].

In another critique, Shubik [1962] states that cost-based pricing may discourage innovation and technological progress by the manufacturing, or selling, division because it does not have to compete on a price-basis with external firms. In addition, Kaplan [1982] states that cost-based methods do not assist in divisional decision-making and do not provide an effective basis for divisional performance evaluation.

Cats-Baril, Gatti, and Grinnell [1988a, 1988b] agree with the limitations of the models which use the selling division's opportunity cost. They suggest an approach that focuses on the buying division's opportunity cost. While they believe this method will provide an effective measure of divisional profit contribution, they also realize that it may not always promote optimal short-run decision-making and may, therefore, not be appropriate in all situations.

Cassel and McCormack [1987] propose a dual pricing method that allows the selling division to be credited with the market price and the buying division to receive the transferred product at cost. The double profits are eliminated with an adjusting entry by central management. This method has the advantage of motivating the divisions to buy internally, but it also has several disadvantages. This method may eliminate the incentives for the divisions to become more efficient or monitor the efficiency of the other divisions. In some situations, such as at the beginning of the product life cycle, a product's cost may actually be higher than its market value. Therefore, the buying division would be paying a premium for purchasing internally [Eccles, 1983].

Another method of dual pricing is suggested by Goldschmidt [1970] and is shown in Table 1. Instead of using different prices for the two divisions, he suggests using

TABLE 1
GOLDSCHMIDT DUAL PRICING MODEL
OF TRANSFER PRICING

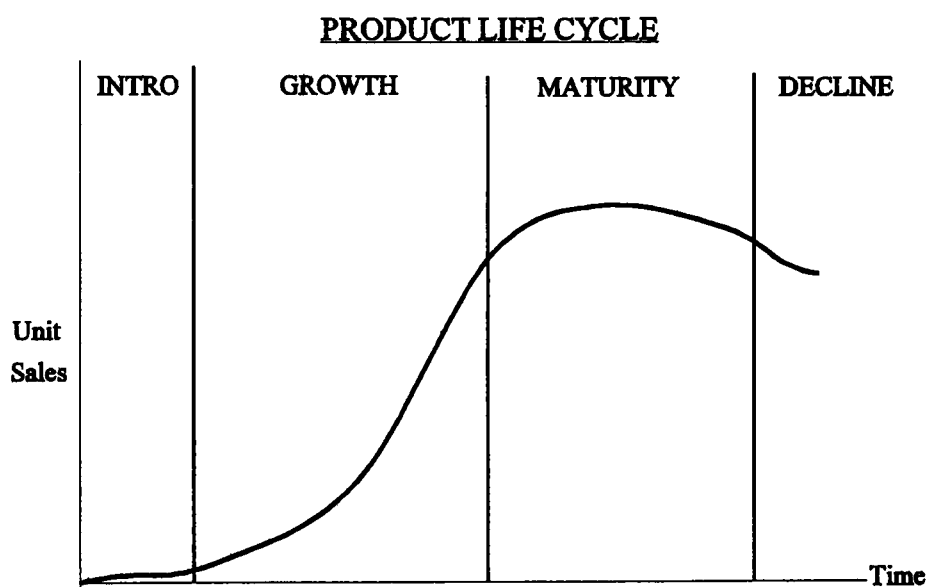
Intermediate Market	Production Capacity	Transfer Pricing Method to be Used	
		For Decision-Making	For Performance Evaluation
Existent	Excess	Marginal Cost	Avoidable Cost
Existent	No Excess	Market Price	Market Price
Nonexistent	Excess	Marginal Cost	Avoidable Cost
Nonexistent	No Excess	Shadow Price	Shadow Price

Source: Y. Goldschmidt, Information for Management Decisions (Ithaca, NY: Cornell University Press, 1970), p. 38.

different prices for different purposes. Since each transfer pricing method has limitations, he advocates using one method for decision-making and another method for performance evaluation, based on the existence of an external market for the intermediate product and excess production capacity.

Lococo [1983] also advocates different transfer pricing methods for different purposes. He states that transfer prices must meet four criteria: (1) Goal congruence, which will allow divisional managers to pursue their division's best interests while still maintaining the firm's goals; (2) Effective performance evaluation of divisions; (3) Encouragement of divisional efficiency; and (4) Feasibility. Ideally, one transfer pricing method should be used which incorporates all of these criteria, but since this will rarely occur, managers should consider using different methods to fulfill different goals.

The contingency approach to transfer pricing states that different methods should be used in different situations. Recent advocates of this approach include Eccles [1985], Lesser [1987], Cats-Baril, Gatti, and Grinnell [1988a, 1988b], Borkowski [1988, 1990], and Aranoff [1990]. Many aspects of the transfer pricing situation may affect the optimum policy, including the corporate structure, divisional interdependency, performance evaluation system, and environmental uncertainty. One factor which may contingently affect the transfer pricing policy is the product life cycle [Eccles, 1985; Cats-Baril, Gatti, and Grinnell, 1988a, 1988b; Keegan and Howard, 1988]. Figure 4 illustrates how transfer pricing may change over the product life cycle. Eccles [1985] suggests a dual pricing method for the two divisions. The transfer pricing method preferred by each division will change over the product life cycle of both the intermediate and final product.



LIFE CYCLE STAGE	Introduction	Growth	Maturity	Decline
NATURE OF PRODUCT	Product is unique	Product has functional substitutes	Product is homogeneous	Product is homogeneous
TRANSFER PRICING MECHANISM	Cost plus fixed fee or profit share	Price associated with closest functional substitute available or Bids solicited from secondary sources	Price of identical products	Price of identical products

FIGURE 4

**RELATIONSHIP BETWEEN PRODUCT LIFE CYCLE
AND THE TRANSFER PRICING MECHANISM**

Source: Adapted from W. L. Cats-Baril, J. F. Gatti, and D. J. Grinnell, "Transfer Pricing in a Dynamic Market," Management Accounting, February 1988, p. 32.

Emmanuel and Mehafdi [1994] suggest the use of target costing to determine transfer prices. The transfer price would be a function of the market selling price of the final product, development costs which are to be sustained, and the product life cycle.

Aranoff [1990] proposes a transfer pricing system that is contingent upon the degree of idle capacity and product demand. He recommends a flexible transfer pricing system with low transfer prices during periods of idle capacity and slow demand (to encourage "off-peak" usage) and high transfer prices during periods of high demand or when the division is at or near capacity. The transfer price may be based on incremental (marginal) cost, incremental cost plus a fee, or dual pricing [Aranoff, 1990].

Karmarkar and Pitbladdo [1993] also focus on capacity issues in their transfer pricing model. They view capacity acquisition in fixed increments, and they found that when the increments are small, unit capacity cost is a good approximation for the internal transfer price. However, when the increments are intermediate to large, the relationship between the internal transfer price and the capacity increment is irregular. Therefore, Karmarkar and Pitbladdo [1993, p. 1043] conclude that "from the viewpoint of practice, the discouraging result is that the optimal internal price is an erratic function of the capacity increment, requires detailed knowledge of the marketplaces for each product, and therefore cannot be reasonably approximated with internal accounting data."

Kirsch *et al.* [1991] developed an expert system for transfer pricing decisions. An expert system is a set of computer programs that use facts and relationships to solve specific problems. This expert system uses information on the corporate goal structure, market structure, costing system, and other relevant variables to arrive at the theoretically

desirable transfer price. Expert systems do not replace human decision-making, but they can provide guidance in complex processes, such as transfer pricing decisions.

Several authors [Wells, 1970, 1971, 1980; Thomas, 1980; Goldratt, 1991] believe that all transfer pricing methods are arbitrary and, therefore, should be abandoned. Wells recommends the elimination of profit centers and the need for transfer pricing. If profit centers are used, Thomas suggests that the profit centers have approximately equal bargaining strength and use negotiated transfer pricing because it is the least objectionable method:

There *is* no correct approach, for "correct" implies exactly the sort of theory that is unobtainable here. Instead, the appropriate question is the opportunistic (even slightly cynical) one: "What's apt to produce the sorts of dysfunctional behaviour that we best can live with?" [Thomas, 1980, pp. 222-223]

Negotiation

Dean [1955] was one of the first authors to advocate negotiated transfer pricing. He felt that negotiation was necessary for the preservation of divisional autonomy and the related benefits of decentralization. However, he stated that three principles must be followed:

- (1) Prices of all transfers in and out of a profit center should be determined by negotiation between buyers and sellers.
- (2) Negotiators should have access to full data on alternative sources and markets and to public and private information about market prices.
- (3) Buyers and sellers should be completely free to deal outside the company [Dean, 1955, p. 68].

Since Dean's article, negotiated transfer pricing has had both proponents and critics. Fremgen [1970] stated that the negotiation method of transfer pricing "is the most valid for a truly decentralized firm" [p. 28]. In a complex organizational environment, the compromise price reached through negotiation may be an appropriate "satisficing" approach [Wu and Sharp, 1979]. This negotiated transfer price may act as an integrative device within the organization [Grabski, 1985]. Shillinglaw [1983] provides the following justification:

Negotiation systems are based on the notion that the individual division managers, with intimate knowledge of their own markets and opportunities, are in the best position to decide whether internal transfers will take place. Division managers will make mistakes, but they are expected to be right often enough to justify giving them the authority to make these decisions. The presumption is that the managers will negotiate an agreement whenever interdivisional transfers are in the company's best interest because any agreement that will benefit the company will also appear to be beneficial to both divisions at some price. If top management cannot accept this presumption, decentralization is probably inappropriate [p. 20.26].

Critics contend that the optimal transfer price, in a mathematical sense, may not result from negotiation. Negotiated transfer prices may result in the evaluation of managers' power to negotiate rather than actual performance [Dopuch and Drake, 1964]. However, negotiation skills may be considered an aspect of managerial performance [Hirsch, 1988]. Other possible disadvantages of negotiated transfer pricing include the potential for distortion of profit center results [Grabski, 1985], the time required of the divisional managers and of central management [Kaplan, 1982], and the potential for conflict [Shillinglaw, 1983].

Several studies have examined the efficiency of negotiation in comparison to other methods of transfer pricing. These studies are discussed briefly here and summarized in Table 2.

Dejong *et al.* [1989] compared the efficiency of three transfer pricing mechanisms: the traditional economic model, the Ronen and McKinney [1970] dual pricing model, and negotiation. The results were indistinguishable between the traditional and Ronen and McKinney models. While these results were significantly better than those for negotiation in the early periods, by the sixth session, negotiation was as efficient as the models with centralized control.

Vaysman [1993] compared two common transfer pricing methods: negotiation and a centralized cost-based model. He found that both transfer pricing methods produced optimal firm profits, depending upon different levels of information asymmetry and types of managerial compensation schemes. Negotiation resulted in optimal firm profits with complete information between the divisions. However, when there was not complete information between the divisions, negotiation resulted in higher (but not optimal) levels of firm profits than a centralized system of transfer pricing.

Ghosh [1991, 1994] also compared negotiation and a centralized model of transfer pricing. He conducted a laboratory experiment with student surrogates negotiating through a computerized system. He found that negotiation resulted in higher firm profits, less conflict between the divisions, and greater equity between the divisions. The equity between the divisions improved over multiple negotiation periods. Ghosh also examined possible moderating variables (management compensation, risk-taking propensity, time,

TABLE 2

**SUMMARY OF RESEARCH COMPARING NEGOTIATION
WITH OTHER METHODS OF TRANSFER PRICING**

Authors	Research Premise
Dejong <i>et al.</i> [1989]	Comparison of negotiation, traditional economic model, and Ronen & McKinney dual pricing model.
Vaysman [1993]	Comparison of negotiation and cost-based centralized-control model.
Ghosh [1991, 1994]	Comparison of negotiation and centralized-control model.
Hansen and Kimbrell [1990]	Game-theoretic model of transfer pricing.
Hong [1989]	Game-theoretic model with incomplete information.
Edlin and Reichelstein [1995]	Examination of specific investment in relation to transfer pricing models.

and power) and found that risk-seeking negotiators were significantly more effective than risk-averse negotiators.

Hansen and Kimbrell [1990] used a cooperative game-theoretic paradigm to model the transfer pricing problem. They showed the role of negotiated transfer pricing as an integrating mechanism or a means of allocating cooperative gains. They concluded that negotiated transfer pricing is theoretically sound. One important assumption of the game-theoretic model is complete information. The authors suggested that complete information may be a justifiable assumption in a decentralized firm. However, they acknowledged the limitation of this assumption and the need for additional research in this area.

Hong [1989] also used a game-theoretic model, but he assumed that the seller did not have access to the buyer's private information. He examined the model over three levels of corporate intervention (fully autonomous divisions, partially autonomous and partially constrained divisions, and fully centralized control) and found a significant loss of efficiency with the fully autonomous divisions.

Edlin and Reichelstein [1995] also modeled negotiated transfer pricing. They examined the problem of specific investment required by one division for the sole purpose of intrafirm transactions. They found that negotiated transfer pricing leads to efficient outcomes when: (1) a simple fixed-price contract is negotiated prior to the investment, and (2) this contract may be renegotiated upon the arrival of new information.

With the exception of the study by Hong [1989], research shows that negotiation may be considered an efficient method of transfer pricing [Dejong *et al.*, 1989; Vaysman, 1993; Ghosh, 1991, 1994; Hansen and Kimbrell, 1990; Edlin and Reichelstein, 1995].

Figure 5 shows a model of the transfer pricing negotiation. Although there is a substantial quantity of research on negotiated transfer pricing, and negotiation in general, a comprehensive theory of the process does not exist [Murnighan and Bazerman, 1990]. As a result, the research on negotiated transfer pricing appears fragmented. Studies have dealt with a diverse set of independent variables which have been hypothesized to impact a wide range of transfer pricing outcomes. Table 3 summarizes some of these studies.

One outcome studied in previous research is the negotiated transfer price or some profit measure derived from the transfer price. Gomaa [1982] studied the effects of market uncertainty (the existence of a market price), the evaluation system (divisional vs. corporate performance evaluation), and the importance of the product on dysfunctional behavior. He utilized a simulation procedure to develop a benchmark for transfer pricing behavior and conducted a laboratory experiment with student surrogates "negotiating" with an interactive computer program. He found that dysfunctional behavior was higher (i.e., more variance from the benchmark) when there was no external market, the product was important, and divisional profit performance was emphasized. In addition, he found that the participants considered the existence of a market price to be the most important variable in the decision, followed by the evaluation basis and the importance of the product.

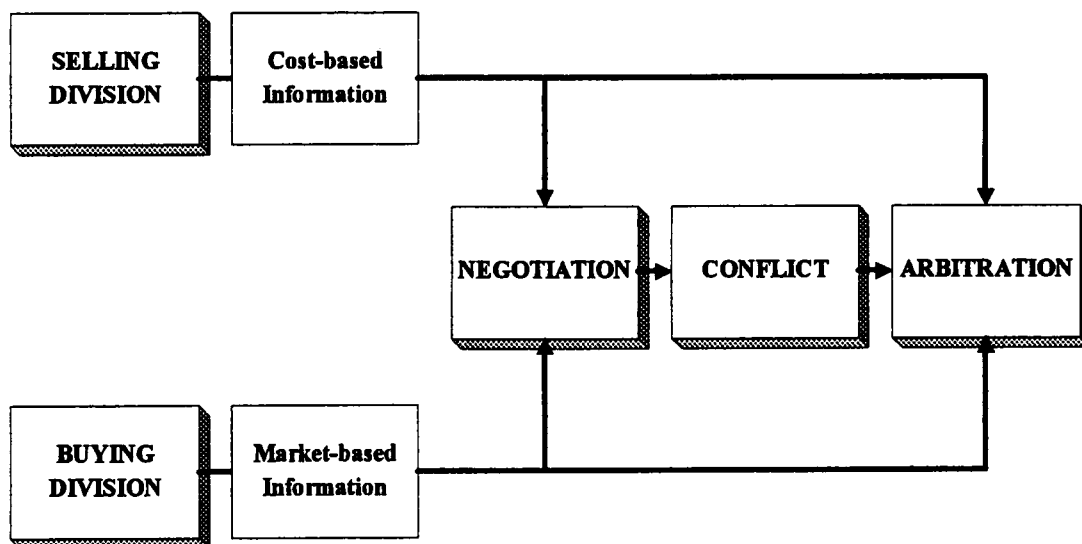


FIGURE 5
MODEL OF TRANSFER PRICING NEGOTIATION

Source: Adapted from B. H. Spicer, "Towards an Organizational Theory of the Transfer Pricing Process," Accounting, Organizations and Society 13, No. 3 (1988), p. 319.

TABLE 3**SUMMARY OF SELECTED RESEARCH ON
NEGOTIATED TRANSFER PRICING**

Authors	Dependent Variables	Independent Variables
Gomaa [1982]	Dysfunctional behavior (variance from optimal)	Market uncertainty* Performance evaluation system* Importance of product*
Chalos and Haka [1990]	Firm's profit relative to optimal profit Divisional conflict (profit split)	Market uncertainty* Performance evaluation system* Negotiation history (single or multiple periods)
Chan [1993]	Profit goals Joint (firm) profit Divisional profits Distance between offers Time required	Performance evaluation system* Negotiator's accountability to constituents* Negotiator's perceived relative power
Viator, Poe, and Strawser [1992]	Firm profit Divisional profits	Negotiation strategy* Risk-taking behavior*
Mahenthiran [1991]	Efficiency (firm profit relative to optimal) Ineffectiveness (number of periods with no transfers) Negotiators' perceived autonomy	Market uncertainty* Performance evaluation system* Divisional interdependency Arbitration*

TABLE 3 (continued)

Authors	Dependent Variables	Independent Variables
Greenberg, Greenberg, and Mahenthiran [1994]	Firm profit Negotiators' perceived autonomy Efficiency (number of periods to agreement) Bargaining disposition (difference between first and last offers)	Divisional interdependency* Performance evaluation system* Arbitration*
Mays [1979]	Profit split	Existence of market Type of accounting report Type of bargaining process
Schlachter [1986]	Profit split Profit goals Negotiators' satisfaction	Divisional asymmetries due to: Market conditions* Previous negotiation results*
Arunachalam [1991] and Arunachalam and Dilla [1992]	Joint (firm) profit Equality of distribution Agreement structure	Communication channel* (computer-mediated or face-to-face) Interaction structure*
Ravenscroft, Haka, and Chalos [1993]	Negotiation strategies	Threat capacity* (existence and certainty of external market) Performance evaluation system* Bargaining horizon* (single or multiple periods)
Ackelsberg [1977] and Ackelsberg and Yukl [1979]	Conflict resolution behavior	Existence of market price Performance evaluation system* Importance of product*

*Significant results.

Chalos and Haka [1990] conducted a bargaining experiment with students as surrogates for divisional managers. They studied the effect of market uncertainty (the existence and certainty of an external market), incentive scheme (based on divisional vs. combination of divisional and corporate performance), and negotiation history (single vs. multiple negotiations setting) on the firm's profit relative to optimal profit and divisional conflict, as measured by the difference between divisional profits. They found higher conflict and higher profits associated with higher market uncertainty and a divisional reward scheme. While the main effect of the reward scheme was not significant for the conflict variable, there was a significant effect if the market was uncertain, indicating an interactive effect.

Chan [1993] conducted a bargaining experiment with teams of student surrogates of the same gender. Prior to the negotiation, specific negotiation strategies and goals were formulated with another student surrogate acting as the negotiator's manager. Chan studied the effects of the performance evaluation system (based on divisional vs. firm performance), the negotiator's accountability to constituents (as represented by the other student surrogate acting as the manager), and the negotiator's perceived relative power on a set of performance measures (average targeted profits, standardized aspiration levels, buyer's profit, seller's profit, joint profit, distance between final offers, and time required for agreement). He found that performance evaluation based on firm outcomes resulted in lower profit goals, more cooperation, higher joint outcomes, and smaller distances between the final offers. When the negotiator was held accountable to constituents, he found higher profit goals, but no significant effect on negotiation outcomes. He found

neither the goals nor outcomes of the negotiation were affected by the perceived power of the negotiator.

Viator, Poe, and Strawser [1992] studied the effects of negotiation strategy (competitive, cooperative, or conditional) and risk-taking behavior (risk-seeking or risk-averse) on both the divisional and overall firm profits from a transfer pricing negotiation. In their experiment, student surrogates represented the managers of the selling division and a computerized model represented the buying division with an established negotiation strategy and risk-taking behavior. This research found that negotiation strategy had an effect on overall firm efficiency in the earlier trading periods, but the three methods converged during the later periods. Risk-taking behavior had no effect on overall firm profits, but risk-seeking behavior resulted in higher divisional profit.

Mahenthiran [1991] conducted a laboratory experiment with student surrogates, paired by risk-taking behavior, to study the effects of market uncertainty, divisional interdependency (importance of product to the division), performance evaluation (divisional vs. joint scheme), and arbitration on three outcome measures of the transfer pricing negotiation: (1) Efficiency of the negotiation, as evaluated by the quantity transferred and the transfer price relative to the firm's optimal quantity and price; (2) Ineffectiveness, represented by the number of periods of no transfer; and (3) The negotiators' perceived autonomy. He found that a joint incentive or performance evaluation resulted in more optimal quantities and transfer prices than a divisional evaluation scheme. Mahenthiran found improved efficiency and higher autonomy scores from the negotiators were obtained with a joint incentive scheme and no arbitration, but

only when the market is certain. Overall, mandatory arbitration reduced the participants' perceived autonomy scores.

Greenberg, Greenberg, and Mahenthiran [1994] conducted a similar laboratory experiment. They examined the effects of divisional interdependency, performance evaluation, and arbitration on four measures of the negotiation process: (1) Firm profit, viewed as the integrating objective of effectiveness or goal congruence; (2) Negotiators' perceived autonomy, viewed as a differentiating objective; (3) Efficiency, as operationalized by the number of period of negotiation required to reach an agreement; and (4) Bargaining disposition, measured as the difference between the first and last offers. They found that under high interdependence, a firm-based performance evaluation method or arbitration resulted in higher firm profits. However, the use of both a firm-based incentive *and* arbitration did not result in significantly higher profit than the use of either method individually.

Mays [1979] conducted a laboratory experiment to study the effects of the existence of an external market, the type of accounting report (no report vs. absorption costing report vs. direct costing report), and the type of bargaining process (cooperative vs. competitive) on the profit split. He found that none of the variables significantly affected the profit split between the divisional managers.

Schlachter [1986] also studied the profit distribution between the divisions. He conducted a two-stage negotiation process that considered both pre-negotiation expectations and final negotiation results. The independent variables were divisional asymmetries due to market conditions (favor buyer, seller, or neither) and divisional

asymmetries due to previous negotiation results (favor buyer or seller). He found that the division with favorable market conditions received approximately 60% of the profit, but if neither division were favored, the split was nearly equal. He also found that divisional asymmetries due to previous negotiation results led to more excessive transfer pricing expectations and greater divergence in managers' satisfaction than those arrived at with less divisional asymmetry.

Arunachalam [1991] and Arunachalam and Dilla [1992] conducted a laboratory experiment to study the effects of the communication channel (computer-mediated vs. face-to-face negotiation) and interaction structure (structured agenda vs. no structure) on three measures of the transfer pricing negotiation: (1) joint firm profit, (2) the equality of the profit distribution, and (3) the agreement structure (deviations from an integrative agreement). They found higher profits and more equality of profits with face-to-face negotiation and structured interaction. They also found a learning effect between the first and second negotiation periods, but little or no improvement between the second and third periods. Face-to-face negotiation resulted in much better outcomes in the first period, so the learning effect was not significant.

Other studies have focused on the behavior of the negotiators. Ravenscroft, Haka, and Chalos [1993] conducted a bilateral bargaining experiment with students as surrogates for divisional managers. They studied the negotiation strategies employed by the participants and examined the effects of threat capacity (the existence and certainty of an external market), reward scheme (based on divisional vs. combination of divisional and corporate performance), and bargaining horizon (single vs. multiple negotiations setting).

They found more reciprocal, or coordinative, behavior when no market or a certain market existed, divisional rewards were emphasized, and a multiple bargaining situation existed.

Ackelsberg [1977] and Ackelsberg and Yukl [1979] studied the conflict resolution behavior of divisional managers and their attitudes toward other divisions. Ackelsberg conducted a multiperiod business game with undergraduate business students as surrogates for managers. The independent variables studied were the evaluation system (divisional vs. corporate performance evaluation), the importance of the product, and the existence of a market price (but this variable was not successfully manipulated). The results indicate that an evaluation system based on divisional performance leads to more competitive, less cooperative, and less favorable attitudes toward the other negotiator. These results are stronger if the transferred product is important to both divisions.

Arvidsson [1973] conducted eight different experiments to study the behavior of participants in a transfer pricing negotiation. His findings indicate that results are better with a face-to-face, free exchange of information. While he did find opportunism, it was reduced with free communication and a "soft" bargaining position.

Okpechi [1976] conducted a survey of divisional managers involved in the transfer pricing process. He found a significant correlation between the degree of interdependency and the degree of interdivisional conflict. This conflict was resolved, in ranked order, by confrontation, compromise, arbitration, force, and avoidance. Another survey was conducted by Lambert [1979] to study interdivisional conflict. He surveyed corporate

controllers and found increased conflict between the divisions when there were inequities in the divisional profit outcomes or the lack of an external market.

Gangolly [1977] studied the transfer pricing process and found that equitarianism, tolerance for ambiguity, and gender may be moderating variables in the negotiation process. In another negotiation experiment, McGhee, Shields, and Birnberg [1978] found that personality variables, such as tolerance for ambiguity and decision style, do not account for much of the variance in decision makers' behavior, but may be mediating variables between the receipt of information and the resultant decisions.

Very little accounting research has studied the cognitive and personality variables which affect transfer pricing negotiations [Chenhall, Harrison, and Watson, 1981]. However, there is a rich literature on negotiation and bargaining in the management, economics, and psychology fields. Table 4 lists some of the potential individual factors suggested by various authors which may affect the negotiation process. Most of these suggested factors have not been tested and the remainder have generated mixed results.

Transfer Pricing in Practice

There have been very few empirical studies comparing actual transfer pricing practices with those advocated by theory. Most of the studies in this area have examined only a very small sample of firms [Solomons, 1965; Benke and Edwards, 1980; Yunker, 1982; Eccles, 1985]. Most of these studies have utilized surveys and interviews. More broad-based studies, such as Vancil [1979], Wu and Sharp [1979], Joy [1985, 1988], Borkowski [1988, 1990], and Tang [1979, 1992, 1993], use surveys exclusively.

TABLE 4
POTENTIAL INDIVIDUAL FACTORS
IN THE NEGOTIATION PROCESS

Individual Factors	Authors
Age of negotiators	Bartos [1974]; Mays [1979]*
Aspirations or goals	Fouraker & Siegel [1963]; Gangolly [1977];* Ebert & Wall [1983]; Schlachter [1986];* Northcraft & Neale [1991]; Ravenscroft, Haka, & Chalos [1993];* Putnam [1994]
Attitudes and perceptions	Ackelsberg [1977];* Mays [1979];* Putnam [1990]; Thompson & Hastie [1990]; Schmidt [1993]; Ravenscroft, Haka, & Chalos [1993]*
Attitude toward risk	Gangolly [1977];* Bacharach & Lawler [1981]; Lax & Sebenius [1986]; Thompson & Hastie [1990]; Ghosh [1991, 1994];* Viator, Poe, & Strawser [1992]*
Authoritarianism	Bartos [1974]; Eccles [1985];* Chenhall [1986]; Lax & Sebenius [1986]; Gul & Ray [1989]; Gilkey & Greenhalgh [1993]
Cognitive complexity	Ebert & Wall [1983]; Chen & Olson [1989]; Thompson & Hastie [1990]; Northcraft & Neale [1991]; Bazerman [1993]; Ravenscroft, Haka, & Chalos [1993]*
Decision style	McGhee, Shields, & Birnberg [1978]; Neale & Northcraft [1990]; Neale & Bazerman [1993]; Schmidt [1993]
Division (buyer or seller)	Mays [1979]*
Empathy	Gilkey & Greenhalgh [1993]

TABLE 4 (continued)

Individual Factors	Authors
Equity sensitivity	Gangolly [1977];* Thompson & Hastie[1990]; Murnighan [1991]; Hufnagel & Birnberg [1994]; King & Hinson [1994]
Experience of negotiators ¹	Fouraker & Siegel [1963]; Neale & Northcraft [1990]; Schmidt [1993]
Gender of negotiators	Bartos [1974]; Gangolly [1977];* Mays [1979];* Northcraft & Neale [1991]; Gilkey & Greenhalgh [1993]; King & Hinson [1994]; Morrison & Calero [1994]
Locus of control	Ackelsberg [1977];* Ebert & Wall [1983]; Gilkey & Greenhalgh [1993]
Machiavellianism	Northcraft & Neale [1991]
Negotiation strategy	Fouraker & Siegel [1963]; Bartos [1974]; Mays [1979];* Putnam [1990]; Neale & Northcraft [1990]; Viator, Poe, & Strawser [1992];* Schmidt [1993]; Bazerman [1993]; Neale & Bazerman [1993]
Personality	Bartos [1974]; Beckmann [1977]; Schmidt [1993]; Gilkey & Greenhalgh [1993];
Power ²	Hamner & Baird [1978]; Bacharach & Lawler [1981]; Ghosh [1991, 1994];* Chan [1993];* Schmidt [1993]; Salancik & Pfeffer [1993]
Pressure to reach agreement	Hamner & Baird [1978]; Lax & Sebenius [1986]; Ghosh [1991, 1994];* Viator, Poe, & Strawser [1992]*
Race of negotiators	Bartos [1974]; Mays [1979]*
Reciprocity	Northcraft & Neale [1991]

TABLE 4 (continued)

Individual Factors	Authors
Role conflict and ambiguity	Vancil [1979];* Ebert & Wall [1983]
Solution dependency	Bacharach & Lawler [1981]; Lax & Sebenius [1986]
Tolerance for ambiguity	Gangolly [1977];* McGhee, Shields, & Birnberg [1978]
Toughness	Bartos [1974]; Gilkey & Greenhalgh [1993]
Use of force, threat, or bluff	Cross [1969]; Lax & Sebenius, 1986; Putnam [1990]; Northcraft & Neale [1991]; Ravenscroft, Haka, & Chalos [1993];* Hufnagel & Birnberg [1994]
Values	Gangolly [1977];* Thompson & Hastie [1990]; Murnighan [1991]

*Transfer pricing context.

¹General business experience, accounting experience, and formal education.

²Perception, attribution, and equality of power between negotiators.

Table 5 shows the methods of transfer pricing utilized in practice, as determined by several of these studies. Wu and Sharp [1979] provided only ordinal data, but their results indicate that when an external market price is known, it is the most preferred basis for the transfer price, followed by a negotiated price, and then full cost plus profit margin. If a market price is not known, the full cost plus profit margin is the primary method, followed by a negotiated price.

These studies suggest that there may not be one "best" method and that the transfer pricing methods utilized are not primarily those advocated by theory. Firms appear to choose methods for their simplicity and understandability rather than their theoretical advantages [Grabski, 1985]. Real world situations are too complex and varied to fit into the limited parameters of most theories [Lemke, 1970]. "There is no one grand theory of transfer pricing that can explain all observed practices, and looking for one is fruitless" [Amershi and Cheng, 1990, p. 65]. Grabski [1985] states that more broad-based research is needed. However, he believes that this research should not just consider what transfer pricing method is used, but why.

Joy [1985, 1988] examined the factors influencing the selection of a transfer pricing method. He found no evidence of a relationship between the objectives of the transfer pricing system and the transfer pricing method utilized. The selected transfer pricing method varied with the proportion of goods transferred internally, the proportion of the managers' pay in the form of a bonus, and the managers' authority. Seven other factors were of strong importance to individual firms, but showed little or no overall importance in the selection of a transfer pricing method.

TABLE 5
TRANSFER PRICING METHODS IN PRACTICE

Method ¹	Study by				
	Vancil [1979]	Benke & Edwards [1980]	Joy [1985]	Borkowski [1988]	Tang [1992]
Market	31.0%	52.6%	30.2%	32.7%	36.7%
Negotiated	22.2%	21.1%	15.1%	22.6%	16.6%
Full Cost	36.4%	26.3%	35.8%	41.1%	40.8%
Variable Cost	4.6%	0	4.7%	3.6%	4.5%
Other ²	5.8%	0	10.4%	0	1.4%

¹Methods are defined differently in the various studies and different populations are sampled. Therefore, direct comparison of the percentages may not be warranted.

²Other methods found in the Vancil study were profit on sales (2.9%) and profit on investment (2.9%). In the Joy study, other methods were not separately specified (4.7%) or no one method was predominant (5.7%). Tang found other cost-based methods (0.9%) and other methods not separately specified (0.5%).

Sources:

R. L. Benke, Jr. and J. D. Edwards, Transfer Pricing: Techniques and Uses (New York: National Association of Accountants, 1980).

S. C. Borkowski, "An Investigation into the Divergence of Theory from Practice Regarding Transfer Pricing Methods," Ph.D. dissertation, Temple University, 1988.

A. C. Joy, Jr., "An Empirical Investigation into Transfer Pricing Practices," Ph.D. dissertation, University of Illinois at Urbana-Champaign, 1985.

R. Y. W. Tang, "Transfer Pricing in the 1990s," Management Accounting, February 1992, pp. 22-26.

R. F. Vancil, Decentralization: Managerial Ambiguity by Design (Homewood, IL: Dow Jones-Irwin, 1979).

Borkowski [1988, 1990] studied the divergence of theory from actual practice and attempted to explain this difference with various environmental and organizational variables. She found that the existence of an external market price was a significant environmental variable in the transfer pricing process. She also found that some organizational variables were significant in most analyses. In conclusion, she felt these results supported the contingency theory as "each firm may have a different yet acceptable solution to the transfer pricing problem as experienced in that firm" [Borkowski, 1988, p. 151].

ORGANIZATIONAL VIEWS OF TRANSFER PRICING

Many of the studies previously cited included organizational and environmental variables, such as the existence and certainty of an external market, the importance of the product, the product life cycle, and the performance evaluation system. Most of these studies, however, did not attempt to integrate transfer pricing within a comprehensive organizational framework. Most of the work in transfer pricing which advocates an organizational view is theoretical in nature. The organizational view is contrasted with the traditional, or classical, view of transfer pricing:

This classical approach has both advantages and limitations. One advantage of the use of restrictive assumptions on organizational conditions is that it allows the researcher to define the problem to be studied as a transfer pricing problem without explicit reference to the wider process of management control. This allows the researcher to investigate the properties of new or alternative ways to set transfer prices, and to study incentive and risk-sharing attributes of reward systems based in whole, or part, on performance measures making use of transfer prices. What this approach does not do, is lend itself to a deeper understanding of the

dimensions of the entire transfer pricing process, in the wide variety of organizational contexts within firms in which transfer pricing systems operate [Spicer, 1988, p. 304].

Many authors, such as Kaplan and Atkinson [1989], Kaplan [1982, 1984], Hopwood [1983], Flamholtz [1983], and Birnberg, Turopolec, and Young [1983], have suggested that accounting should be considered within an organizational context. In response to these concerns, several authors have attempted to integrate transfer pricing within an organizational framework [Watson and Baumler, 1975; Waterhouse and Tiessen, 1978; Swieringa and Waterhouse, 1982; Spicer, 1988; Antle, 1989; Baiman, 1990; Emmanuel and Mehafdi, 1994]. Although these authors propose distinct theories, they are complementary in nature and all emphasize learning, adaptability, and flexibility [Grabski, 1985]. Each theory captures a slightly different set of details of the organization. These different details lead to different perceptions of the organization and its problems and, in turn, to different solutions [Swieringa and Waterhouse, 1982]. This section provides a brief summary of five different organizational theories and their applications for transfer pricing: (1) contingency theory, (2) behavioral theory, (3) agency theory, (4) markets and hierarchies theory, and (5) other organizational theories.

Contingency Theory

Contingency theory is based on the premise that no single type of management system is most effective and efficient for all organizations. The most effective system is

contingent on a set of organizational and environmental variables [Spicer and Ballew, 1983].

Current research has not provided strong support for the contingency theory [Waterhouse and Tiessen, 1978; Spicer and Ballew, 1983; Tiessen and Waterhouse, 1983]. Most of this research tends to be "*post hoc*" in nature, resulting from attempts to explain observed patterns among measures of environmental, technological, and structural attributes of organizations through the use of multivariate statistical techniques on large samples, diverse units, and cross-sectional data" [Spicer and Ballew, 1983, p. 76].

An example of this type of research is a survey study conducted by Borkowski [1988, 1990]. She attempted to explain the divergence of transfer pricing theory and practice with various environmental and organizational variables. She found that the existence of an external market price was a significant environmental variable in the transfer pricing process. She also found that some organizational variables were significant in most analyses, but without a clear pattern or cause.

Contingency theory recognizes that organizations are different and, therefore, no single acceptable transfer pricing method exists. The best method for a particular organization will be contingent upon certain environmental, organizational, and behavioral variables.

Behavioral Theory

Watson and Baumler [1975] developed a behavioral theory of transfer pricing that built upon the contingency theory of organizations. They suggest that the transfer pricing

system is contingent on two organizational variables -- the degree of differentiation and the degree of integration.

Watson and Baumler consider decentralization as a means of coping with uncertainties in the organization and environment. The term *differentiation* is used to denote not only the operational segmentation, but also the consequent differences in the attitudes and behavior of the organization members. The more uncertain the environment, the more differentiation will be required. If the subunits are highly interdependent, a high degree of integration will be important for effective organizational results. However, the greater the differentiation, the more difficult it will be to achieve this necessary integration. Watson and Baumler base their theory primarily on the work of Lawrence and Lorsch [1967]. Lawrence and Lorsch found the most successful firms were those that achieved the required differentiation to cope with the uncertainty of their environment and simultaneously achieved the necessary integration for effective coordination.

Watson and Baumler [1975] state that transfer pricing enhances differentiation by separating the responsibility for different organizational functions. In addition, transfer pricing is a mechanism of integration and coordination. If the environment is stable and interdependencies are minimal, a simple integration device will be adequate for integration. In this situation, a transfer price determined by mathematical programming may be appropriate. However, some degree of decentralization will be sacrificed through the use of this transfer pricing method. On the other hand, if the firm operates in a diverse, dynamic environment and there are complex sequential or reciprocal interdependencies, more elaborate integrative mechanisms will be required. Lawrence and Lorsch [1967]

found that successful firms in this situation achieved integration by resolving interdepartmental conflict through confrontation (i.e., negotiation). Therefore, Watson and Baumler suggest negotiation of a transfer price could provide an effective means of integration. In summary, Watson and Baumler propose that transfer pricing should be studied in relationship to contingent organizational variables, such as the degrees of differentiation and integration.

Eccles² [1983, 1985, 1987] developed a transfer pricing theory based on two contingent strategic variables -- the degree of diversification (or emphasis on independence) and the degree of vertical integration (or emphasis on interdependence). His theory was developed from the results of an intensive investigation of the transfer pricing practices of thirteen firms in several different industries.

Agency Theory

Agency theory views the firm "as an overlapping set of contracts among principals and agents, each of whom is assumed to be motivated solely by self-interest. Therefore, the behavior of the firm is the outcome of the process that brings into equilibrium, via the agreed upon contracts, the (possibly) conflicting self-interests of the principals and agents" [Baiman, 1982, p. 155]. Thus, the behavior of the firm is similar to the behavior of a market, a complex process designed to reach an equilibrium [Tiessen and Waterhouse, 1983].

²Although Eccles' theory is not classified as the behavioral theory, it is consistent with the work of Watson and Baumler.

Agency theory assumes all individuals are rational, risk-averse, work-averse, and motivated solely by self-interest. In addition, individuals are assumed to have unlimited computational capability and the ability to anticipate and assess the probability of all possible future contingencies. Agency theory also assumes information asymmetry in that the agent has private information which the principal cannot obtain without cost. Information asymmetry, combined with the agent's characteristics of self-interest, risk-aversion, and work-aversion, prohibits cooperation. When cooperative behavior is not consistent with the self-interest of the participants, inefficiency occurs and all participants are potentially worse off. The basic agency problem is, therefore, characterized by a lack of cooperation and a potential for negative outcomes [Baiman, 1990].

Managerial accounting research based on agency theory is concerned with the role played by and the demand for managerial accounting procedures, such as transfer pricing, which may mitigate a firm's underlying agency problems. Agency theory was used as the foundation for studies of truth-inducing Groves-scheme transfer pricing mechanisms by Amershi and Cheng [1990] and Banker and Datar [1992]. Amershi and Cheng [1990] found that the principal (central management) may improve truthful revelation of private information by the agents (divisional managers) with diverse compensation schemes, which may include incentive and deterrent elements. Besanko and Sibley [1991] examined transfer pricing and compensation schemes under conditions of information asymmetry and moral hazard. However, Emmanuel and Mehafdi [1994] criticize their conclusions as being ambiguous and limited to simplistic situations.

Yost [1989, 1990] studied a transfer pricing system under conditions of adverse selection where the agents have access to each other's private information more than the principal. He found that when communication of information was costless, centralized decision-making was preferable to decentralized. However, when communication was costly, decentralized decision-making provided an efficient result with the transfer price set at marginal cost equal to marginal revenue. In addition, marginal cost transfer pricing was robust to varying degrees of information asymmetry.

While agency theory provides a logical model for investigating basic organizational relationships, there has been little direct empirical testing of the theory in managerial accounting [Baiman, 1990]. Agency research has focused on incorporating selected aspects of contractual relationships, such as information asymmetry, adverse selection, and moral hazard, rather than developing a comprehensive theoretical framework [Emmanuel and Mehafdi, 1994]. In addition, agency theory requires a number of restrictive assumptions, such as a one-period world, a two-person firm, and an exogenous labor market [Baiman, 1982].

Markets and Hierarchies Theory

In the theory of markets and hierarchies³ developed by Williamson [1964, 1970, 1975, 1981a, 1981b, 1986, 1993a, 1993b], the basic unit of analysis is the *transaction*, which occurs when a good or service is transferred. Transactions may be conducted in an

³Also referred to as the transaction cost theory, the organizational failures framework (OFF), and the economics of internal organization, which was originally based on the seminal work of Coase [1937].

external market or in the internal hierarchy of the firm. The decision to utilize an external market or the internal hierarchy is made to minimize transaction costs, which include both out-of-pocket expenses and opportunity costs. These costs are affected by three dimensions of the transaction: (1) The frequency and volume of the transfers; (2) The uncertainty and complexity of the transfers; and (3) The required transaction-specific investment, which may include the site, physical assets, human assets, dedicated assets, and marketing assets [Williamson, 1985; Van der Meer-Kooistra, 1994]. As the values of these dimensions increase, the transaction costs in the external market would be expected to increase, thereby favoring an internal transfer.

The decision to transfer internally or externally is complicated by human and environmental factors as shown in Figure 6. A basic assumption of the markets and hierarchies theory is that individuals are limited by *bounded rationality*. Rationality is considered bounded because it fails to meet the following criteria:

- (1) Rationality requires a complete knowledge and anticipation of the consequences that will follow on each choice. In fact, knowledge of consequences is always fragmentary.
- (2) Since these consequences lie in the future, imagination must supply the lack of experienced feeling in attaching value to them. But values can be only imperfectly anticipated.
- (3) Rationality requires a choice among all possible alternative behaviors. In actual behavior, only a very few of all these possible alternatives ever come to mind [Simon, 1945, p. 81].

The combination of bounded rationality and environmental uncertainty or complexity forces individuals to engage in "adaptive, sequential decision-making. This

HUMAN FACTORS

ENVIRONMENTAL FACTORS

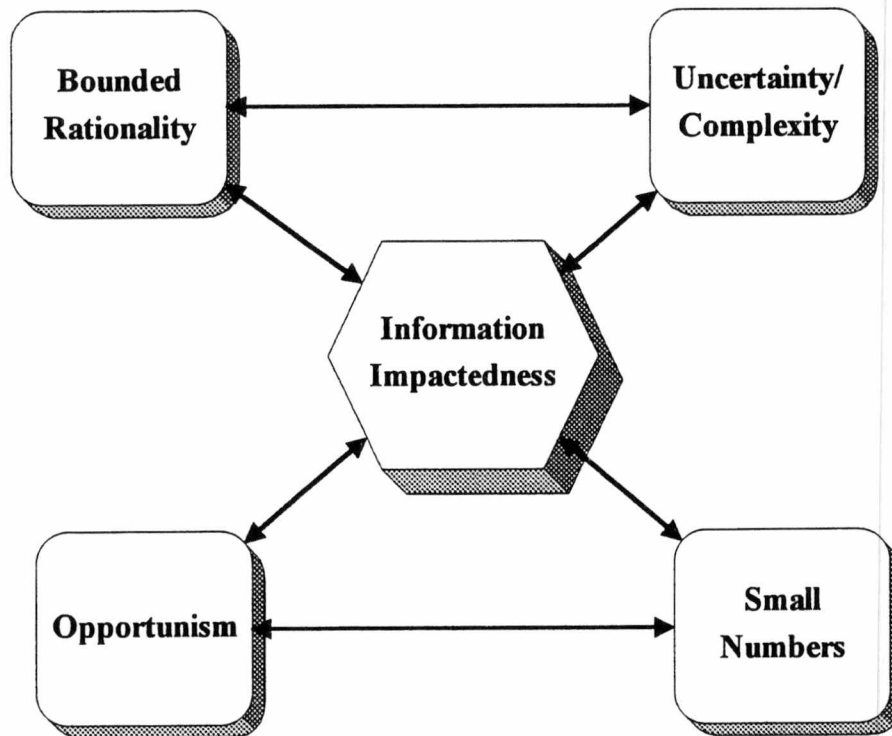


FIGURE 6

**HUMAN AND ENVIRONMENTAL FACTORS IN
THE MARKETS AND HIERARCHIES THEORY**

Source: Adapted from O. E. Williamson, Markets and Hierarchies: Analysis and Antitrust Implications (New York: The Free Press, 1975), p. 40.

enables them to retain flexibility in the face of unforeseen contingencies" [Swieringa and Waterhouse, 1982, p. 156]. Task-specific information is acquired during sequential decision-making. This information is *impacted* if it is held as private information. Since potential competitors do not possess this private information, they are at a disadvantage in future negotiations. Therefore, a *small numbers* bargaining condition may emerge.

Individuals may use their private information to engage in *opportunism*.

Opportunism extends the usual motivational assumption of self-interest seeking to include self-interest seeking with guile. . . . Opportunism refers to "making false or empty, that is, self-disbelieved threats or promises," cutting corners for undisclosed personal advantage, covering up tracks, and the like. Although it is a central behavioral assumption, it is not essential that all economic agents behave this way. What is crucial is that some agents behave in this fashion and that it is costly to sort out those who are opportunistic from those who are not [Williamson and Ouchi, 1981, p. 351].

Opportunistic behavior may result in decision-making that is dysfunctional for the firm. However, firms create procedures to limit opportunistic behavior. These procedures include accounting activities, such as budgeting, cost allocation, and transfer pricing [Baiman, 1990].

The markets and hierarchies theory is similar, in many respects, to agency theory. However, many of the restrictive assumptions of agency theory are relaxed. The markets and hierarchies approach provides a positive theory to explain the alternative ways of contracting (in the external market or within the firm through an internal hierarchy), and the resulting structure of that hierarchy [Spicer and Ballew, 1983; Tiessen and Waterhouse, 1983].

The markets and hierarchies theory is not without criticisms. While many of the restrictive assumptions of agency theory are relaxed, other bounds are imposed. The analysis based on the markets and hierarchies theory tends to be less formal and rigorous than with agency theory [Baiman, 1990]. One result is that very little research has even been attempted in management accounting based on this theory.

Several studies have attempted to examine limited aspects of the markets and hierarchies theory. Walker and Weber [1984, 1987] conducted a case study which supported several aspects of Williamson's theory (technological and volume uncertainty and opportunistic behavior of suppliers). Balakrishnan and Wernerfelt [1986] empirically tested the frequency of technological change and found a higher incidence of external transactions in an environment of high technological change. While this appears to contradict Williamson's theory, Balakrishnan and Wernerfelt defend the theory as it relates to general environmental uncertainty. Walker and Poppo [1991] conducted a survey which examined the importance of specialized assets in the determination of conducting internal or external transactions. In support of the markets and hierarchies theory, they confirmed the importance of specialized assets and found lower transaction costs within organizations when there were high levels of specialized assets.

More extensive analysis of the theory has been attempted with case studies. Colbert [1991] used both questionnaire and interview responses from managers in four large high-tech firms to study the factors relevant to the transfer pricing process. He found the extent to which firms constrain subunit managers from using external transactions is positively related to the extent of asset specificity and the importance of the

component to the competitive strategy of the firm. Van der Meer-Kooistra [1994] conducted a case study of four Dutch multinationals. He found that internal transactions can be coordinated in two ways: (1) how authority is distributed, and (2) how internal transactions are valued. Based on the information derived from the case study, Van der Meer-Kooistra developed a variation of the markets and hierarchies model for transfer pricing in an organizational context, as shown in Figure 7.

Eccles and White [1988] criticize the markets and hierarchies theory as contradicting practice. They examined information from Eccles' 1985 case study and found several firms that chose external transactions when the price for internal transactions was the same or even less. This situation may be due to the incongruence of managerial and company goals or a failure of the incentive system. In addition, several studies have supported the markets and hierarchies theory and provided rationales for these inefficient intrafirm transactions. Harrigan [1985] found firms that allowed external transactions, but encouraged internal transactions, even when they were more costly. She felt there may be some strategic reason for these inefficient intrafirm transactions. Milgrom and Roberts [1992] believe this strategy would be used to develop a core competency (i.e., to acquire knowledge and expertise in a specialized production). Choi [1994] provides a signaling model where the market price of the intermediate product is public information, but the cost of internal transactions is private information. He sees inefficient intrafirm transactions as deliberate and purposeful strategies for a firm to signal about its cost of production.

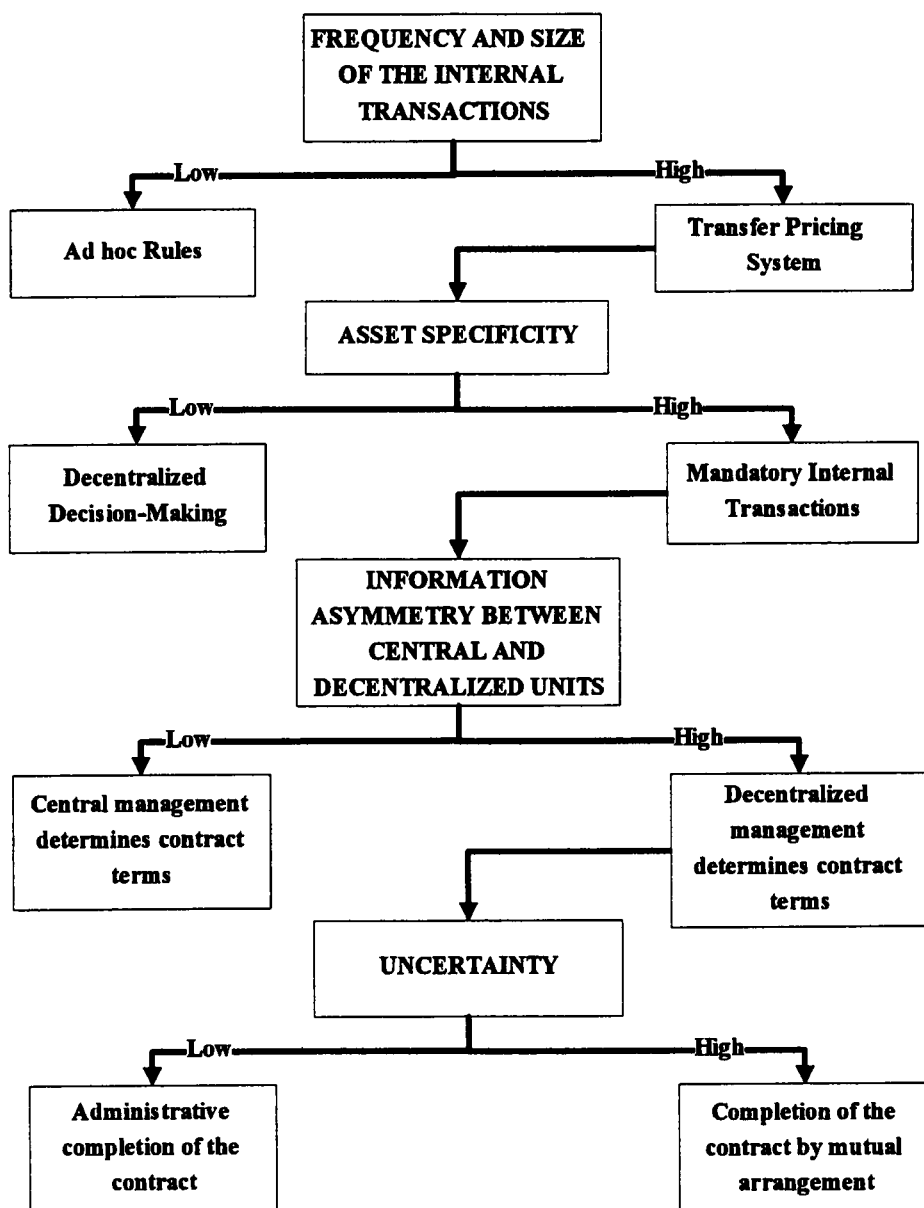


FIGURE 7

**FACTORS INFLUENCING TRANSFER PRICING
IN AN ORGANIZATIONAL CONTEXT**

Source: Adapted from J. Van der Meer-Kooistra, "The Coordination of Internal Transactions: The Functioning of Transfer Pricing Systems in the Organizational Context," *Management Accounting Research* 5, No. 2 (1994), p. 149.

Krickx [1995] provides a historical perspective of the changes in vertical integration patterns in computer firms. He found these patterns were consistent with the theory of markets and hierarchies.

Other Organizational Theories

Several other organizational views of transfer pricing have been suggested. Spicer and Ballew [1983] claim that transfer pricing questions are "as much issues of organizational design as they are choices of accounting alternatives" [p. 92]. They compare the markets and hierarchies approach with two alternative organizational theories -- contingency theory and the information economics approach. While the markets and hierarchies approach is a positive theory that seeks to explain the factors affecting the organization of economic activities, the information economics approach provides an explicit normative model that is used to structure organizational choices in the form of economic problems. Information economics provides a higher level of analytical rigor, but requires radical simplifications in the conceptual model. Therefore, Spicer and Ballew believe the information economics approach provides only minimal assistance for multi-person control problems in large, complex organizations.

Swieringa and Waterhouse [1982] compare the traditional analytical view of transfer pricing with four organizational views: (1) the behavioral model, (2) the garbage can model, (3) the organizing model, and (4) the markets and hierarchies model. The behavioral model, developed by Cyert and March [1963], views the organization as a coalition of participants with no internal consensus and, therefore, latent goal conflict.

These conflicts, such as the transfer pricing problem, are resolved sequentially with an emphasis on short-run feedback. The garbage can model [Cohen, March, and Olsen, 1972; Cohen and March, 1974] views the organization as four independent streams -- problems, solutions, participants, and choice opportunities (occasions when a decision is required). This model would consider the transfer pricing problem to be a choice opportunity with a complex mix of problems, solutions, and participants. The organizing model [Weick, 1979] considers "organizing" to be a continual process of clarifying information through the coordinated actions of the participants. This model is based not on goal-directed actions, but on goal interpretation. Therefore, the transfer pricing problem could be viewed not as a present or future problem, but as a means of legitimizing past actions. The markets and hierarchies model [Williamson, 1964, 1970, 1975, 1981a, 1981b, 1986, 1993a, 1993b] examines the alternative means of cooperation (i.e., external market or internal hierarchy).

Swieringa and Waterhouse [1982] suggest that transfer pricing decisions should be considered within the complex, detailed organizational context. The four different organizational views provide different perspectives to the problems. The organizational models require more information than the traditional models and they emphasize adaptability and organizational complexity. Also, the organizational models concentrate on the decision process, not just the outcome. Swieringa and Waterhouse state that "the process of arriving at transfer pricing rules, procedures and prices provides an opportunity for structuring and controlling which is as important as the rules, procedures and prices that are obtained from the process" [1982, p. 160].

The most comprehensive organizational theory of transfer pricing was developed by Spicer [1988]. His theory is based on the behavioral theory of transfer pricing proposed by Watson and Baumler [1975] and the markets and hierarchies theory developed by Williamson [1964, 1970, 1975, 1981a, 1981b, 1986, 1993a, 1993b]. Because Spicer's theory is the foundation for the model used in this research, it will be examined in more detail in the next chapter.

INTERNATIONAL TRANSFER PRICING

Although the present study deals exclusively with domestic transfers, the international aspects of transfer pricing have generated a significant body of literature. A general overview of this topic is provided by Verlage [1975], Plasschaert [1979], Benke and Edwards [1980], Rugman and Eden [1985], Mueller, Gernon, and Meek [1987], Belkaoui [1991], Tang [1979, 1992], Feinschreiber [1993], Emmanuel and Mehafdi [1994], OECD [1994], and King [1994]. Comprehensive reviews of the relevant literature are provided by Eden [1985] and Leitch and Barrett [1992].

In October 1988, the U. S. Treasury Department and the Internal Revenue Service (IRS) published a White Paper containing a detailed analysis of current international transfer pricing practice and recommendations for change. After substantial corporate opposition to the White Paper, proposed transfer pricing regulations were issued in 1992 which differed significantly from the White Paper recommendations [Business International Corporation and Ernst & Young, 1991; King, 1994]. In 1993, temporary transfer pricing regulations were issued which represented an amalgam of the White Paper

recommendations and the proposed 1992 regulations [King, 1994]. The final section 482 transfer pricing regulations were issued in 1994. The new rules retain the key elements of the 1993 temporary regulations, but provide more detail and allow more flexibility [Barlas, 1994; Baliga, 1994; "Final 482 Regs. Add Flexibility in Transfer Pricing," 1994]. Also in 1994, driven by the changes in the Treasury regulations, the Organization for Economic Cooperation and Development (OECD) issued a discussion draft of new guidelines for international transfer pricing [OECD, 1994; Humphreys, 1994; Levey and Shapiro, 1995; Tax Executives Institute International Tax Committee, 1995]. The OECD guidelines are incorporated into an extensive network of treaties for the member countries, including the United States, and affect a significant proportion of world trade [OECD, 1994; Emmanuel and Mehafdi, 1994]. The OECD guidelines and the IRS regulations are both based on the principle of a transfer price that is comparable to an "arm's length transaction" [OECD, 1994; Barlas, 1994; Baliga, 1994; "Final 482 Regs. Add Flexibility in Transfer Pricing," 1994].

The environment for international transfers is much more complex than that for domestic transfers. Therefore, the criteria underlying the choice of a transfer pricing policy may vary significantly between domestic and international transfers. Wu and Sharp [1979] surveyed Fortune 500 firms and found significant differences between domestic and international transfers in the rankings of criteria for transfer pricing policies and the particular policies utilized. The causative and associative relationships between subsidiary autonomy, performance evaluation, and transfer pricing in a multinational company were examined by Yunker [1982]. Additional research analyzing the factors that influence

transfer pricing has been conducted by Benvignati [1985], Abdallah [1989], Al-Eryani, Alam, and Akhter [1990], Tang [1979, 1992, 1993], and Plasschaert [1994]. While there are many factors to be considered in the choice of a transfer pricing policy, the predominant factor for international transfers appears to be tax considerations [Wu and Sharp, 1979; Coburn, Ellis, and Milano, 1981; Benvignati, 1985; Abdallah, 1989; Tang, 1979, 1992, 1993]. Since the environment, criteria, and pricing policy may differ between domestic and international transfers, the two areas should be considered separately. The present study deals exclusively with domestic transfers and does not include the international or tax aspects of transfer pricing.

SUMMARY

This chapter provided a limited review of the transfer pricing literature. Both the traditional analytical methods of transfer pricing and negotiated transfer pricing were presented, including the empirical research on these subjects. Then, various organizational views of transfer pricing, which attempt to provide a theoretical foundation for transfer pricing issues, were presented. However, these organizational views differ and they have not been strongly related to empirical research. The next chapter presents the development of an organizational theory of transfer pricing, based on several of the previous organizational viewpoints, which should provide a foundation for future empirical research in transfer pricing.

CHAPTER III

DEVELOPMENT OF THEORY AND HYPOTHESES

This chapter develops an organizational theory of transfer pricing which is based on several current organizational theories. First, the organizational theory of transfer pricing developed by Spicer [1988] is presented. Then, the theory is expanded by including additional aspects of other organizational theories. This expanded model provides the theoretical foundation for the present study and for the hypotheses developed in the second section of this chapter.

THEORETICAL DEVELOPMENT

Spicer [1988] developed the most comprehensive organizational theory of transfer pricing. His theory is based on the behavioral theory of transfer pricing proposed by Watson and Baumler [1975] and the markets and hierarchies theory developed by Williamson [1964, 1970, 1975, 1981a, 1981b, 1986, 1993a, 1993b].

Spicer's model, shown in Figure 8, presents the organizational factors affecting the transfer pricing process. These factors include: (1) The dimensions of the transfer, which are the investment requirements, the frequency and volume, and the uncertainty and complexity of the transfer; (2) The diversification strategy; (3) The organization design; and (4) The core set of factors, which represents Williamson's human and environmental factors.

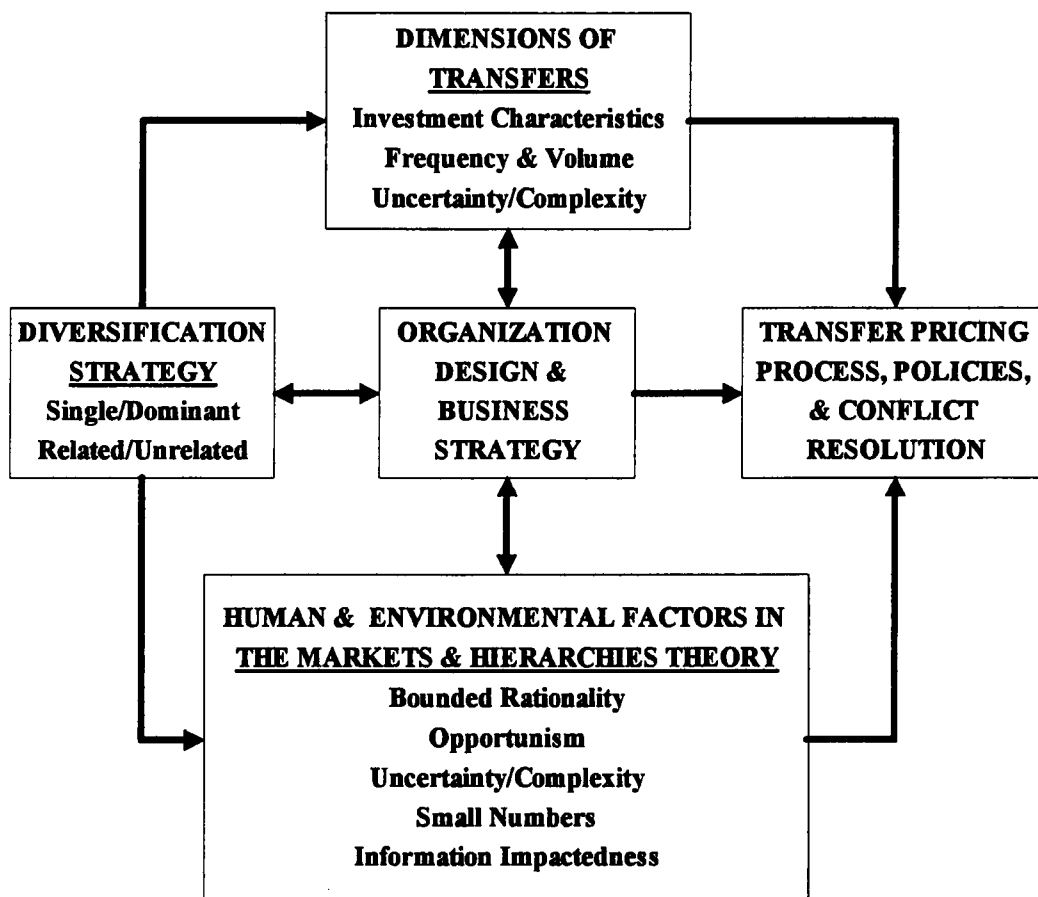


FIGURE 8
**ORGANIZATIONAL MODEL OF
THE TRANSFER PRICING PROCESS**

Source: Adapted from B. H. Spicer, "Towards an Organizational Theory of the Transfer Pricing Process," Accounting, Organizations and Society 13, No. 3 (1988), p. 309.

Based on this model, Spicer [1988] developed a set of hypotheses stating that the greater the degrees of transaction-specific investment, uncertainty and/or complexity, and frequency and volume of the transfer: (1) the more central control will be exercised over the make-or-buy decision, (2) the more specified arbitration procedures will exist, (3) the more performance measures and incentives will be based on cooperation and adaptation, and (4) the more conflict there will be between the divisions. When standardized intermediate products are transferred, Spicer hypothesizes that market prices will be the primary basis for choosing between internal and external suppliers and for setting transfer prices. If the transferred product is idiosyncratic, internal manufacturing costs will be the primary basis. The more complex situation, between these two extremes, involves a transferred product with a moderate degree of customization and a material transaction-specific investment. Spicer hypothesizes that both the market price and internal manufacturing cost will be important in the transfer pricing decision and negotiation may be the most effective form of integration. Negotiation of a transfer price in this complex situation is the context of this present study.

Spicer did not develop hypotheses concerning the organization design and strategy variables or the core set of human and environmental factors. The model for the present research expands Spicer's model by incorporating a more thorough analysis of these factors. This expanded model of transfer pricing within an organizational context is shown in Figure 9, and a more detailed version of the model is shown in Appendix A. Based on organization theory and previous research, the organizational design and strategy variables may include: (1) the structure of the firm, (2) the diversification

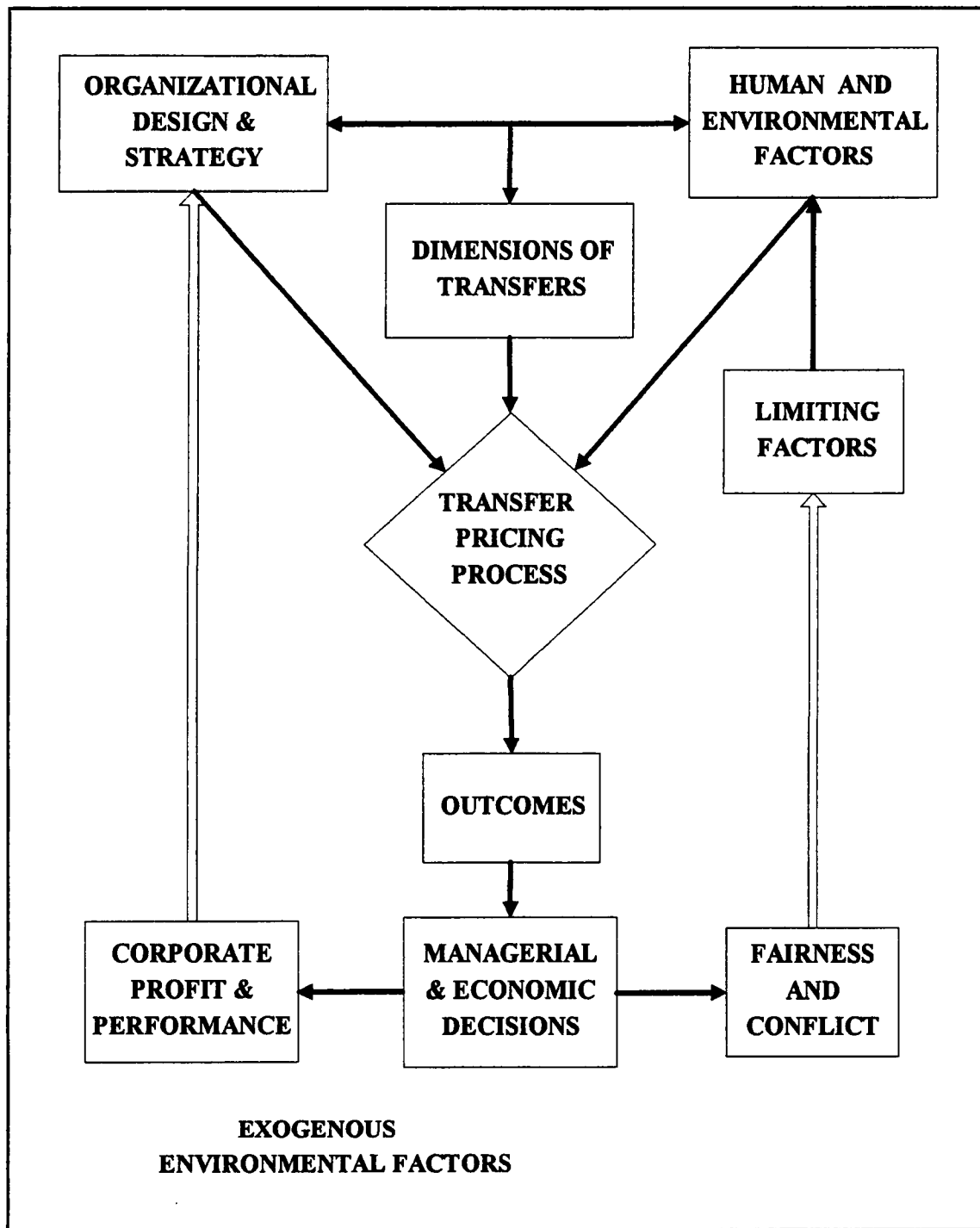


FIGURE 9

**MODEL OF TRANSFER PRICING
WITHIN AN ORGANIZATIONAL CONTEXT**

strategy, (3) the degree of differentiation, (4) the degree of integration, (5) the degree of decentralization or the discretion of the divisions in decision-making (centralized vs. decentralized), (6) the types of responsibility centers, (7) the existence and method of corporate intervention and arbitration, (8) the basis for performance evaluation (divisional, corporate, or a mixed scheme), (9) the firm's goals and objectives, (10) the firm's competitive advantage, (11) the financial strategy, (12) the management information system, and (13) the profit orientation (short-term vs. long-term emphasis) [Lawrence and Lorsch, 1967; Johnson, Kast, and Rosenzweig, 1973; Eccles, 1985; Spicer, 1988; Borkowski, 1988, 1990; Emmanuel and Mehafdi, 1994].

The core factors in Spicer's model are theoretical assumptions from the markets and hierarchies theory: (1) bounded rationality, (2) opportunism, (3) information impactedness, (4) uncertainty and complexity, and (5) small numbers bargaining conditions. These human and environmental factors may confound the decision-making process and lead to dysfunctional results. *Limiting factors* affect the degree of bounded rationality by focusing attention and encouraging adaptation. These limiting factors may include time pressure, type and amount of communication, history of process and relationships, prior expectations, and personality and role characteristics [March and Simon, 1980]. Additional limiting factors may include individuals' goals and objectives, attitudes toward risk, perceived autonomy, perceived power, and negotiation strategies [Ackelsberg, 1977; Gangolly, 1977; Mays, 1979; Ackelsberg and Yukl, 1979; Schlachter, 1986; Chalos and Haka, 1990; Mahenthiran, 1991; Ghosh, 1991, 1994;

Viator, Poe, and Strawser, 1992; Schmidt, 1993; Chan, 1993; Ravenscroft, Haka, and Chalos, 1993; Greenberg, Greenberg, and Mahenthiran, 1994].

Spicer [1988] defined the dimensions of the transfers as: (1) the transaction-specific investment characteristics, (2) the frequency and volume of the transfers, and (3) the uncertainty and complexity of the transfers. The transaction-specific investments may be for the site, physical assets, human assets, dedicated assets, and/or marketing assets [Williamson, 1985; Van der Meer-Kooistra, 1994]. Other dimensions of the transfers may include product characteristics, the importance of the product, the product life cycle, and the stability of internal trade [Ackelsberg, 1977; Ackelsberg and Yukl, 1979; Gomaa, 1982; Eccles, 1985; Emmanuel and Mehafdi, 1994].

The entire transfer pricing system is subject to exogenous environmental factors, such as: (1) Industry conditions; (2) Market conditions (including market existence, market uncertainty, market position, stability of trade, and availability of substitutes, subcontractors, and suppliers); (3) Technology and change; (4) Tax and legal regulations; and (5) International considerations [Johnson, Kast, and Rosenzweig, 1973; Eccles, 1985; Borkowski, 1988, 1990; Emmanuel and Mehafdi, 1994; Chalos, 1995].

The transfer pricing process includes the transfer pricing objectives, policies (both explicit and implicit), method of selection, pricing basis, complexity, and administrative restraints [Eccles, 1985; Spicer, 1988; Emmanuel and Mehafdi, 1994; Van der Meer-Kooistra, 1994]. The outcomes of the transfer pricing process include: (1) The decision to make the product internally and transfer between divisions or to buy the product externally; (2) The quantity and price of the transferred product; and (3) The attitudes of

the participants, including the degree of conflict between the participants. These outcomes then impact managerial and economic decisions, such as product pricing, production levels, capital investment, and performance evaluation [Eccles, 1985]. Ultimately, these managerial and economic decisions determine: (1) Corporate profit and performance measures, which then affect the organizational design and strategy variables; and (2) Managers' perceptions of individual fairness and conflict, which then affect the limiting factors in the model [Ackelsberg, 1977; Ackelsberg and Yukl, 1979; March and Simon, 1980; Eccles, 1985; Schlachter, 1986; Chalos and Haka, 1990; Arunachalam, 1991; Arunachalam and Dilla, 1992; Ravenscroft, Haka, and Chalos, 1993; Chan, 1993].

The foundation for the present research is this model of transfer pricing within an organizational context, shown in Figure 9 and Appendix A. The context of the proposed research is the complex intermediate situation (i.e., a moderate degree of product customization and a material transaction-specific investment) in which negotiation would be an appropriate transfer pricing process. This situation is difficult to predict due to both internal and external contracting hazards [Williamson and Ouchi, 1981; Spicer, 1988]. The specific hypotheses to be studied within this context are developed in the next section.

DEVELOPMENT OF HYPOTHESES

This section presents the development of the research hypotheses, based on the model of transfer pricing within an organizational context and related research on transfer pricing and negotiation. These hypotheses address the outcomes of the transfer pricing negotiation. The first outcome is a decision to either make the product internally and

transfer between divisions or to buy the product on the external market. If an internal transfer is chosen, the transfer price between the divisions must be negotiated. This transfer price will determine the divisional allocation of profit from the transaction. Following negotiation, the divisional managers' attitudes concerning the transfer pricing process and outcomes may affect future negotiations and interrelationships. Therefore, three outcomes of the negotiation process will be studied: (1) the decision to buy the product externally or make and transfer the product internally, (2) the transfer price for an internal transaction and the resulting profit allocation between the divisions, and (3) the post-negotiation attitudes of the divisional managers. Based on the model of transfer pricing within an organizational context (Figure 9 and Appendix A) and prior research on transfer pricing and negotiation, hypotheses are presented concerning the organizational and behavioral factors impacting these negotiation outcomes.

Internal vs. External Transaction

A comprehensive analysis of the make-or-buy decision is provided by Gambino [1980]. In addition, the markets and hierarchies theory by Williamson [1964, 1970, 1975, 1981a, 1981b, 1986, 1993a, 1993b] and the organizational theory of transfer pricing by Spicer [1988] develop an extensive consideration of the internal vs. external transaction decision. These researchers hypothesize when an internal or an external transaction will be the most effective. They suggest that in an intermediate situation that does not clearly fall within the conditions for either an internal or external transaction, other variables may be taken into consideration to make this decision. This theory was supported in studies by

Walker and Weber [1984, 1987], Balakrishnan and Wernerfelt [1986], Walker and Poppo [1991], Colbert [1991], and Van der Meer-Kooistra [1994].

Walker and Weber [1984, 1987] found that transactional considerations from Williamson's markets and hierarchies theory, such as technological and volume uncertainty and opportunistic behavior of suppliers, impact the make-or-buy decision. Other factors, such as production costs and switching costs, also affected the decision. Colbert [1991] studied four large high-tech firms and found a positive relationship between the degree of constraint of external transactions and both the importance of the product and the degree of asset specificity. Van der Meer-Kooistra [1994] conducted a case study and found four key variables important in the make-or-buy transfer pricing question: (1) the frequency and size of the transactions, (2) the degree of asset specificity, (3) the degree of information asymmetry, and (4) the degree of uncertainty.

Balakrishnan and Wernerfelt [1986] found that the frequency of technological change interacts with the degree of competition to influence the make-or-buy decision. They found that increased technological uncertainty is related to a higher incidence of external transactions. On the other hand, they defend Williamson's [1975] argument that general environmental uncertainty will lead to the use of internal transactions. The rationale for Williamson's theory is that uncertainty will require more complex contracts with external suppliers to anticipate possible contingencies. As the number of possible contingencies increase, external contracting becomes more expensive and, therefore, internal transactions will be more likely.

Williamson's theory concerning internal and external transactions has not been tested extensively in a transfer pricing context, despite the key role the transfer pricing system may play in the make-or-buy decision [Hornngren, 1989]. Previous research suggests that market uncertainty may be an important variable in the use of an internal or external transfer [Walker and Weber, 1984, 1987; Balakrishnan and Wernerfelt, 1986; Van der Meer-Kooistra, 1994]. The present study examines this relationship further by testing the following hypothesis, stated in the alternative form:

H_{1A}: An external transaction will be chosen less often under conditions of high market uncertainty than under low market uncertainty.

Despite its importance to the organization, the make-or-buy decision has not been included in most prior transfer pricing research. Colbert [1991] and Van der Meer-Kooistra [1994] conducted case studies to study the factors relevant to the make-or buy decision in the transfer pricing process. Schlachter [1986] attempted to study the factors which may affect this decision, but his experiment was designed to encourage an internal transfer and, therefore, an insignificant number of negotiators chose an external transaction. Most research has not included the option of external transfer, despite the theoretical literature concerning negotiation which states that buyers and sellers should be free to trade outside the company [Dean, 1955]. If managers are not free to select an external transfer, the parties to the negotiation will have unequal bargaining power and negotiation may not produce an equitable result [Anthony, Dearden, and Vancil, 1965].

Although an internal transfer may be in the best interest of the corporation as a whole, divisional managers may choose an external transfer if it improves divisional

performance and their performance is evaluated on a divisional basis. Eccles [1987]

found:

Profit center managers generally consider internal transactions to be more difficult than external transactions. This thinking occurs because these transactions take place between managers who are in competition for promotions, capital, bonuses, and other rewards. The extent of this competition depends on the relative emphasis on profit center results versus total group or company results in allocating rewards [p. 26].

Therefore, organizational factors, such as the performance evaluation system, and behavioral factors, such as the past relationship between the divisions, may impact the decision to utilize an internal or external transaction. Therefore, the following hypotheses are presented in the alternative form:

H_{1B}: An external transaction will be chosen more often under a divisional evaluation basis than under a mixed scheme based on divisional and corporate profits when the external transfer is better for divisional performance.

H_{1C}: An external transaction will be chosen more often with a negative negotiation history than with a positive history.

Negotiated Transfer Price

If an internal transfer is chosen, a transfer price must be determined. As discussed in Chapter II, there is a substantial quantity of research on negotiated transfer pricing. However, a comprehensive theory of the process does not exist [Murnighan and Bazerman, 1990] and, as a result, the research on negotiated transfer pricing appears fragmented. Previous research has dealt with a diverse set of independent variables and a wide range of transfer pricing outcomes.

The primary outcome studied in previous research is the negotiated transfer price. The transfer price will determine the allocation of profit between the divisions. Chalos and Haka [1990] conducted a bargaining experiment with students as surrogates for divisional managers. They studied the effect of market uncertainty (the existence and certainty of an external market), incentive scheme (based on divisional vs. combination of divisional and corporate performance), and negotiation history (single vs. multiple negotiations setting) on the firm's profit relative to optimal profit and divisional conflict, as measured by the difference between divisional profits. They found higher conflict and higher profits associated with higher market uncertainty and a divisional reward scheme. While the main effect of the reward scheme was not significant for the conflict variable, there was a significant effect if the market was uncertain, indicating an interactive effect.

Gomaa [1982] studied the effects of market uncertainty (the existence of a market price), the evaluation system (divisional vs. corporate performance evaluation), and the importance of the product on dysfunctional behavior. He utilized a simulation procedure to develop a benchmark for transfer pricing behavior and conducted a laboratory experiment with student surrogates "negotiating" with an interactive computer program. He found that dysfunctional behavior was higher (i.e., more variance from the benchmark) when there was no external market, the product was important, and divisional profit performance was emphasized.

Mahenthiran [1991] conducted a laboratory experiment with student surrogates, paired by risk-taking behavior, to study the effects of market uncertainty, divisional interdependency (importance of product to the division), performance evaluation

(divisional vs. joint scheme), and arbitration on three outcome measures of the transfer pricing negotiation: (1) Efficiency of the negotiation, as evaluated by the quantity transferred and the transfer price relative to the firm's optimal quantity and price; (2) Ineffectiveness, represented by the number of periods of no transfer; and (3) The negotiators' perceived autonomy. He found that when the market is certain, a joint incentive scheme and no arbitration led to significantly higher efficiency and higher autonomy scores from the negotiators. When the market is uncertain, a joint incentive scheme still reduced the effects of uncertainty and information asymmetry by resulting in a transferred quantity closer to optimal.

Mays [1979] conducted a lab experiment to study the effects of the existence of an external market, the type of accounting report (no report vs. absorption costing report vs. direct costing report), and the type of bargaining process (cooperative vs. competitive) on the profit split. He found that none of the variables significantly affected the profit split between the divisional managers.

Langholtz, Gettys, and Foote [1993] studied transfer pricing under conditions of certainty, risk, and uncertainty. Under certainty, resources, constraints, and objectives are known. Risk was defined as a condition where the resources, constraints, and objectives are random variables, but the decision maker is assumed to know the probability distribution of these variables. Uncertainty is the condition where resources, constraints, and objectives are random variables, but the decision maker does not know the probability distributions and must, therefore, rely on observation, experience, and inference.

Langholtz, Gettys, and Foote conducted a laboratory experiment and found that subjects

performed best under certainty and worst under uncertainty. They also found that performance under conditions of risk improved over time. They concluded that, after a period of learning, subjects could deal with risk, but not with uncertainty.

Borkowski [1988, 1990] conducted a survey of manufacturing firms utilizing transfer pricing. She found that the existence of a market price did not necessarily lead to the use of the market price as a transfer price. She also found no significant relationship between market uncertainty and the transfer price.

These previous studies provide conflicting evidence on the effect of market uncertainty on the transfer price and profit allocation between the divisions. This conflicting evidence indicates a need for additional research. To provide additional evidence, the following hypothesis is presented, in the alternative form:

H_{2A}: There will be a greater divergence in the profit allocation between the divisions under conditions of high market uncertainty than under low market uncertainty.

These previous studies also provide limited evidence that a divisional evaluation basis promotes more unequal divisional profits [Gomaa, 1982; Chalos and Haka, 1990; Mahenthiran, 1991]. Chalos and Haka [1990] found, however, that this result is significant only if the market is uncertain.

Chan [1993] conducted a bargaining experiment with teams of student surrogates of the same gender. Prior to the negotiation, specific negotiation strategies and goals were formulated with another student surrogate acting as the negotiator's manager. Chan studied the effects of the performance evaluation system (based on divisional vs. firm results), the negotiator's accountability to constituents (as represented by the other student

surrogate acting as the manager), and the negotiator's perceived relative power on a set of performance measures (average targeted profits, standardized aspiration levels, buyer's profit, seller's profit, joint profit, distance between final offers, and time required for agreement). He found that performance evaluation based on firm outcomes resulted in lower profit goals, more cooperation, higher joint outcomes, and smaller distances between the final offers.

Greenberg, Greenberg, and Mahenthiran [1994] conducted a laboratory experiment to examine the effects of divisional interdependency, performance evaluation, and arbitration on four measures of the negotiation process: (1) Firm profit, viewed as the integrating objective of effectiveness or goal congruence; (2) Negotiators' perceived autonomy, viewed as a differentiating objective; (3) Efficiency, as operationalized by the number of period of negotiation required to reach an agreement; and (4) Bargaining disposition, measured as the difference between the first and last offers. They found that under high interdependence, a firm-based performance evaluation method or arbitration resulted in higher firm profits. However, the use of both a firm-based incentive *and* arbitration did not result in significantly higher profit than the use of either method individually.

The present study will provide additional evidence on this issue by testing the following hypothesis, stated in the alternative form:

- H_{2B}: There will be a greater divergence in the profit allocation between the divisions under a divisional evaluation basis than under a mixed scheme based on divisional and corporate profits.

Until recently, the history of the negotiation process and the relationship between the negotiators has not been considered in transfer pricing research. Mays [1979] attempted to examine the effect of the relationship between the negotiators by creating either a cooperative or competitive bargaining environment. He conducted a laboratory study with students negotiating through written communication. He studied the effects of the existence of an external market, the type of accounting report (no report vs. absorption costing report vs. direct costing report), and the type of bargaining process (cooperative vs. competitive). None of the independent variables significantly affected the profit split between the divisional managers, but the manufacturing division (seller) tended to negotiate a lower percentage of the profit than the distribution division (buyer).

Schlachter [1986] also studied the profit distribution between the divisions. He conducted a two-stage negotiation process that considered both pre-negotiation expectations and final negotiation results. The independent variables were divisional asymmetries due to market conditions (favor buyer, seller, or neither) and divisional asymmetries due to previous negotiation results (favor buyer or seller). He found that the division with favorable market conditions received approximately 60% of the profit, but if neither division were favored, the split was nearly equal. He also found that divisional asymmetries due to previous negotiation results led to more excessive transfer pricing expectations and greater divergence in managers' satisfaction than those arrived at with less divisional asymmetry.

This prior research provides preliminary support for the effect of negotiation history on the transfer pricing process and the following hypothesis, in the alternative form, examines the issue further:

H_{2C}: There will be a greater divergence in the profit allocation between the divisions with a negative negotiation history than with a positive history.

Post-Negotiation Attitudes

Post-negotiation attitudes have been examined in several previous studies. The attitudes of the divisional managers following negotiation may be important in future interdivisional negotiations. Recent surveys show that there are many interdivisional transactions [Eccles, 1985; Joy, 1985, 1988] and feelings of inequity, conflict, lack of cooperation, and dissatisfaction from past negotiations may hinder future interdivisional transactions.

Ravenscroft, Haka, and Chalos [1993] conducted a bilateral bargaining experiment with students as surrogates for divisional managers. They studied the negotiation strategies employed by the participants and examined the effects of threat capacity (the existence and certainty of an external market), reward scheme (based on divisional vs. combination of divisional and corporate performance), and bargaining horizon (single vs. multiple negotiations setting). They found more reciprocal, or coordinative, behavior when no market or a certain market existed, divisional rewards were emphasized, and a multiple bargaining situation existed.

Gomaa [1982] utilized a laboratory experiment and found more dysfunctional behavior when there was no external market, the product was important, and divisional profit was emphasized.

These studies provide conflicting evidence on the effect of market uncertainty and the performance evaluation basis on post-negotiation attitudes. To provide additional evidence on the effect of market uncertainty, the following hypothesis, is presented in the alternative form:

H_{3A}: More negative attitudes, such as conflict, inequity, lack of cooperation, and dissatisfaction, will result under conditions of high market uncertainty than under low market uncertainty.

Ackelsberg [1977] and Ackelsberg and Yukl [1979] studied the conflict resolution behavior of divisional managers and their attitudes toward other divisions. Ackelsberg conducted a multiperiod business game with undergraduate business students as surrogates for managers. The independent variables studied were the evaluation system (divisional vs. corporate performance evaluation), the importance of the product, and the existence of a market price (but this variable was not successfully manipulated). The results indicate that an evaluation system based on divisional performance leads to more competitive, less cooperative, and less favorable attitudes toward the other negotiator. These results are stronger if the transferred product is important to both divisions.

Mahenthiran [1991] conducted a laboratory experiment with student surrogates, paired by risk-taking behavior, to study the effects of market uncertainty, divisional interdependency (importance of product to the division), performance evaluation (divisional vs. joint scheme), and arbitration. He found that when the market is certain,

a joint incentive scheme and no arbitration led to significantly higher efficiency and higher autonomy scores from the negotiators. Overall, higher autonomy scores were obtained without arbitration.

Greenberg, Greenberg, and Mahenthiran [1994] conducted a similar laboratory experiment. They examined the effects of divisional interdependency, performance evaluation, and arbitration. They found that under high interdependence, a firm-based performance evaluation method or arbitration resulted in higher firm profits. However, they found no significant effects on the negotiators' perceived autonomy.

Chan [1993] conducted a bargaining experiment to study the effects of the performance evaluation system (based on divisional vs. firm performance), the negotiator's accountability to constituents, and the negotiator's perceived relative power on a set of performance measures. He found that performance evaluation based on firm outcomes resulted in lower profit goals, more cooperation, higher joint outcomes, and smaller distances between the final offers. When the negotiator was held accountable to constituents, he found higher profit goals, but no significant effect on negotiation outcomes. He found neither the goals nor outcomes of the negotiation were affected by the perceived power of the negotiator.

In summary, most of the studies which examined the effects of the evaluation basis found that a divisional evaluation basis resulted in less cooperation, higher conflict, more negative attitudes, and lower corporate profit [Ackelsberg, 1977; Ackelsberg and Yukl, 1979; Gomaa, 1982; Chalos and Haka, 1990; Mahenthiran, 1991; Chan, 1993]. However, Ravenscroft, Haka, and Chalos [1993] found more reciprocal, integrative

behavior with a divisional evaluation scheme. These mixed results indicate that additional information is needed concerning the effects of the performance evaluation basis on negotiation outcomes. The present research provides additional evidence by testing the following hypothesis, presented in the alternative form:

H_{3B}: More negative attitudes will result under a divisional evaluation basis than under a mixed scheme based on divisional and corporate profits.

Several researchers have stated that the attitudes and relationships developed through a transfer pricing negotiation will impact future negotiations between the divisions [Ackelsberg, 1977; Ackelsberg and Yukl, 1979; Schlachter, 1986]. Schlachter [1986] found that divisional asymmetries due to previous negotiations resulted in greater divergence in prenegotiation expectations and greater divergence in the managers' satisfaction with the results. This research does not, however, directly test the effect of past relationships on future negotiations. Therefore, the following hypothesis, in the alternative form, is presented for further analysis:

H_{3C}: More negative attitudes will result with a negative negotiation history than with a positive history.

SUMMARY

This chapter developed a model of transfer pricing within an organizational context (Figure 9 and Appendix A) based on the work of Spicer [1988], Williamson [1964, 1970, 1975, 1981a, 1981b, 1986, 1993a, 1993b], and other organizational theorists. This model depicts the various organizational, environmental, and human factors that affect the

transfer pricing process. Previous transfer pricing research, discussed in the preceding sections, provides a foundation for further research on three of these factors: (1) the degree of market uncertainty, (2) the performance evaluation basis, and (3) the negotiation history. If there is a high degree of market uncertainty, a divisional performance evaluation basis, and/or negative past relationships between the divisions, divisional managers may feel more competitive. Therefore, the managers may not share information or strive toward an equitable solution. This may result in an external transaction or in a greater divergence in the allocation of the profit between the divisions from an internal transaction. The divergence between profit allocations may be an indication of relative bargaining power, which could influence post-negotiation attitudes and future negotiations. Hypotheses, developed from the theoretical model and prior research, are summarized on the next page. The next chapter presents the research methodology for testing these hypotheses.

SUMMARY OF HYPOTHESES

Internal vs. External Transaction:

- H_{1A}: An external transaction will be chosen less often under conditions of high market uncertainty than under low market uncertainty.
- H_{1B}: An external transaction will be chosen more often under a divisional evaluation basis than under a mixed scheme based on divisional and corporate profits.
- H_{1C}: An external transaction will be chosen more often with a negative negotiation history than with a positive history.

Transfer Price and Division of Profits:

- H_{2A}: There will be a greater divergence in the profit allocation between the divisions under conditions of high market uncertainty than under low market uncertainty.
- H_{2B}: There will be a greater divergence in the profit allocation between the divisions under a divisional evaluation basis than under a mixed scheme based on divisional and corporate profits.
- H_{2C}: There will be a greater divergence in the profit allocation between the divisions with a negative negotiation history than with a positive history.

Post-Negotiation Attitudes:

- H_{3A}: More negative attitudes, such as conflict, inequity, lack of cooperation, and dissatisfaction, will result under conditions of high market uncertainty than under low market uncertainty.
- H_{3B}: More negative attitudes will result under a divisional evaluation basis than under a mixed scheme based on divisional and corporate profits.
- H_{3C}: More negative attitudes will result with a negative negotiation history than with a positive history.

CHAPTER IV

RESEARCH METHODOLOGY

Based on the theoretical model of transfer pricing within an organizational context (Appendix A) and prior research on negotiated transfer pricing, a set of hypotheses was developed in the previous chapter. This chapter presents the research methodology to test these hypotheses. First, the variables in this research are discussed. This discussion is followed by an explanation of the experimental task, subjects, and research model.

VARIABLES

The model variables for this research are shown in Figure 10. This project examines the effects of three independent variables: (1) the degree of market uncertainty, (2) the basis for performance evaluation, and (3) the previous negotiation history. The degree of market uncertainty is considered either high or low. The basis of evaluation is either divisional (.02% of divisional profit) or mixed, with the mixed scheme calculated as .001% of corporate profit and .015% of divisional profit. This mixed scheme should emphasize the importance of corporate performance without negating the need for inter-divisional cooperation [Chalos and Haka, 1990]. In the present study, the relationship between the negotiators over past periods is considered either positive or negative.

Three dependent variables are studied in this research: (1) The decision to make the product internally and transfer between divisions or to buy the product on the external

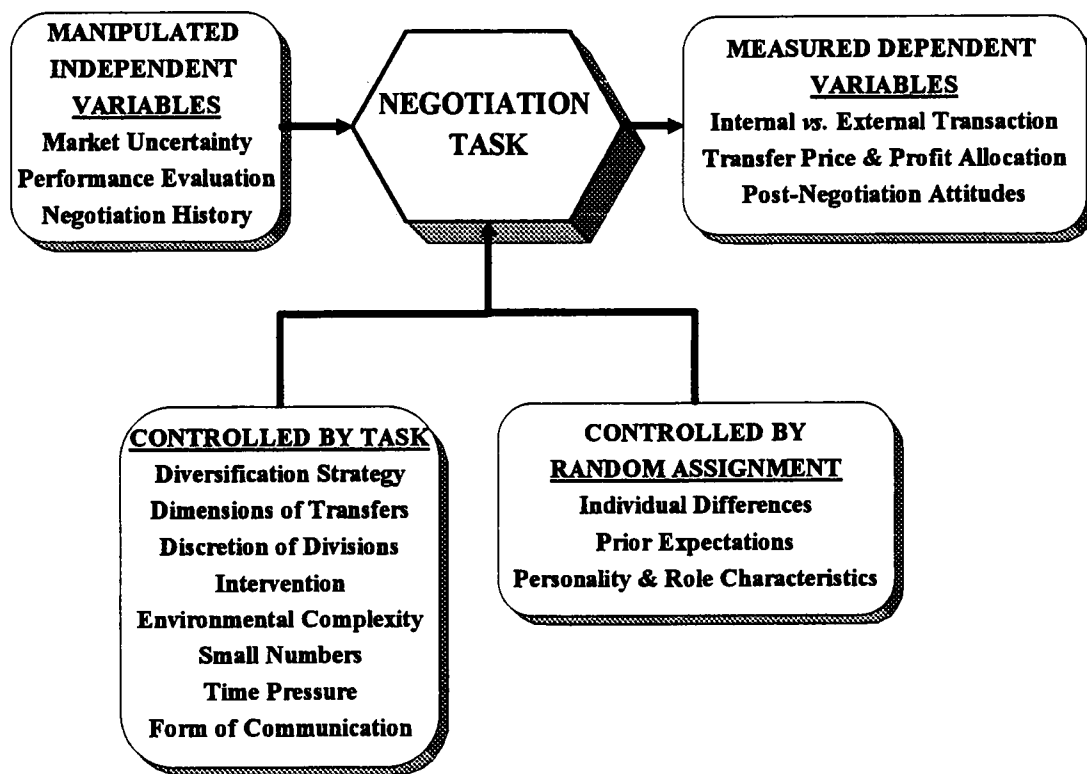


FIGURE 10
MODEL VARIABLES

market; (2) The negotiated transfer price if an internal transaction is chosen and the divisional allocation of profit from this transfer price; and (3) The post-negotiation attitudes of the participants toward the other division and the negotiation outcomes. In this study, overall demand and sales price of the final product are constant, so all internal transactions will result in equal profit for the organization. However, a "behavioral optimum" transfer price could provide an equitable allocation of the profit between the divisions.

Since this study is conducted in a negotiated transfer pricing context, the factors which have previously been considered to lead to the use of negotiation are held as constants (i.e., controlled by the negotiation task). These controlled variables are shown in Figure 10. The firm is assumed to be highly differentiated with a dominant or related diversification strategy and a high need for integration. The intra-firm transfer characteristics include a moderate degree of product customization, a material amount of transaction-specific investment, a relatively high frequency and volume of transfers, and a moderate degree of complexity and uncertainty.

An external market exists for the intermediate product, and the divisions have the necessary autonomy to choose between an internal transfer at a negotiated transfer price or an external market transaction. The autonomous units are not subject to corporate intervention in the transfer pricing process.

Individuals are assumed to be limited by bounded rationality. The environment is complex with only a small number of possible participants in the process. Therefore, some individuals may resort to opportunism. These human factors may be accentuated by time

pressure or by the form of communication. The negotiators have private information that is provided in written form, and they communicate through face-to-face negotiation.

All participants have individual differences in personality, values, expectations, and cognitive ability. This study attempts to control for these differences through random assignment of the participants to negotiation teams and treatment groups.

EXPERIMENTAL TASK

The experimental task for this study involved a bilateral bargaining experiment conducted in a laboratory setting. The participants received general instructions and an informed consent form (Appendix B). Each participant assumed the role of a divisional manager and received a written case with both general information (Appendix C) and private information (Appendix D or Appendix E).⁴ The private information includes details on the three independent variables of market uncertainty (high or low), evaluation basis (divisional or mixed), and negotiation history (positive or negative). In addition, the private information includes details of the division's cost structure and external market opportunities.

The case was written by the researcher, based on several cases in prior studies [Ackelsberg, 1977; Mays, 1979; Gomaa, 1982; Schlachter, 1986; Jones, 1988]. The

⁴Since the three independent variables each have two levels, eight possible combinations can occur ($2 \times 2 \times 2 = 8$). Therefore, there were eight different cases for both the buyer (Appendix D) and the seller (Appendix E). Both the buyer and the seller in each pair received the same combination of variables. Appendix D and Appendix E each contain two versions of the case which are representative of the eight possible combinations of independent variables.

case is similar in format to the previous cases, but it includes a different set of independent variables. The case also provides the option of an internal or external transaction, a dependent variable that has not been included in previous studies.

The participants were randomly paired and assigned to the role of either buyer or seller. They negotiated face-to-face to determine a transfer price for an internal transaction. At the end of the negotiation, the participants decided to accept either the negotiated internal transfer price or an external transaction offer. After the negotiation, participants completed a short questionnaire of post-negotiation attitude scales (Appendix F). The attitude scales were compiled from previous negotiation studies [Ackelsberg, 1977; Mays, 1979; Gomaa, 1982; Schlachter, 1986; Jones, 1988]. The post-negotiation attitude questionnaire consisted of ten questions designed to assess the negotiators' attitudes toward the negotiation process and the outcomes of the negotiation. Specifically, the questions address the negotiators' attitudes toward:

(a) The Negotiation Process:

- (1) Conflict during the negotiation,
- (2) Cooperation during the negotiation,
- (3) Competition during the negotiation,
- (4) Conciliation during the negotiation,
- (5) Equity of the negotiating positions,
- (6) Relationship during negotiation; and

(b) The Outcomes of the Negotiation:

- (7) Satisfaction with the outcome [for division],
- (8) Satisfaction with the outcome [for company],
- (9) Equity of the outcome,
- (10) Overall relationship with other negotiator.

Two pilot studies were conducted to obtain preliminary information. The first pilot study was conducted with eighteen undergraduate participants from *Beta Alpha Psi*, an accounting honor society. The case utilized in this pilot study required three negotiation periods of approximately fifteen minutes each. The negotiation history was determined by the first two negotiations. During the negotiations, the participants appeared to accept their roles and actively negotiate. After the negotiations, the participants completed post-negotiation attitude scales, manipulation checks, demographic information, and a series of questions concerning their participation in the exercise. In addition, the researcher was present during the pilot study to evaluate participation, answer questions, and discuss possible changes.

This pilot study revealed that fifteen minutes was not sufficient time for most participants to complete their negotiation. In addition, some of the calculations required, such as the calculation of the divisional manager's bonus, were not clear from the narrative and, therefore, required more time and explanation. The performance of the participants was evaluated on both a long-term basis over the three periods and a short-term basis (the third negotiation period only). The time required for the second and third negotiations was significantly less than for the first period, but the results of the negotiation (i.e., the transfer price) were not significantly different between the periods. The manipulation checks revealed that the participants did not perceive a difference in the negotiation history based on the previous two negotiations. However, they did perceive the degree of market uncertainty and the performance evaluation basis. Every pair chose to transfer the product internally, which was the best alternative for the company as a whole.

Additional information was obtained from the questionnaire and the discussions following the negotiations. Nearly all of the participants (94.4%) felt the exercise was interesting and would be willing to participate in a similar negotiation in the future. The areas of dissatisfaction were: (1) Insufficient time for negotiation, particularly during the first negotiation period; (2) Time required for entire exercise; (3) Repetition, particularly the third negotiation period; (4) Difficulty in determining formulas to use for various calculations; and (5) Conditions in the physical setting.⁵ A question concerning rewards and incentives revealed that the majority of participants (77.8%) would have been more motivated during the negotiations if a direct monetary reward was based on performance.

After this first pilot study, the researcher rewrote the case to clarify the situation and the calculations required. Sample calculations were provided in the case and time was allocated for preliminary practice with the calculations before negotiation began. The exercise was reduced to one negotiation period. The case indicated that this was the first negotiation for this participant, but gave details about prior negotiation history between the divisions. The revised case, with only one negotiation period, addressed the major concerns of the participants from the first pilot study. In addition, the facts of the case were changed so that an external transaction was the best alternative under some situations.

A second pilot study was conducted with fourteen undergraduate participants from *Beta Alpha Psi*, including three participants from the first pilot study. The participants

⁵This pilot study was conducted in a classroom setting. The pairs could both see and hear the negotiations of other participants. The experiment was conducted in a laboratory setting, thereby eliminating this problem.

again showed interest and active participation. The average time for completion of the entire exercise was 55 minutes with a range of 42-62 minutes.⁶ The participants indicated that they found the case and, particularly, the calculations much easier to understand. The time required to read the case and prepare for the negotiation was reduced and the participants appeared much more confident with their calculations. Two teams (28.6% of the participants) chose to deal externally. The manipulation checks showed good recognition of the experimental conditions and understanding of the requirements and calculations. The questionnaire results and discussion showed an improvement in participant satisfaction. Only the physical setting (a classroom) remained a source of dissatisfaction.

An incentive was added for participants in the second pilot study. In addition to credit for participation in a *Beta Alpha Psi* event, each participant earned one ticket for a cash drawing. The two participants who earned the largest profit each received two extra tickets. The participant who earned the larger proportion of profit in each team received one extra ticket. If the profit allocation was equal, both team members received a second ticket, but this was not announced in advance. Several questions in the post-negotiation questionnaire addressed motivation, rewards, and incentives. The majority of participants (92.8%) indicated that they tried to do their best during the experiment. However, 64.3% still responded that they would have been more motivated during the negotiations if a

⁶This range of time did not include: (1) the completion of the questionnaire containing manipulation checks and questions about participation in the experiment, or (2) discussion of the experiment. The time range included only the activities included in the actual experiment: (1) an introduction period, (2) completion of the experimental task, and (3) completion of the post-negotiation attitude questionnaire.

direct monetary reward was based on performance. When asked about the cash drawing, only 14.3% of the participants stated that the additional incentive contributed to their motivation to do well. However, 71.4% stated that a cash drawing would increase their interest in participating in similar experiments in the future. Nearly all participants (92.8%) stated that they would be willing to participate in future exercises of this type.

The second pilot study did not indicate any significant problems with: (1) the understandability of the case, (2) the ability of the participants to adequately complete the exercise, (3) the ability of the participants to recognize the pertinent experimental conditions, or (4) the time required to complete the exercise. Therefore, only minor changes in grammar and format were made in the case for the actual experiment. A cash drawing was included as an incentive to participate in the experiment and as additional motivation to maximize individual results (high performance resulted in additional tickets for the drawing). The case and all supplementary material are presented in Appendices B through F. A brief analysis of the financial aspects of the case is provided in Appendix G.

The results of the second pilot study were utilized for a power analysis to determine the experimental sample size [Neter, Wasserman, and Kutner, 1985]. The power analysis is discussed in Appendix H. The results of this analysis indicated that a minimum of 112 participants would be needed for the experiment.

SUBJECTS

The subjects for this study were 144 volunteers from the Ph.D. in Accounting, Master of Business Administration, Master of Accountancy, and undergraduate

accounting programs at The University of Tennessee, Knoxville.⁷ All undergraduate participants were juniors or seniors and had completed a course in cost or managerial accounting. The demographic data on these subjects are shown in Table 6 (by degree program) and Table 7 (by gender).

RESEARCH MODEL

Each independent variable has two levels and, therefore, the research model is a 2 x 2 x 2 randomized factorial as shown in Figure 11. The analysis of the hypotheses is based on the following model:

$$\text{OUTCOME}_i = a_i + b_1 \text{ UNCERT} + b_2 \text{ EVAL} + b_3 \text{ HIST} + e_i$$

where:

OUTCOME = outcome of the negotiation process

UNCERT = uncertainty (high or low)

EVAL = evaluation basis (divisional or mixed)

HIST = history of negotiation (positive or negative)

a, b = parameters to be estimated

e = error term

i = 1 for internal vs. external transaction decision,
2 for transfer price, and
3 for post-negotiation attitudes.

⁷Twenty additional volunteers from the undergraduate accounting program at East Tennessee State University at Johnson City, Tennessee participated in the experiment. However, these participants were not included in any of the statistical analyses due to differences in the experimental conditions. In particular, the experiment was conducted in a classroom setting, and this environment was known to cause problems in the pilot studies.

TABLE 6
DEMOGRAPHIC DATA ON EXPERIMENTAL SUBJECTS
BY DEGREE PROGRAM

	Degree Program					Total
	Ph.D.	M.B.A.	M.Acc.	Total Graduate	Under-graduate	
Participants	10	58	15	83	61	144
Gender:						
Female	3	15	4	22	40	62
Male	7	43	11	61	21	82
Age (in years):						
Mean	33.8	27.5	25.8	28.0	22.2	25.5
Minimum	26	23	21	21	20	20
Maximum	39	38	37	39	31	39
Business Experience:						
None	1	4	3	8	29	37
2 years or less	1	14	4	19	23	42
2-5 years	2	22	5	29	5	34
5 years or more	6	18	3	27	4	31
Negotiation Experience:						
None	6	36	10	52	54	106
Some	3	14	4	21	6	27
Extensive	1	8	1	10	1	11

TABLE 7
DEMOGRAPHIC DATA ON EXPERIMENTAL SUBJECTS
BY GENDER

	Gender		Total
	Female	Male	
Participants	62	82	144
Age (in years):			
Mean	23.5	27.0	25.5
Minimum	20	20	20
Maximum	39	39	39
Business Experience:			
None	27	10	37
2 years or less	19	23	42
2-5 years	9	25	34
5 years or more	7	24	31
Negotiation Experience:			
None	55	51	106
Some	5	22	27
Extensive	2	9	11

	Divisional Performance Evaluation		Mixed Performance Evaluation	
	Low Uncertainty	High Uncertainty	Low Uncertainty	High Uncertainty
Positive Negotiation History	Case 1	Case 2	Case 3	Case 4
Negative Negotiation History	Case 5	Case 6	Case 7	Case 8

FIGURE 11
RESEARCH DESIGN

The outcome, or dependent variable, for the internal vs. external transaction decision is a zero/one variable. The hypotheses for the internal vs. external transaction decision (H_{1A} , H_{1B} , H_{1C}) were to be tested with a log linear model appropriate for a dichotomous dependent variable. However, no participants in the experiment chose the external transaction alternative. Therefore, these hypotheses could not be tested. Further discussion of this unexpected result is found in Chapter VI.

The transfer price is the dependent variable for the analysis of the profit allocation between the divisions. Since the expected transfer price differs among the treatments,⁸ the use of the transfer price as the dependent variable may cause difficulty in the interpretation of the results. A second analysis was conducted with a transformed dependent variable representing the profit split or profit allocation between the divisions. Appendix G shows that a transfer price of \$470 results in equal profit for the divisions, maximum corporate profit, and equal bonuses for the managers. Therefore, the difference between \$470 and the negotiated transfer price represents a measure of the profit allocation between the divisions. The second analysis used this measure of the profit split (transfer price minus \$470) as the dependent variable. The hypotheses for the transfer price and allocation of profit (H_{2A} , H_{2B} , H_{2C}) were analyzed with a 2 x 2 x 2 factorial ANOVA model.

The post-negotiation attitudes are measured on a 7-point Likert-type scale. The reported scores on these attitude scales are the dependent variables for the third set of

⁸The range of the expected transfer price differs under the two methods of performance evaluation. In addition, this range is affected by the managers' opinions concerning the viability of one of the alternatives. The range of expected transfer prices is calculated and discussed in Appendix G.

hypotheses. These hypotheses concerning the negotiators' attitudes (H_{3A} , H_{3B} , H_{3C}) were tested with a MANOVA model (multivariate ANOVA) and individual attitude scales were analyzed with ANOVA.

The hypotheses presented in Chapter III deal with the main effects of the models tested. Previous studies found no consistent interactive effects. The interactions of the independent variables, though not included in the hypotheses, were tested, and the results of these tests are presented in the next chapter. Demographic data, such as age, experience, and gender, have been found to be insignificant in prior studies [Gangolly, 1977; Mays, 1979]; therefore, no significant effect is hypothesized. However, the demographic variables are considered as possible covariates.

SUMMARY

This chapter presented the research methodology to test the hypotheses developed in Chapter III. First, the research variables were presented. The experimental task for this study involved a bilateral bargaining experiment conducted in a laboratory setting. The written case used in this experiment was introduced and discussed. Then, the subjects participating in the experiment were discussed. Finally, the research model for the analysis was presented. In the next chapter, this model will be used to analyze the results of the experiment.

CHAPTER V

DATA ANALYSIS AND INTERPRETATION

This chapter presents the data set from the experiment, the statistical analysis of the data, and an interpretation of the results. The chapter is divided into four sections. The first section describes the data set and the precautions taken to detect errors. The next section presents the analysis and interpretation of the ANOVA model for the negotiated transfer price and the profit allocation. The third section presents the analysis and interpretation of the post-negotiation attitude questionnaire with both MANOVA and ANOVA models. The last section summarizes the results of the data analysis.

DATA SET

The data set was obtained from 72 negotiations over a period from January through April of 1991. Three additional negotiations were not included in any of the analyses. Two of these negotiations were not completed due to: (1) the illness of a participant, and (2) the inability of the team to understand the requirements of the case. The third negotiation was completed, but upon examination of the results, it was clear that one participant had either not understood the case or did not attempt to complete it in a reasonable manner.⁹

⁹This particular case was discovered prior to completion of the experiment because the other participant involved brought it to the attention of the researcher.

After completion of the experiment, the researcher examined the calculation sheets and written comments which were returned with the experimental materials. The calculations were examined to determine whether the participants understood the case and the calculations necessary for determination of a transfer price and profit bonus. All of the participants showed calculations or notations indicating an understanding of the material. A few minor mathematical errors were discovered, but these errors did not appear to be material in relation to the participant's decision concerning the transfer price. In addition, the researcher read the written explanation of how the transfer price was determined in each negotiation to help determine whether any teams had used an arbitrary method of agreement, but none were apparent. Some of the responses to the transfer pricing negotiation were outside of the expected range (calculated in Appendix G), but this result could be attributed to a variety of factors and was not considered a viable reason to exclude a team's response. Therefore, after this examination, no additional responses were excluded from the analyses.

Residual analysis of the data was conducted to determine the aptness of the proposed ANOVA model. First, residual frequency plots were used to determine the constancy of the error variance. The ANOVA model requires that the error terms have constant variance for all factor levels. This condition would be illustrated on a residual frequency plot with approximately the same amount of scatter of the residuals around zero for each factor level [Neter, Wasserman, and Kutner, 1985]. The residual frequency plots from this data set revealed approximately the same range of scatter at each factor level except for Case 3, which had several extreme points or outliers. These outliers were

examined further to determine whether they should be cut from the data set. The assumption of constant variance of the error terms appears to hold except for the minor exception in Case 3.

The residual plots highlight potential outliers in the data set. In addition to the plots, other measures (studentized residuals, Cook's distance, and leverage) were used to detect potential outliers and examine their effects. Two outliers were detected by these measures, both in Case 3. However, they did not appear to have high leverage (i.e., a strong influential effect), and these points did not appear to arise from an obvious error or other extraneous cause. Therefore, they were not automatically discarded. Further consideration of these outliers will be discussed with the analysis of the data.

The residuals were plotted in the form of a histogram to determine the normality of the distribution. Neither the residuals nor the standardized residuals, taken as a whole, appeared to have a perfect normal distribution. However, the deviation from normal does not appear extreme. It is possible that the residuals do not appear normally distributed because the sample sizes are not large and because the variances of the error terms for the different factor levels are not perfectly equal. Approximately 95% of the standardized residuals should fall between -2 and +2 when normality exists [Neter, Wasserman, and Kutner, 1985], and these data satisfy that criteria.

Since ANOVA models are robust against certain types of departures from the assumptions of the model, the minor departures found in this data set do not seem problematic. Neter, Wasserman, and Kutner [1985, p. 624] state that "lack of normality is not an important matter, provided the departure from normality is not of extreme form."

The F-test is considered robust against departures from normality and unequal error variances if the sample sizes are equal or do not differ greatly.

TRANSFER PRICE AND DIVISION OF PROFIT

Full Data Set

Figure 12 provides summary statistics on the data set for the transfer price variable. Table 8 presents the results of the ANOVA model for the transfer price dependent variable with all potential covariates.¹⁰ None of the potential covariates are significant in this model. However, there is correlation between these variables, as shown in Table 9. Therefore, each variable was examined individually and in various combinations, but none of the covariates appeared significant. Table 10 shows the reduced ANOVA model without covariates.

The data set may also be expressed in the form of a profit allocation variable, which is calculated as the difference between the negotiated transfer price and \$470 (the transfer price for an equal division of profit). Figure 13 presents summary statistics on the data set for the profit allocation variable. Table 11 shows that the analysis of this variable provides results which are identical to the results obtained with the transfer price variable. However, the analysis of the hypotheses may be clearer with the profit allocation variable.

Table 12 presents the marginal means for both the transfer price and profit allocation variables. The profit allocation is zero for an equal profit split between the two

¹⁰The full data set (144 participants) was utilized for this analysis to incorporate the potential covariates (measures of the individual participants). A reduced data set for the 72 teams also was analyzed without covariates and is discussed later in this chapter.

	Divisional Performance Evaluation		Mixed Performance Evaluation	
	Low Uncertainty	High Uncertainty	Low Uncertainty	High Uncertainty
Positive Negotiation History	<u>Case 1</u>	<u>Case 2</u>	<u>Case 3</u>	<u>Case 4</u>
	Mean 476.4	Mean 500.0	Mean 457.2	Mean 489.2
	Median 470.0	Median 490.0	Median 430.0	Median 482.0
	Min. 440.0	Min. 470.0	Min. 375.0	Min. 440.0
	Max. 510.0	Max. 575.0	Max. 575.0	Max. 540.0
	Std.Dev. 23.1	Std.Dev. 29.8	Std.Dev. 61.7	Std.Dev. 33.7
Negative Negotiation History	<u>Case 5</u>	<u>Case 6</u>	<u>Case 7</u>	<u>Case 8</u>
	Mean 495.8	Mean 487.8	Mean 469.4	Mean 495.3
	Median 490.0	Median 475.0	Median 440.0	Median 515.0
	Min. 470.0	Min. 430.0	Min. 430.0	Min. 435.0
	Max. 547.0	Max. 550.0	Max. 540.0	Max. 550.0
	Std.Dev. 26.1	Std.Dev. 45.1	Std.Dev. 44.3	Std.Dev. 39.4

Key: Min. = Minimum Value
Max. = Maximum Value
Std.Dev. = Standard Deviation

FIGURE 12
SUMMARY STATISTICS ON
TRANSFER PRICE VARIABLE

TABLE 8
ANALYSIS OF VARIANCE TABLE FOR
TRANSFER PRICE VARIABLE
WITH ALL POTENTIAL COVARIATES

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	4428.91	1	4428.91	2.8093	.0961
Uncertainty	13072.33	1	13072.33	8.2920	.0047
History	1655.98	1	1655.98	1.0504	.3073
Eval x Uncert	2970.64	1	2970.64	1.8843	.1722
Eval x Hist	105.81	1	105.81	.0671	.7960
Uncert x Hist	1651.39	1	1651.39	1.0475	.3080
Eval x Uncert x Hist	1139.31	1	1139.31	.7227	.3968
Degree	4014.51	1	4014.51	2.5465	.1130
Gender	577.48	1	577.48	.3663	.5461
Age	2391.43	1	2391.43	1.5169	.2203
BusiExp	1656.40	1	1656.40	1.0507	.3072
NegExp	952.93	1	952.93	.6045	.4383
Error	2065522.46	131	1576.51		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

TABLE 9
PEARSON CORRELATION COEFFICIENT MATRIX
FOR POTENTIAL COVARIATES

	Degree	Gender	Age	BusiExp	NegExp
Degree	1.000				
Gender	-0.373	1.000			
Age	-0.569	0.353	1.000		
BusiExp	-0.432	0.296	0.877	1.000	
NegExp	-0.271	0.276	0.458	0.535	1.000

Key: Degree = participant's degree program (graduate or undergraduate)
Gender = participant's gender (female or male)
Age = participant's age (in years)
BusiExp = participant's business experience (in years)
NegExp = participant's negotiation experience

TABLE 10
ANALYSIS OF VARIANCE TABLE FOR
TRANSFER PRICE VARIABLE
WITHOUT COVARIATES

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	5377.78	1	5377.78	3.4173	.0667
Uncertainty	12100.00	1	12100.00	7.6890	.0063
History	1456.69	1	1456.69	.9257	.3377
Eval x Uncert	4011.11	1	4011.11	2.5489	.1127
Eval x Hist	283.36	1	283.36	.1801	.6720
Uncert x Hist	3192.25	1	3192.25	2.0285	.1567
Eval x Uncert x Hist	1456.69	1	1456.69	.9257	.3377
Error	214021.33	136	1573.69		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

	Divisional Performance Evaluation		Mixed Performance Evaluation	
	Low Uncertainty	High Uncertainty	Low Uncertainty	High Uncertainty
Positive Negotiation History	<u>Case 1</u>	<u>Case 2</u>	<u>Case 3</u>	<u>Case 4</u>
	Mean 6.4	Mean 30.0	Mean -12.8	Mean 19.2
	Median 0.0	Median 20.0	Median -40.0	Median 12.0
	Min. -30.0	Min. 0.0	Min. -95.0	Min. -30.0
	Max. 40.0	Max. 105.0	Max. 105.0	Max. 70.0
	Std.Dev. 23.1	Std.Dev. 29.8	Std.Dev. 61.7	Std.Dev. 33.7
Negative Negotiation History	<u>Case 5</u>	<u>Case 6</u>	<u>Case 7</u>	<u>Case 8</u>
	Mean 25.8	Mean 17.8	Mean -0.6	Mean 25.3
	Median 20.0	Median 5.0	Median -30.0	Median 45.0
	Min. 0.0	Min. -40.0	Min. -40.0	Min. -35.0
	Max. 77.0	Max. 80.0	Max. 70.0	Max. 80.0
	Std.Dev. 26.1	Std.Dev. 45.1	Std.Dev. 44.3	Std.Dev. 39.4

Key: Min. = Minimum Value
Max. = Maximum Value
Std.Dev. = Standard Deviation

Profit Allocation = Transfer Price - \$470

FIGURE 13
SUMMARY STATISTICS ON
PROFIT ALLOCATION VARIABLE

TABLE 11
ANALYSIS OF VARIANCE TABLE FOR
PROFIT ALLOCATION VARIABLE

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	5377.78	1	5377.78	3.4173	.0667
Uncertainty	12100.00	1	12100.00	7.6890	.0063
History	1456.69	1	1456.69	.9257	.3377
Eval x Uncert	4011.11	1	4011.11	2.5489	.1127
Eval x Hist	283.36	1	283.36	.1801	.6720
Uncert x Hist	3192.25	1	3192.25	2.0285	.1567
Eval x Uncert x Hist	1456.69	1	1456.69	.9257	.3377
Error	214021.33	136	1573.69		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

TABLE 12

**MARGINAL MEANS FOR
TRANSFER PRICE AND
PROFIT ALLOCATION VARIABLES**

Marginal Means	Transfer Price	Profit Allocation
Low Uncertainty	\$474.72	\$4.72
High Uncertainty	493.06	23.06
Divisional Evaluation	490.00	20.00
Mixed Evaluation	477.78	7.78
Positive History	480.71	10.71
Negative History	487.07	17.07
Low Uncertainty / Divisional Evaluation	486.11	16.11
Low Uncertainty / Mixed Evaluation	463.33	-6.67
High Uncertainty / Divisional Evaluation	493.89	23.89
High Uncertainty / Mixed Evaluation	492.22	22.22
Low Uncertainty / Positive History	466.83	-3.17
Low Uncertainty / Negative History	482.61	12.61
High Uncertainty / Positive History	494.58	24.58
High Uncertainty / Negative History	491.53	21.53
Divisional Evaluation / Positive History	488.22	18.22
Divisional Evaluation / Negative History	491.78	21.78
Mixed Evaluation / Positive History	473.19	3.19
Mixed Evaluation / Negative History	482.36	12.36

negotiators. If the profit allocation is greater than zero, the seller receives more profit than the buyer. If the profit allocation is less than zero, the buyer receives more profit than the seller. The magnitude of the profit allocation variable represents the divergence in the profit allocation between the divisions. The analysis of variance in Table 11 and the marginal means in Table 12 are used to test the hypotheses concerning the transfer price and division of profits (H_{2A} , H_{2B} , H_{2C}). The analyses are as follows:

H_{2A} : There will be a greater divergence in the profit allocation between the divisions under conditions of high market uncertainty than under low market uncertainty.

Uncertainty is the only independent variable which is significant in the ANOVA model in Table 11 (p -value = .0063). As hypothesized, there was a greater divergence in the profit allocation between the divisions under high market uncertainty (marginal mean of \$23.06) than under low market uncertainty (marginal mean of \$4.72). Figure 14 provides a graphical representation of this relationship. The significance of the uncertainty variable is consistent with prior research [Gomaa, 1982; Chalos and Haka, 1990; Mahenthiran, 1991; Langholtz, Gettys, and Foote, 1993], but the variable is defined slightly differently in the present study. Previous research established market uncertainty on the basis of the existence and certainty of an external market for the intermediate product. The present study sets the market uncertainty as an aspect of the future prospects for an external market. Figure 15 provides a graphical representation of the mean levels of profit allocation and the significant difference between the effects of high and low market uncertainty.

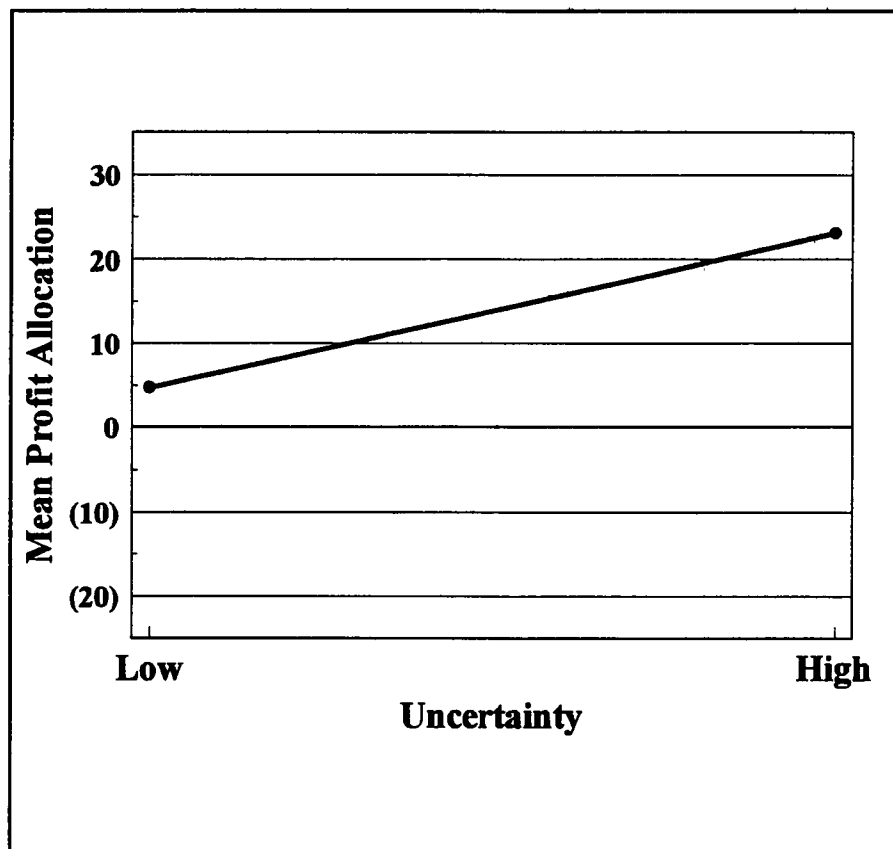


FIGURE 14
MEAN PROFIT ALLOCATION
BY UNCERTAINTY

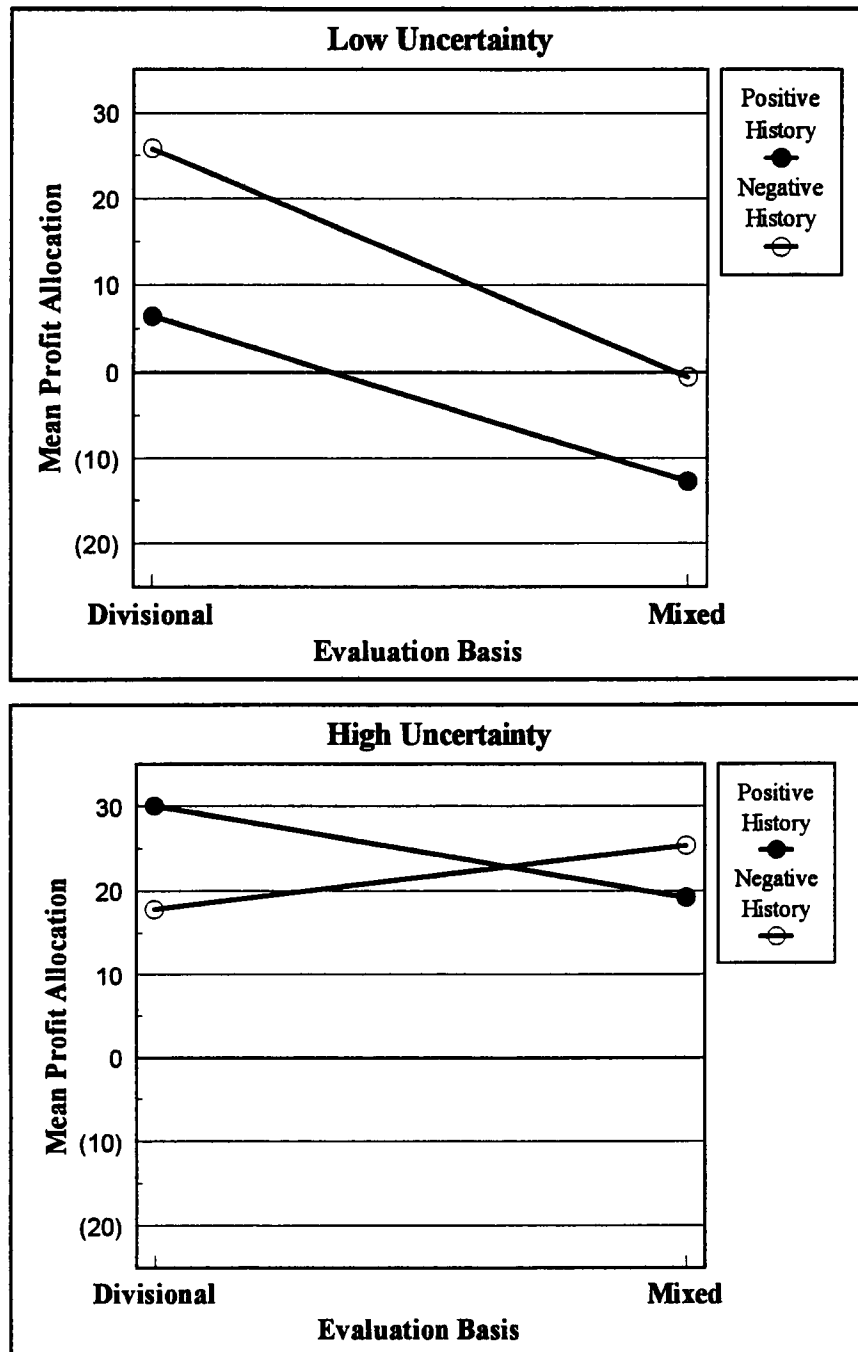


FIGURE 15

**MEAN PROFIT ALLOCATION GRAPHS FOR
LOW AND HIGH UNCERTAINTY**

H_{2B}: There will be a greater divergence in the profit allocation between the divisions under a divisional evaluation basis than under a mixed scheme based on divisional and corporate profits.

As hypothesized, there was greater divergence in the profit allocation between the divisions under a divisional performance evaluation basis (marginal mean of \$20.00) than under a mixed scheme based on both divisional and corporate earnings (marginal mean of \$7.78); however, this result was not statistically significant (p -value = .0667). Figure 16 presents a graphical representation of this relationship. Chalos and Haka [1990] found the performance evaluation variable was significant only if the market was uncertain. The opposite effect was found in the present study. This can be seen graphically in Figure 17. Contrasts show that the evaluation basis was insignificant for high market uncertainty (p -value = .8588), but was statistically significant for low market uncertainty (p -value = .0161). There was a higher level of divergence (i.e., distance from zero) in the profit allocation under high market uncertainty, but an insignificant difference between the two evaluation bases (marginal means of \$23.89 for divisional and \$22.22 for mixed). Under low market uncertainty, there was a significantly greater divergence in the profit allocation under a divisional performance evaluation basis (marginal mean of \$16.11) than under a mixed performance evaluation (marginal mean of \$-6.67), which is consistent with hypothesis H_{2B}.

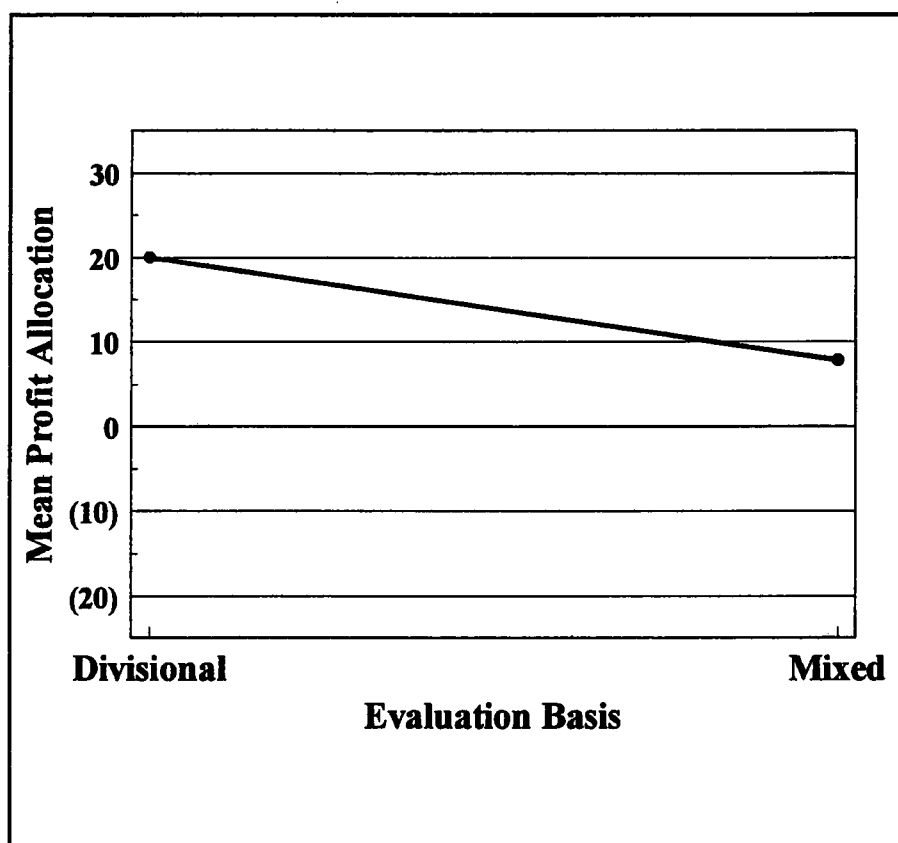


FIGURE 16

**MEAN PROFIT ALLOCATION
BY EVALUATION BASIS**

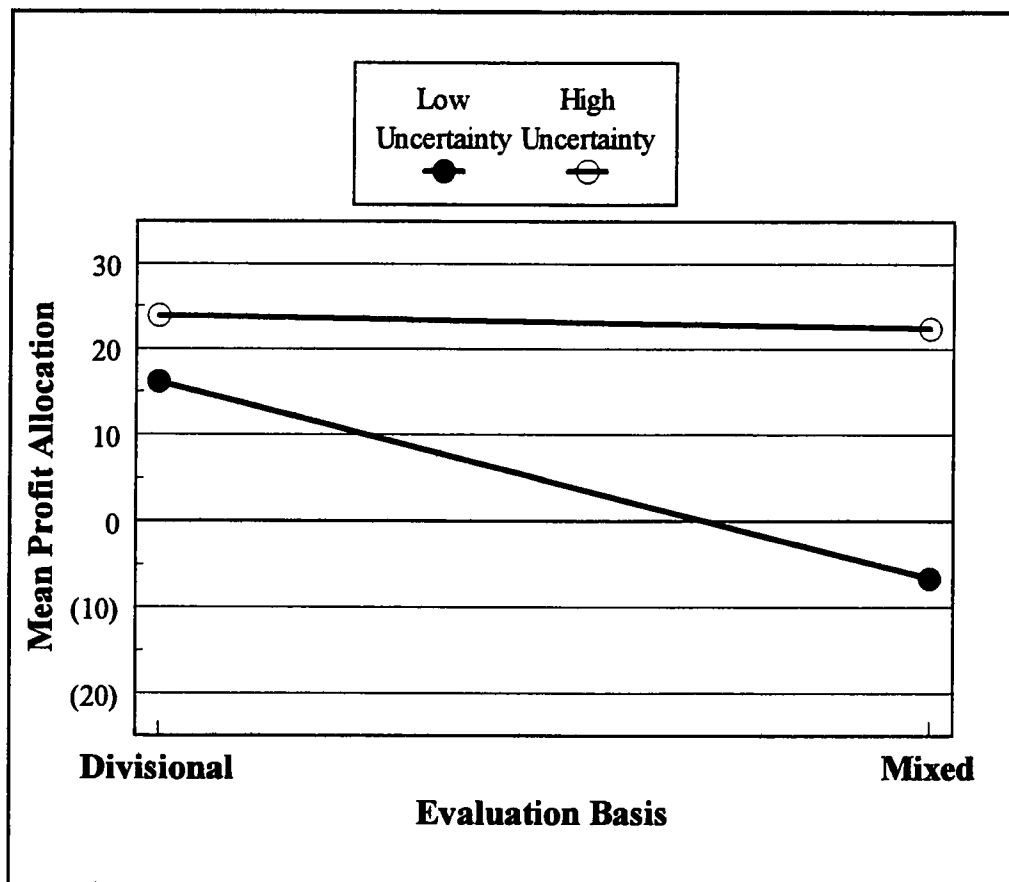


FIGURE 17

**MEAN PROFIT ALLOCATION GRAPH OF
EVALUATION BASIS BY UNCERTAINTY**

H_{2C}: There will be a greater divergence in the profit allocation between the divisions with a negative negotiation history than with a positive history.

Previous negotiation history was not a significant independent variable in the ANOVA model in Table 11 (p-value = .3377). Although not statistically significant, Figure 18 shows a greater divergence in the profit allocation with a negative negotiation history (marginal mean of \$17.07) than with a positive history (marginal mean of \$10.71). This result is consistent with Mays [1979], but he found that the seller tended to negotiate a lower percentage of the profit than the buyer. The opposite effect appears evident in the present study. Figure 13 shows the mean profit allocation for each treatment level. If this value is zero, both the buyer and seller will receive the same profit from the transaction. However, if this value is greater than zero, the seller receives proportionately more profit than the buyer. The mean profit allocation is greater than zero for all treatments levels, except under a mixed performance evaluation basis during low market uncertainty conditions (Cases 3 and 7). Therefore, except in Cases 3 and 7, the seller negotiated a higher average percentage of profit than the buyer which contradicts Mays' results.

Figure 15 presents a graphical representation of the effects of the three independent variables on the mean profit allocation. Although there are some interactive effects evident from the graphs in Figure 15, none of these interactive effects were statistically significant. This result is consistent with previous research.

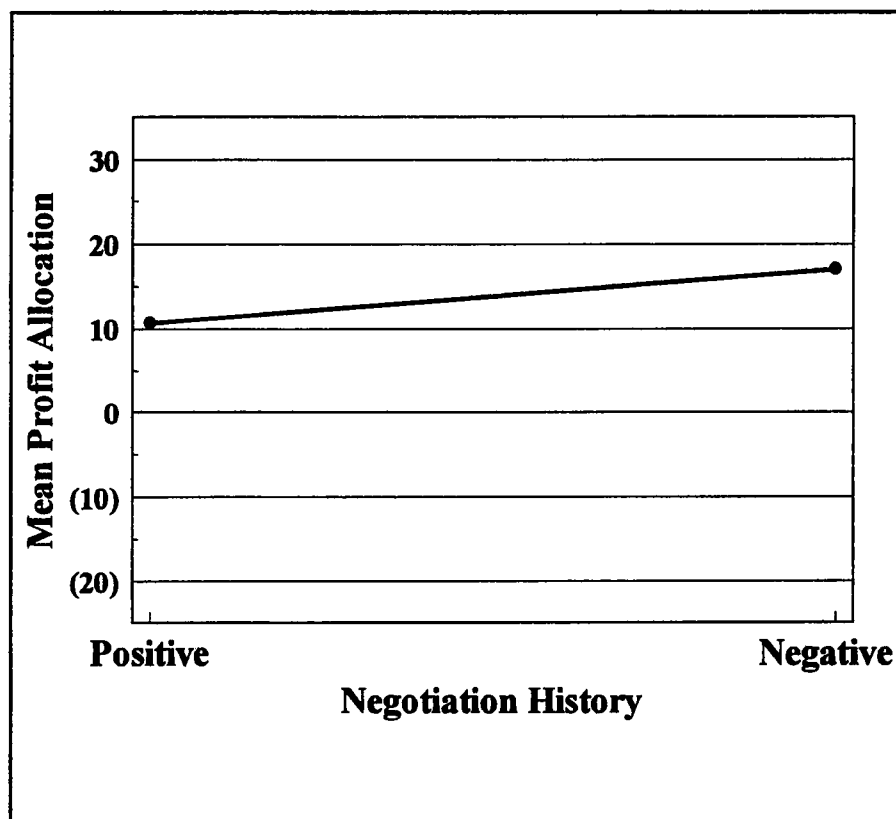


FIGURE 18
MEAN PROFIT ALLOCATION
BY NEGOTIATION HISTORY

Reduced Data Set After Discarding Outlier

The previous analysis was based on the entire data set. However, one team in Case 3 was identified as an outlier by the statistical program. This team had the most extreme value in Case 3 and was previously identified as an outlier in the residual analysis. Neter, Wasserman, and Kutner [1985, p. 115] recommend "to discard an outlier only if there is direct evidence that it represents an error in recording, a miscalculation, a malfunctioning of equipment, or a similar type of circumstance." On the other hand, the presence of an outlier may distort the fit of the model to such an extent as to suggest a lack of fit for the entire model. This condition is especially problematic if the data set consists of a small number of observations [Neter, Wasserman, and Kutner, 1985].

If the outlier (Team 67) is discarded from the data set, the results of the analysis of variance change substantially, as shown in Table 13 (full model with potential covariates) and Table 14 (reduced model without covariates). Table 15 shows the revised marginal means after discarding the outlier. After discarding the data from Team 67, no other cases were identified as outliers by the statistical program.

As Table 14 shows, uncertainty is still the most significant variable in the model ($p\text{-value} = .0005$). There is greater divergence in the profit allocation under high market uncertainty (marginal mean of \$23.06) than under low uncertainty (marginal mean of \$1.04). There also is greater divergence in the profit allocation under a divisional performance evaluation basis (marginal mean of \$20.00) than under a mixed divisional and corporate basis (marginal mean of \$4.10), and this result is now a statistically significant effect ($p\text{-value} = .0115$). The interactive effect of evaluation and uncertainty also is

TABLE 13
ANALYSIS OF VARIANCE TABLE FOR
PROFIT ALLOCATION VARIABLE
WITH ALL POTENTIAL COVARIATES
AFTER DISCARDING OUTLIER

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	7534.80	1	7534.80	5.4835	.0207
Uncertainty	17669.83	1	17669.83	12.8593	.0005
History	3971.98	1	3971.98	2.8906	.0915
Eval x Uncert	6240.77	1	6240.77	4.5417	.0350
Eval x Hist	938.19	1	938.19	.6828	.4102
Uncert x Hist	3653.64	1	3653.64	2.6589	.1054
Eval x Uncert x Hist	140.56	1	140.56	.1023	.7496
Degree	1931.39	1	1931.39	1.4056	.2380
Gender	1216.11	1	1216.11	.8850	.3486
Age	2461.07	1	2461.07	1.7911	.1832
BusiExp	1745.74	1	1745.74	1.2705	.2618
NegExp	854.57	1	854.57	.6219	.4318
Error	177258.06	129	1374.09		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

TABLE 14
ANALYSIS OF VARIANCE TABLE FOR
PROFIT ALLOCATION VARIABLE
WITHOUT COVARIATES
AFTER DISCARDING OUTLIER

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	8964.27	1	8964.27	6.5708	.0115
Uncertainty	17177.61	1	17177.61	12.5912	.0005
History	3574.22	1	3574.22	2.6199	.1079
Eval x Uncert	7183.76	1	7183.76	5.2657	.0233
Eval x Hist	1491.21	1	1491.21	1.0931	.2977
Uncert x Hist	6080.34	1	6080.34	4.4569	.0366
Eval x Uncert x Hist	254.69	1	254.69	.1867	.6664
Error	182810.22	134	1364.26		

Key: Eval = evaluation basis (divisional or mixed)
Uncert = uncertainty (high or low)
Hist = history of negotiation (positive or negative)

TABLE 15

**MARGINAL MEANS FOR
PROFIT ALLOCATION VARIABLE
AFTER DISCARDING OUTLIER**

Marginal Means	Profit Allocation
Low Uncertainty	\$1.04 *
High Uncertainty	23.06
Divisional Evaluation	20.00
Mixed Evaluation	4.10 *
Positive History	7.03 *
Negative History	17.07
Low Uncertainty / Divisional Evaluation	16.11
Low Uncertainty / Mixed Evaluation	-14.03 *
High Uncertainty / Divisional Evaluation	23.89
High Uncertainty / Mixed Evaluation	22.22
Low Uncertainty / Positive History	-10.53 *
Low Uncertainty / Negative History	12.61
High Uncertainty / Positive History	24.58
High Uncertainty / Negative History	21.53
Divisional Evaluation / Positive History	18.22
Divisional Evaluation / Negative History	21.78
Mixed Evaluation / Positive History	-4.17 *
Mixed Evaluation / Negative History	12.36
Low Uncertainty / Mixed Evaluation / Positive History (Case 3) ¹	-27.50

* Change in amount from previous analysis as shown in Table 10.

¹Case 3 contained the outlier and, therefore, is the only treatment level mean to change from the amounts shown in Figure 12. The revised median is \$-42.50, the maximum is \$60.00, and the standard deviation is \$47.26 after discarding the outlier.

significant (p-value = .0233). As previously discussed, this effect is due to the significant effect of the evaluation basis under low market uncertainty (p-value for the contrast under low market uncertainty is .0009 and p-value for the contrast under high market uncertainty is .8485).

Although there is a greater divergence in the profit allocation under a negative negotiation history (marginal mean of \$17.07) than under a positive history (marginal mean of \$7.03), this effect is still not statistically significant (p-value = .1079). However, the interactive effect of uncertainty and history is significant (p-value = .0366). This relationship is shown in Figure 19. The other interactions are still not statistically significant. Therefore, all of the relationships previously discussed with the full data set hold when the outlier is discarded, but the model fits the data better without the outlier and more of the relationships are statistically significant.

Reduced Data Set for Team Responses

All of the previous analyses utilized the data for the 144 individual responses to incorporate consideration of the potential covariates. However, the covariates were not significant in the analyses. Since this experiment consisted of a team task, the data could be analyzed with the team responses. This reduced data set would have the same treatment level means (Figure 13) and marginal means (Table 12), but the ANOVA model would show significant differences due to the changes in the sum-of-squares and in the degrees of freedom for the error term. Table 16 presents the ANOVA model for the reduced data set with team responses. Although the same relationships exist between the

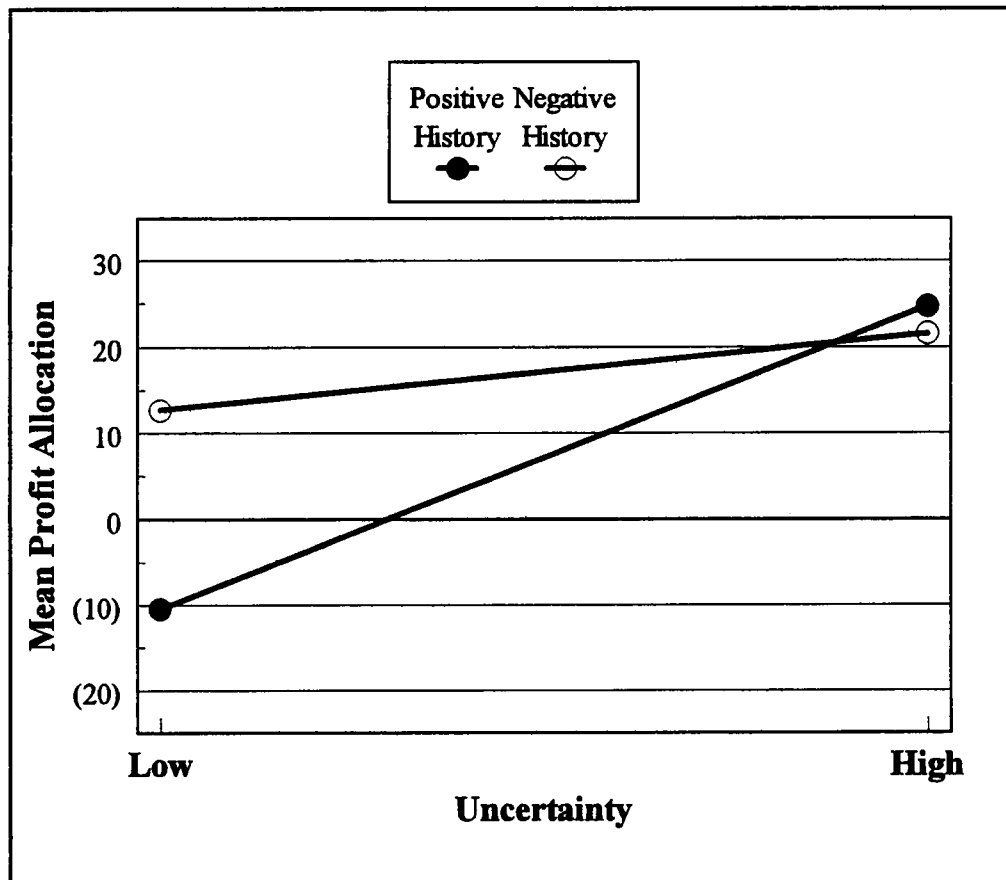


FIGURE 19

**MEAN PROFIT ALLOCATION GRAPH OF
UNCERTAINTY BY NEGOTIATION HISTORY**

TABLE 16
ANALYSIS OF VARIANCE TABLE FOR
PROFIT ALLOCATION VARIABLE
FOR TEAM RESPONSES

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	2688.89	1	2688.89	1.6081	.2093
Uncertainty	6050.00	1	6050.00	3.6183	.0616
History	728.35	1	728.35	.4356	.5116
Eval x Uncert	2005.56	1	2005.56	1.1995	.2775
Eval x Hist	141.68	1	141.68	.0847	.7719
Uncert x Hist	1596.12	1	1596.12	.9546	.3322
Eval x Uncert x Hist	728.35	1	728.35	.4356	.5116
Error	107010.67	64	1672.04		

Key: Eval = evaluation basis (divisional or mixed)
Uncert = uncertainty (high or low)
Hist = history of negotiation (positive or negative)

variables as in the previous analyses, these relationships are not significant with the team data.

Reduced Data Set for Team Responses After Discarding Outlier

As previously discussed, an outlier (Team 67) was identified in Case 3. This outlier may distort the fit of the model shown in Table 16 to such an extent as to suggest a lack of fit for the entire model. Neter, Wasserman, and Kutner [1985] state that this situation is especially problematic if the data set consists of a small number of observations. The reduced data set for team responses consists of a small number of observations (nine per treatment level) and, therefore, may be even more susceptible to the effects of an outlier. Table 17 presents the ANOVA model for the reduced data set for team responses after discarding the outlier. The marginal means are the same as presented in Table 15. The results of the ANOVA model in Table 17 are used to retest the hypotheses concerning the transfer price and division of profits (H_{2A} , H_{2B} , H_{2C}). The analyses are as follows:

H_{2A} : There will be a greater divergence in the profit allocation between the divisions under conditions of high market uncertainty than under low market uncertainty.

Uncertainty is the only significant variable in the reduced model (p -value = .0178). As hypothesized, there is a greater divergence in the profit allocation under high market uncertainty (marginal mean of \$23.06) than under low market uncertainty (marginal mean of \$1.04).

TABLE 17

**ANALYSIS OF VARIANCE TABLE FOR
PROFIT ALLOCATION VARIABLE
FOR TEAM RESPONSES
AFTER DISCARDING OUTLIER**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	4482.14	1	4482.14	3.0893	.0837
Uncertainty	8588.80	1	8588.80	5.9197	.0178
History	1787.11	1	1787.11	1.2317	.2713
Eval x Uncert	3591.88	1	3591.88	2.4757	.1206
Eval x Hist	745.60	1	745.60	.5139	.4761
Uncert x Hist	3040.17	1	3040.17	2.0954	.1527
Eval x Uncert x Hist	127.35	1	127.35	.0878	.7680
Error	91405.11	63	1450.87		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

H_{2B}: There will be a greater divergence in the profit allocation between the divisions under a divisional evaluation basis than under a mixed scheme based on divisional and corporate profits.

Although the relationship was not statistically significant ($p\text{-value} = .0837$), there was greater divergence in the profit allocation between the divisions under a divisional performance evaluation basis (marginal mean of \$20.00) than under a mixed scheme based on both divisional and corporate earnings (marginal mean of \$4.10). Contrasts show that the evaluation basis was still significant for low market uncertainty ($p\text{-value} = .0226$), but was not statistically significant for high market uncertainty ($p\text{-value} = .8960$).

H_{2C}: There will be a greater divergence in the profit allocation between the divisions with a negative negotiation history than with a positive history.

Negotiation history was still not a significant independent variable in the reduced model ($p\text{-value} = .2713$). There was a greater divergence in the profit allocation with a negative negotiation history (marginal mean of \$17.07) than with a positive history (marginal mean of \$7.03).

None of the interactive effects are significant in the reduced model for team responses after discarding the outlier. To summarize, the results indicate that the relationships between the variables are consistent with the hypothesized relationships, but only the uncertainty variable is statistically significant, supporting hypothesis H_{2A}.

POST-NEGOTIATION ATTITUDES

After the negotiation experiment, all participants completed a short questionnaire consisting of ten attitude scales [Appendix F]. The range of responses on the attitude scales ran from 1 (positive) to 7 (negative) for every question.¹¹ The marginal means are shown in Table 18. The scales were analyzed together with a multivariate analysis of variance (MANOVA). The results are shown by independent variable in Table 19 (uncertainty), Table 20 (evaluation basis), and Table 21 (negotiation history). Each scale was also analyzed individually with an ANOVA model. The results of these analyses (both the full models with all potential covariates and the reduced models) are shown in Appendix I. The marginal means for each scale are presented in Appendix J and will be utilized in the discussion of both the MANOVA and the ANOVA results.

MANOVA Results

The MANOVA results (Tables 19, 20, and 21) show the relationship between each individual scale and one independent variable. These results are identical to the individual ANOVA models without covariates in Appendix I. For example, Table 19 shows the effect of uncertainty on the conflict scale (F-statistic of 1.0860 and p-value of .2992). The ANOVA table for conflict without covariates in Appendix I shows the same F-statistic and p-value for uncertainty. Tables 19, 20, and 21 also show the MANOVA results for the

¹¹For questions 1 and 3, the responses were presented in the opposite order [Appendix F]. The researcher, therefore, reversed the participants' responses and all questions are structured with 1 representing the most positive end of the response range and 7 representing the most negative.

TABLE 18
MARGINAL MEANS FOR
OVERALL POST-NEGOTIATION ATTITUDES

Marginal Means	Attitude Score
Low Uncertainty	2.461
High Uncertainty	2.541
Divisional Evaluation	2.314
Mixed Evaluation	2.687
Positive History	2.479
Negative History	2.523
Low Uncertainty / Divisional Evaluation	2.347
Low Uncertainty / Mixed Evaluation	2.572
High Uncertainty / Divisional Evaluation	2.281
High Uncertainty / Mixed Evaluation	2.803
Low Uncertainty / Positive History	2.414
Low Uncertainty / Negative History	2.505
High Uncertainty / Positive History	2.547
High Uncertainty / Negative History	2.536
Divisional Evaluation / Positive History	2.411
Divisional Evaluation / Negative History	2.217
Mixed Evaluation / Positive History	2.550
Mixed Evaluation / Negative History	2.825

TABLE 19

**MULTIVARIATE ANALYSIS OF VARIANCE TABLE
FOR EFFECT OF UNCERTAINTY ON
POST-NEGOTIATION ATTITUDES**

Post-Negotiation Attitude		Sum-of- Squares	Degrees of Freedom	Mean- Square	F-statistic	p-value
Conflict		2.25	1	2.25	1.0860	.2992
	Error	281.78	136	2.07		
Cooperation		23.36	1	23.36	8.5765	.0040
	Error	370.44	136	2.72		
Competition		.34	1	.34	.1108	.7397
	Error	417.61	136	3.07		
Conciliation		10.56	1	10.56	3.8749	.0510
	Error	370.72	136	2.72		
Opportunity		7.56	1	7.56	4.2471	.0412
	Error	242.17	136	1.78		
Compatibility		.69	1	.69	.4821	.4886
	Error	195.89	136	1.44		
Division Satisfaction		.34	1	.34	.1949	.6596
	Error	237.50	136	1.75		
Company Satisfaction		2.25	1	2.25	1.4277	.2342
	Error	214.33	136	1.58		
Fairness		.01	1	.01	.0046	.9462
	Error	206.94	136	1.52		
Relationship		1.36	1	1.36	1.0518	.3069
	Error	176.00	136	1.29		

MULTIVARIATE TEST STATISTICS:

Wilks' Lambda	= .7593	DF = 10, 127	F = 4.0258	p = .0001
Pillai Trace	= .2407	DF = 10, 127	F = 4.0258	p = .0001
Hotelling-Lawley Trace	= .3170	DF = 10, 127	F = 4.0258	p = .0001

TABLE 20

**MULTIVARIATE ANALYSIS OF VARIANCE TABLE
FOR EFFECT OF EVALUATION BASIS ON
POST-NEGOTIATION ATTITUDES**

Post-Negotiation Attitude		Sum-of- Squares	Degrees of Freedom	Mean- Square	F-statistic	p-value
Conflict		16.00	1	16.00	7.7224	.0062
	Error	281.78	136	2.07		
Cooperation		3.36	1	3.36	1.2340	.2686
	Error	370.44	136	2.72		
Competition		15.34	1	15.34	4.9957	.0270
	Error	417.61	136	3.07		
Conciliation		10.56	1	10.56	3.8749	.0510
	Error	370.72	136	2.72		
Opportunity		2.51	1	2.51	1.4079	.2375
	Error	242.17	136	1.78		
Compatibility		4.69	1	4.69	3.2592	.0732
	Error	195.89	136	1.44		
Division Satisfaction		9.51	1	9.51	5.4440	.0211
	Error	237.50	136	1.75		
Company Satisfaction		3.36	1	3.36	2.1327	.1465
	Error	214.33	136	1.58		
Fairness		2.01	1	2.01	1.3189	.2528
	Error	206.94	136	1.52		
Relationship		9.00	1	9.00	6.9545	.0093
	Error	176.00	136	1.29		

MULTIVARIATE TEST STATISTICS:

Wilks' Lambda	= .8457	DF = 10, 127	F = 2.3176	p = .0154
Pillai Trace	= .1543	DF = 10, 127	F = 2.3176	p = .0154
Hotelling-Lawley Trace	= .1825	DF = 10, 127	F = 2.3176	p = .0154

TABLE 21

**MULTIVARIATE ANALYSIS OF VARIANCE TABLE
FOR EFFECT OF NEGOTIATION HISTORY ON
POST-NEGOTIATION ATTITUDES**

Post-Negotiation Attitude		Sum-of- Squares	Degrees of Freedom	Mean- Square	F-statistic	p-value
Conflict		9.00	1	9.00	4.3438	.0390
	Error	281.78	136	2.07		
Cooperation		4.69	1	4.69	1.7235	.1915
	Error	370.44	136	2.72		
Competition		.84	1	.84	.2736	.6017
	Error	417.61	136	3.07		
Conciliation		2.50	1	2.50	.9197	.3393
	Error	370.72	136	2.72		
Opportunity		.84	1	.84	.4719	.4933
	Error	242.17	136	1.78		
Compatibility		.11	1	.11	.0771	.7816
	Error	195.89	136	1.44		
Division Satisfaction		.56	1	.56	.3221	.5713
	Error	237.50	136	1.75		
Company Satisfaction		.44	1	.44	.2820	.5963
	Error	214.33	136	1.58		
Fairness		.56	1	.56	.3697	.5442
	Error	206.94	136	1.52		
Relationship		.11	1	.11	.0859	.7700
	Error	176.00	136	1.29		

MULTIVARIATE TEST STATISTICS:

Wilks' Lambda	= .8775	DF = 10, 127	F = 1.7729	p = .0720
Pillai Trace	= .1225	DF = 10, 127	F = 1.7729	p = .0720
Hotelling-Lawley Trace	= .1396	DF = 10, 127	F = 1.7729	p = .0720

effect of the independent variable on all of the scales (dependent variables) together.

Several different measures (Wilkes' Lambda, Pillai Trace, and Hotelling-Lawley Trace) are calculated by the statistical program. In this analysis, the results from the different measures are identical. The results of the MANOVA used to test hypotheses H_{3A} , H_{3B} , H_{3C} are discussed in this section. The results of the individual ANOVA models in Appendix I are discussed in the next section.

H_{3A} : More negative attitudes, such as conflict, inequity, lack of cooperation, and dissatisfaction, will result under conditions of high market uncertainty than under low market uncertainty.

Table 19 shows that uncertainty was a significant variable in the MANOVA model (p -value = .0001). As hypothesized, more negative attitudes (such as less cooperation, more competition, less conciliation, less compatibility, and lower satisfaction with the company results) resulted under high market uncertainty (marginal mean of 2.541) than under low market uncertainty (marginal mean of 2.461). The most significant result was for cooperation (p -value = .0040), which showed that participants felt that the other negotiator was less cooperative under high market uncertainty. These results are consistent with the results found by Gomaa [1982] and Ravenscroft, Haka, and Chalos [1993]. However, some of the individual attitude scales (conflict, opportunity, divisional satisfaction, fairness, and the overall relationship) resulted in more positive attitudes under high market uncertainty.¹² These scales did not have statistically significant results, with

¹²These results are determined by a comparison of the marginal means for the individual attitude scales, as shown in Appendix J.

the exception of question 5, which addressed the participants' attitudes toward the equality of the opportunities for both negotiators ($p\text{-value} = .0412$).

H_{3B}: More negative attitudes will result under a divisional evaluation basis than under a mixed scheme based on divisional and corporate profits.

Table 20 shows the MANOVA results for the evaluation basis, which is statistically significant ($p\text{-value} = .0154$). However, the significant result contradicts the hypothesized relationship. Divisional evaluation resulted in more positive attitudes (marginal mean of 2.314) than a mixed evaluation scheme (marginal mean of 2.687). More positive attitudes under divisional evaluation were found on all scales, except for satisfaction with the company results (not significant at $p\text{-value} = .1465$). Ravenscroft, Haka, and Chalos [1993] also found more positive attitudes with a divisional evaluation scheme. However, this result contradicts most of the research concerning the effect of a divisional evaluation basis on post-negotiation attitudes [Ackelsberg, 1977; Ackelsberg and Yukl, 1979; Gomaa, 1982; Chalos and Haka, 1990; Mahenthiran, 1991; Chan, 1993].

H_{3C}: More negative attitudes will result with a negative negotiation history than with a positive history.

Table 21 shows that negotiation history was not a significant variable for the post-negotiation attitudes in a MANOVA model ($p\text{-value} = .0720$). As hypothesized, more negative attitudes resulted from a previously negative negotiation history (marginal mean of 2.523) than with a positive negotiation history (marginal mean of 2.479). The only

statistically significant result was for the conflict scale ($p\text{-value} = .0390$), which showed more conflict between the negotiators with a negative negotiation history. However, several scales revealed opposite, although statistically insignificant, results.

ANOVA Results

Appendix I shows the ANOVA results for each attitude scale individually. The full model was used with all potential covariates. Several covariates appeared to be significant in some of the analyses, but when the correlated variables were removed from the models, these potential covariates were no longer significant. Only one attitude scale (question 5 on opportunity) had a significant covariate, which is included in the reduced model. The following discussion is based on the reduced models in Appendix I and the marginal means in Appendix J.

The first question addressed the degree of conflict the participant felt with the other negotiator. The evaluation basis ($p\text{-value} = .0062$) and history ($p\text{-value} = .0390$) were both significant in the model. Consistent with Ravenscroft, Haka, and Chalos [1993], the participants felt more conflict under a mixed evaluation scheme (marginal mean of 2.597) than under a divisional basis (marginal mean of 1.931). The participants also felt more conflict with a negative negotiation history (marginal mean of 2.514) than with a positive history (marginal mean of 2.014). As previously discussed, this was the only scale with a significant result for the history variable. The interaction of evaluation basis and uncertainty was also significant ($p\text{-value} = .0221$). This result is caused by the effect of the evaluation basis under high market uncertainty, as shown in Figure 20.

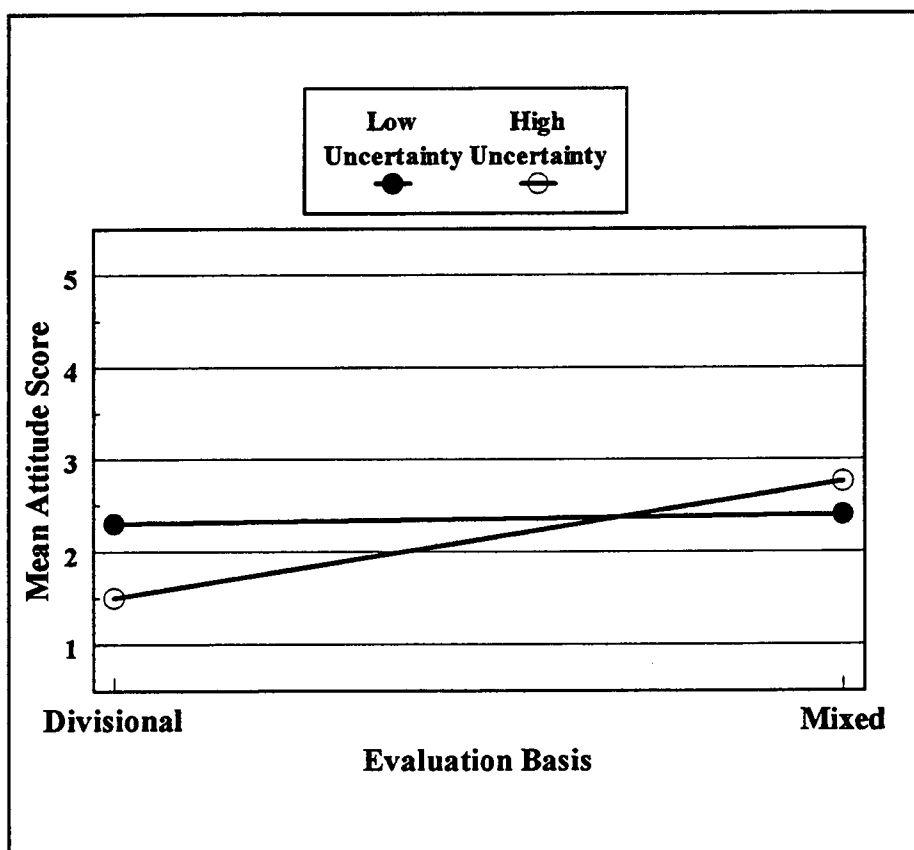


FIGURE 20

**POST-NEGOTIATION ATTITUDES ON CONFLICT
WITH EVALUATION BASIS BY UNCERTAINTY**

The second question dealt with cooperation between the negotiators. Uncertainty was the only significant variable ($p\text{-value} = .0040$). As hypothesized, less cooperation was reported under conditions of high market uncertainty (marginal mean of 2.986) than under low market uncertainty (marginal mean of 2.181). This result is consistent with Gomaa [1982] and Ravenscroft, Haka, and Chalos [1993]. The three-way interaction is significant ($p\text{-value} = .0072$) due to the significant effect of uncertainty on the evaluation-by-history interaction.

The third question dealt with competition between the negotiators. The evaluation basis was significant ($p\text{-value} = .0270$). The participants reported that the other negotiator was more competitive under a mixed performance evaluation scheme which combined divisional and corporate results (marginal mean of 3.889) than under a divisional evaluation basis (marginal mean of 3.236). This result is inconsistent with the hypothesized relationship. However, the participants reported other negative attitudes, such as higher conflict and less cooperation, under a mixed scheme and these attitudes may lead to a more competitive atmosphere.

The fourth question dealt with the other negotiator's tendency to concede. The main effects were not statistically significant for this scale. However, the evaluation basis and uncertainty were close to the .05 significance level with $p\text{-values}$ of .0510 and the interaction of evaluation-by-uncertainty was significant ($p\text{-value} = .0018$). Participants felt the other negotiator was more conciliatory under a divisional evaluation basis (marginal mean of 3.389) than under a mixed basis (marginal mean of 3.931). They also felt the other negotiator was more conciliatory with low uncertainty (marginal mean of 3.389)

than with high uncertainty (marginal mean of 3.931). The effect of uncertainty is expected, but the effect of the evaluation basis is not consistent with the hypothesis. These results are consistent with the findings of Ravenscroft, Haka, and Chalos [1993]. The significant interaction of evaluation-by-uncertainty is shown in Figure 21.

The fifth question asked whether both negotiators had an equal opportunity to perform well in the negotiation. Uncertainty was significant ($p\text{-value} = .0283$); however, it contradicted the hypothesized and overall results. Participants felt there was more of an equal opportunity for both negotiators under high market uncertainty (marginal mean of 2.222) than under low uncertainty (marginal mean of 2.681). Opportunity also was the only scale with a significant covariate (gender at $p\text{-value} = .0019$). On the average, female participants reported more positive scores (agreement that both negotiators had equal opportunity) than male participants. Another way to consider the gender effect is to examine the negotiation pairs. Four possible combinations were: (1) female buyer and seller, (2) female buyer and male seller, (3) male buyer and female seller, and (4) male buyer and seller. This pair variable is a significant covariate in the ANOVA model without gender ($p\text{-value} = .0084$). Further examination reveals that the most positive scores (agreement that both negotiators had equal opportunity) were reported by the female/female pairs, followed in order by the female buyer/male seller pairs, male buyer/female seller pairs, and the male/male pairs who reported the most negative scores. This result is consistent with a study of gender effects in negotiation by King and Hinson [1994].

The sixth question dealt with the compatibility of the team during negotiation. The main effects were not statistically significant. However, the three-way interaction was

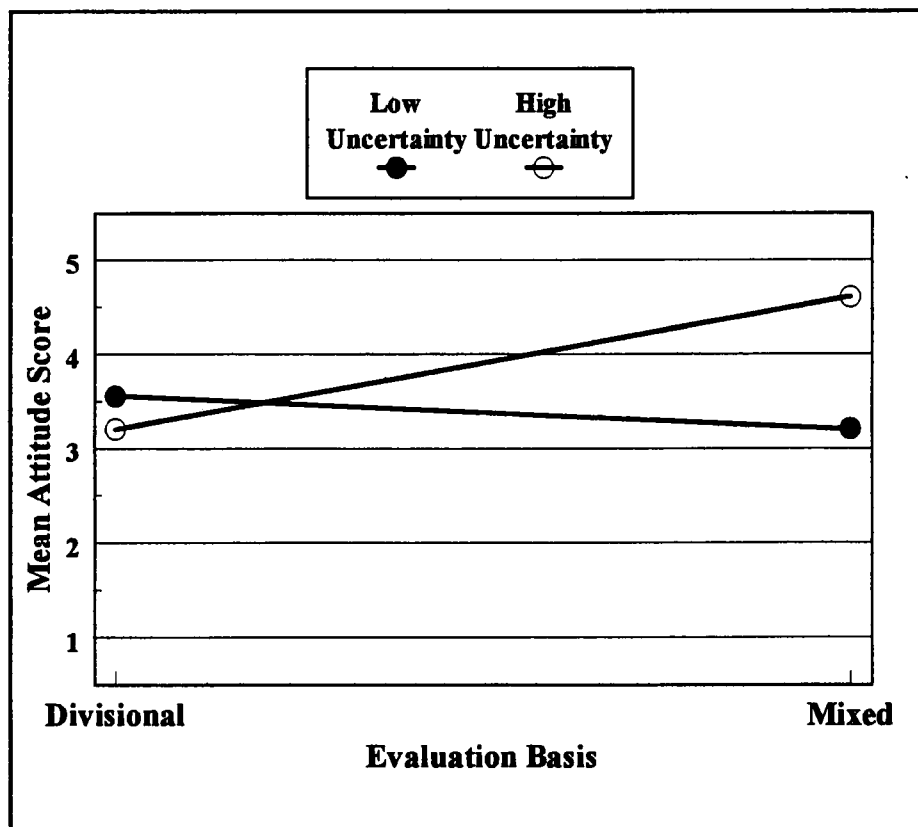


FIGURE 21

**POST-NEGOTIATION ATTITUDES ON CONCILIATION
WITH EVALUATION BASIS BY UNCERTAINTY**

significant ($p\text{-value} = .0063$). Neter, Wasserman, and Kutner [1985] interpret a three-way interaction as the difference in a two-factor interaction at varying levels of the third main effect variable. This significant three-way interaction is due to the effect of the evaluation basis on the uncertainty-by-history interaction.

The seventh question concerned the negotiators' satisfaction with the final outcome for his or her division. The evaluation variable was significant ($p\text{-value} = .0211$) and showed participants with a mixed evaluation basis felt less satisfaction (marginal mean of 2.389) than those with a divisional evaluation basis (marginal mean of 1.875). The three-way interaction were also significant ($p\text{-value} = .0211$) due to the strong effect of the evaluation main effect.

The eighth question concerned the negotiators' satisfaction with the final outcome for the company as a whole. The main effects were not statistically significant. There also were no significant results from the ninth question, which dealt with the fairness of the outcome to both divisions. However, the three-way interaction was significant for both of these questions.

The tenth question asked about the relationship between the negotiators after the negotiation had ended. The only significant variable was the evaluation basis ($p\text{-value} = .0093$) with more positive responses from the divisional evaluation basis (marginal mean of 1.681) than from the mixed evaluation basis (marginal mean of 2.181). The three-way interaction also was significant ($p\text{-value} = .0061$) due to the strong main effect of evaluation on the uncertainty-by-history interaction.

Although the range of responses on the attitude scales ran from 1 (positive) to 7 (negative) for every question, overall the responses were extremely positive. The mean responses range from 1.93 to 3.65 and the medians range from 2 to 4.

The statistical program identified several outliers in the analyses. Three individuals were identified as outliers over several attitude scales. These individuals were both members of Team 10 with Case 2 and the seller in Team 35 with Case 3. These cases were double-checked for input errors, but none were found. Since the questions concerned attitudes and there were no right or wrong answers, there was no reason to believe that these responses were mistakes. Therefore, these responses were not deleted from the analysis.

In addition to the attitude scales, the post-negotiation questionnaire also asked the participants to describe how they arrived at their final decision and what factors were most important to them. Overwhelmingly, the responses included some reference to "the good of the company." Many participants also viewed quality and control as very important factors in the decision. Since these factors were important to the participants, it may not be surprising that all participants chose to accept an internal transfer. Uncertainty and risk were also cited as factors in the decision. Several buyers expressed concern over the riskiness of the Cary bid. Many participants responded that keeping the business "in house" and establishing a positive relationship with the other division were very important. Several responses stated that the bonus was of secondary concern and several stated that the bonus was no concern at all. The responses to this question appear to explain and support the findings from the analysis.

SUMMARY

This chapter presented the data set from the negotiation experiment and the results of the residual analysis to detect errors and violations of model assumptions in the data. The results of the negotiation, the transfer price and profit allocation between the divisions, were analyzed with an ANOVA model, both with and without potential covariates.

Uncertainty was found to be a significant variable and, as hypothesized, there was a greater divergence in the profit allocation between the divisions under high market uncertainty than under low market uncertainty. The evaluation basis was not significant in the model. However, under low market uncertainty, there was a significantly greater divergence in the profit allocation under a divisional performance evaluation basis than under a mixed scheme of both divisional and corporate results. The previous negotiation history was not a significant variable in the ANOVA model.

One outlier was identified and discarded. The models were then analyzed again. The same relationships between the variables were found, but the model appeared to fit the data better and both uncertainty and the evaluation basis were statistically significant.

The reduced data set for team responses was then analyzed and the same relationships were found, but no results were statistically significant. When the outlier was discarded, uncertainty was significant and the evaluation basis was significant under low market uncertainty. Negotiation history was not significant in the model.

The post-negotiation attitude scales were analyzed with a MANOVA model. Uncertainty was a significant variable in the model. As hypothesized, more negative

attitudes resulted under high market uncertainty than under low uncertainty. The evaluation basis was also a significant variable in the MANOVA model. However, the effect contradicted what was hypothesized and more positive attitudes were found under a divisional performance evaluation basis than under a mixed evaluation system. The previous negotiation history was not a significant variable in the model.

The attitude scales were also analyzed individually with ANOVA. The results were consistent with the MANOVA responses, with two exceptions:

- (1) Previous negotiation history was a significant variable when conflict was the dependent variable. More conflict was reported with a negative negotiation history.
- (2) Gender was a significant covariate for the scale dealing with equal opportunity for success. Respondents were asked if both negotiators had an equal opportunity to perform well in the negotiation. Uncertainty was significant, but more positive responses were found under a high market uncertainty condition. Female participants reported more positive responses than male participants. Female/female teams responded with the most positive responses and male/male teams had the most negative responses.

Participants were also asked to describe how they arrived at their final decision and what factors were most important to them. Nearly all respondents included some reference to "the good of the company" or keeping the business "in house." This attitude

was the most important factor for many of the participants. Other important factors included quality, control of production, reduction of uncertainty and risk, and developing or maintaining a positive relationship with other divisions in the company.

The next chapter will present the conclusions which may be drawn from this analysis. Also, the contributions and limitations of the study will be discussed. Finally, implications for future research will be suggested.

CHAPTER VI

CONCLUSION

This chapter will present some conclusions from the analysis in Chapter V. The contributions and limitations of the study will be discussed. Finally, some implications for future research will be suggested.

CONCLUSIONS FROM THE ANALYSIS

This study tested the effect of three independent variables in the transfer pricing process: (1) The degree of market uncertainty (an environmental variable); (2) The performance evaluation basis (an organizational variable); and (3) The previous negotiation history (a behavioral variable). The outcomes of the transfer pricing process include: (1) The decision to buy the product externally or make the product internally; (2) The negotiated transfer price for an internal transfer and the resulting profit allocation between the divisions; and (3) The post-negotiation attitudes of the negotiators. To study the effects of these independent variables on the three outcomes of the transfer pricing process, a bilateral negotiation experiment was conducted with students as surrogates for divisional managers. Since no participants chose an external transaction, the make-or-buy decision could not be tested. This aspect of the transfer pricing process requires more research.

Consistent with theory, prior research, and the hypotheses, the results of this study indicate a greater divergence in the profit allocation between the divisions and more negative attitudes between the negotiators with high market uncertainty than with low market uncertainty. In conditions of low market uncertainty, greater divergence was found in the profit allocation between the divisions with a divisional performance evaluation basis than with a mixed scheme based on both divisional and corporate results (as shown in Figure 17). Under high market uncertainty, the evaluation basis was not significant. This result may be due to the increased overall stress inherent under high market uncertainty, as evidenced by the more negative post-negotiation attitudes of the participants. In a state of high market uncertainty, there may be too many important variables for the negotiators to consider and the performance evaluation basis may not seem as important.

Contrary to the hypotheses, divisional performance evaluation resulted in more positive post-negotiation attitudes than mixed evaluation. This result is consistent with the findings of Ravenscroft, Haka, and Chalos [1993], but is not consistent with the majority of transfer pricing research [Ackelsberg, 1977; Ackelsberg and Yukl, 1979; Gomaa, 1982; Chalos and Haka, 1990; Mahenthiran, 1991; Chan, 1993]. Ravenscroft, Haka, and Chalos [1993] suggest that divisional rewards may motivate negotiators to set higher goals which, in turn, may result in more integrative and satisfactory solutions, as shown by Pruitt [1983], Neale and Northcraft [1986], Riedel, Nebeker, and Cooper [1988], Northcraft and Neale [1991], Neale and Bazerman [1993], and Putnam [1990, 1994]. The mixed evaluation basis required more complex calculations. This increased

complexity may have had two effects: (1) The complexity may have reduced the negotiators' perceived correlation between the transfer price and their personal reward, thereby negating the effect of the evaluation basis [Ravenscroft, Haka, and Chalos, 1993]; and/or (2) The complexity may have increased the general stress and anxiety in the negotiation, thereby creating a more negative atmosphere with the mixed evaluation basis. Most prior research concerning the effects of the performance evaluation basis on transfer pricing outcomes has examined a divisional basis vs. a corporate basis [Ackelsberg, 1977; Ackelsberg and Yukl, 1979; Gomaa, 1982; Mahenthiran, 1991; Chan, 1993]. The present study, similar to Chalos and Haka [1990] and Ravenscroft, Haka, and Chalos [1993], used a mixed evaluation basis of both corporate and divisional results to encourage consideration of both divisional performance and interdivisional cooperation. Therefore, the difference between a mixed evaluation basis and a strictly corporate basis may explain the difference in results. More research is needed to study the effects of the performance evaluation basis on negotiators' attitudes in a transfer pricing negotiation.

Consistent with previous research, individual attributes analyzed as covariates were not significant. The one exception is for the individual analysis of the post-negotiation attitude concerning the negotiators' opportunity for success. Gender was a significant covariate with female participants reporting more positive responses (i.e., more equal opportunity for success in the negotiation) than male participants. Female/female teams responded with the most positive responses and male/male teams had the most negative responses. This result is consistent with a study by King and Hinson [1994] which found females more concerned with the relationship dimension of the negotiation

and more likely to believe their opponent behaved fairly to reach a mutually beneficial result.

The previous negotiation history was not a significant variable in the analysis of the profit allocation from the transfer or the post-negotiation attitudes. The one exception is for the individual analysis of the post-negotiation attitude concerning conflict between the participants. As hypothesized, more conflict was reported with a negative negotiation history.

The theoretical model of transfer pricing within an organizational context (Appendix A) presents a wide variety of factors which may affect the transfer pricing process, the outcomes of the process, and the performance of the corporation. This study has provided additional evidence on the effects of three of those variables.

CONTRIBUTIONS

This study has contributed to the development and testing of a more comprehensive organizational theory of transfer pricing. It has expanded the organizational theory of transfer pricing developed by Spicer [1988] to include additional aspects of the organizational design, strategy, human, and environmental factors from the markets and hierarchies theory by Williamson [1964, 1970, 1975, 1981a, 1981b, 1986, 1993a, 1993b] and other organizational theorists. This expanded theory is shown in Appendix A as the model of transfer pricing within an organizational context.

This study has provided additional evidence for the body of research on both transfer pricing and negotiation. This research has provided additional insight into the

effects of environmental variables (such as market uncertainty), organizational variables (such as the performance evaluation basis), and behavioral variables (such as the negotiation history) on the transfer pricing negotiation and the post-negotiation attitudes of the divisional managers.

The theory and preliminary evidence from this study may be used by managers to facilitate more effective and efficient transfer pricing in their organizations. Managers may utilize the theory to design and operate better transfer pricing processes. The transfer pricing process is a means of coordination and integration within the organization and this process may be as important as the resulting outcomes [Swieringa and Waterhouse, 1982; Eccles, 1985; Van der Meer-Kooistra, 1994]. The outcomes of the process also have far-reaching ramifications. The overall strategy of the firm may be linked to the transfer pricing system (i.e., the degree of diversification, signalling effects to the external market, and acquisition and maintenance of core competencies). Capital expenditures for specialized assets may be dependent upon the transfer pricing process. The quantity and quality of purchased inputs and manufactured outputs may also be dependent upon the transfer pricing process. If managers have authority to use external markets, both divisional and corporate profits may be affected by transfer pricing. If managers use internal transactions, corporate profits will not be directly affected because intracompany profits and losses will be eliminated. However, transfer pricing may have significant indirect effect on corporate profit if it affects managerial decisions concerning the use of resources and/or the pricing of products. The transfer pricing process also may affect managerial performance evaluation and, as a result, managers' motivation and decision-

making. Therefore, effective transfer pricing ultimately may increase overall corporate profit, improve production, enhance performance evaluation, encourage cooperation within the company, and increase managers' job satisfaction.

Managers also may consider the results of this study for the design and operation of effective transfer pricing systems. For example, this study found that high market uncertainty resulted in greater divergence in the profit allocation between the divisions and more negative post-negotiation attitudes. Therefore, if the market is highly uncertain, management may want to use different transfer pricing mechanisms (i.e., they may use more centralized decision-making or mandatory arbitration, or they may alter the way the transfer price is used in performance evaluation). However, this study is a very limited test of the theory and should be considered in combination with other research. Additional research is still needed to provide reliable evidence and practical guidelines.

LIMITATIONS

This study is a limited test of the theoretical model. Variables that are considered controlled in this experiment, such as form of communication, corporate intervention, and discretion of the divisions, are not included in the analysis and, yet, may actually drive the outcomes of transfer pricing negotiations. In addition, important variables may have been omitted from the theoretical model of transfer pricing within an organizational context. For example, there may be additional variables in the organizational design or limiting factors which have not been considered. Complementary field research and additional laboratory research are needed to provide a more thorough test of the theory.

Between the first and second pilot studies, the case was revised to make the external purchase alternative appear more attractive to the participants. Under a divisional performance evaluation basis, an external transaction is the best alternative if the Cary Corporation bid is considered a viable alternative. If the Cary bid is considered too risky or if the performance evaluation basis is determined by the mixed scheme, an internal transaction is the best alternative. This revision inadvertently created an additional variable to the study (i.e., whether the internal or external transaction is most advantageous), which was not explicitly studied. However, this manipulation of the advantages between an internal or external transaction would be expected to have the most impact on the make-or-buy decision (i.e., making the external alternative more attractive under a divisional performance evaluation basis). Since no participants chose an external transaction, this additional variable seemed to have little or no effect.

As with all laboratory experiments with students as surrogates, this study has limited external validity or generalizability. The experimental environment requires unrealistic constraints, such as strict time limits, lack of additional information, and lack of privacy. These constraints may cause results which are inconsistent with the results from an actual organization. In addition, the generalizability of this study is limited by the context of the research. This study assumes a situation in which negotiation would be the most appropriate transfer pricing mechanism. In practice, approximately 20% of transfer pricing firms utilize negotiation [Vancil, 1979; Benke and Edwards, 1980; Borkowski, 1988; Joy, 1985; Tang, 1992].

The use of students as surrogates may be justified by the fact that this research is concerned primarily with the development and testing of theory. Swieringa and Weick [1982] have stated that the use of students in a controlled laboratory experiment may facilitate an effective test of theory by increasing the internal validity of the study. Internal validity may be increased in an experiment that controls extraneous variables.

While there are criticisms of the use of students as surrogates for decision-makers with specialized knowledge or experience, this research requires no specialized knowledge or experience for the negotiation. Ashton and Kramer [1980] reported that the results of studies that focus on general decision-making, such as price negotiation, show considerable similarities between students and non-students. Neale and Northcraft [1986] found, in an unfamiliar decision setting, experts outperformed amateurs (student surrogates), but the pattern of both groups' performance was influenced consistently by the experimental variables. The present study was designed to be an unfamiliar decision setting (i.e., the first transfer pricing negotiation for the manager), so the experimental variables should have influenced the decision of a student surrogate in a pattern consistent with that of an expert (professional manager) facing a first transfer pricing negotiation.

However, a student surrogate may not be an effective representative of a manager with expertise in transfer pricing negotiation. Many of the transfer pricing studies have been conducted over several trading periods in order to provide student surrogates with experience in the transfer pricing negotiation. Most of these studies have found some effect of a learning curve, but the results are not consistent. Viator, Poe, and Strawser [1992] found differences in performance during the first nine trading periods out of a total

of fifteen periods with the most significant difference between the first and second periods. Chalos and Haka [1990] found improvement in performance over time, primarily in the third period, and they found better performance in a multi-period negotiation than in a single-period negotiation. Ravenscroft, Haka, and Chalos [1993] also found better performance in a multi-period negotiation than in a single-period negotiation, but they did not find a learning effect between periods in the multi-period setting. Arunachalam and Dilla [1992] also found learning effects, especially between the first and second periods, but the effect was not significant for participants negotiating face-to-face because their performance was closer to optimum in the first session and the learning effect was minimal. The present study was limited to a single-period negotiation. However, the narrative of the case indicated that there would be a continuing relationship between the negotiators which implied a multi-period setting. The participants may or may not have interpreted this as a multi-period setting. Results of the pilot study which included multiple rounds of negotiation did not reveal a significant learning effect.

Even with a multi-period setting, students may not be effective surrogates for professional managers. Neale and Northcraft [1990] distinguish between experience through trial-and-error learning and *expertise*, which "implies so extensive a background and training in an area that the error-adjustment and hypotheses-testing phases of learning are complete" (p. 65). They found that experience alone does not result in more effective performance. Therefore, students may be effective surrogates for managers facing a new situation (i.e., both groups would be in the trial-and-error learning phase). Managers may still outperform students in this situation due to more experience in other related tasks and

more knowledge of the general business environment, but the decisions of both groups would probably be affected in a similar manner by the experimental variables [Neale and Northcraft, 1986]. However, it is doubtful that inexperienced student surrogates will perform like professional managers with expertise in transfer pricing negotiations.

Although this experiment did not require specialized knowledge, it did involve a task which was probably unfamiliar to students. Also, all of the information about the company, division, product, and market was previously unknown to the students. Actual managers would be well aware of this information and would probably be experienced in some form of negotiation. Miller and Komorita [1986] found that laboratory experiments typically lack some information that is known or available in the real world, but the experiment may also include some information which would be unknown or too costly to obtain in practice. They conclude that this situation is not a problem of laboratory experiments *per se*, but information provided in experiments should be designed to simulate real world conditions as closely as possible, and researchers should analyze the results of experiments in light of their intended purpose (often a test of theory). The lack of general business knowledge and general negotiation experience would probably be diminished if the students had substantial practical business experience. For this reason, M.B.A. students were sought. However, not all M.B.A. students have business experience, and practical considerations required that a broader base of prospective participants be considered. Both business and negotiation experience were considered as potential covariates in the analysis, but neither was significant.

In addition, students are asked to play a role as a divisional manager and some students will take this role more seriously than others. It is not known to what extent students chose to enact their role and, therefore, to what extent the experiment succeeds in simulating a transfer pricing negotiation in practice. "This does not mean the [role playing] paradigm cannot be used for purposes of testing research hypotheses, but it does mean that results should be interpreted with a great deal of caution" [Morley and Stephenson, 1977, p. 53].

Student surrogates may not have the same goals and/or motivation as actual managers. The managers will be aware of the ramifications of the negotiation on the divisional and corporate level, as well as the personal ramifications through their performance evaluation, promotion, and bonus systems. Students, on the other hand, may be much more idealistic and less aware of the far-reaching implications. The participants in this study expressed an overriding concern to do what was best for the company as a whole. Students may also be less motivated by personal gain since no monetary or promotional incentives are directly related to performance in the experiment. Riedel, Nebeker, and Cooper [1988] found that rewards had two impacts on performance: (1) a direct positive relationship with performance, and (2) a positive impact on goal setting, which was then positively related to performance. "The basic question is, can the experimental setting with typically a single goal adequately simulate the rewards found in the real world where multiple and conflicting goals exist" [Birnberg and Nath, 1968]. While monetary incentives directly based on performance could be utilized in an experiment, a trade-off would probably be required between the materiality of the

incentives and the number of students in the experiment. Transfer pricing research has utilized both direct monetary incentive based on performance and "competitive tournaments" where prizes are rewarded only to top performers or where "lottery tickets" are earned for a higher chance at a reward. The present study used a competitive tournament where high performance earned more tickets for the prize "lottery." Lazear and Rosen [1981] found that the incentive provided by competitive tournaments is comparable to that provided by direct compensation.

When unanticipated results are obtained in an experiment, it may indicate that important variables are missing from the model or that unanticipated interactions exist. It may also indicate flaws in the underlying theory or the research methodology. In this study, the option of an external transfer was not chosen by any participants. This unanticipated result probably indicates a flaw in the research methodology. The case used in this experiment may not have stressed the viability of the external option. Also, since the participants were instructed to negotiate a transfer price, they may have felt that an internal transfer was the anticipated outcome. The fact that the majority of students considered the good of the company as a primary factor in their decision may also indicate that the students were motivated by an idealistic view of "the right thing to do." Abdelkhalik [1974] found that students' responses were less dispersed than experts, indicating text learning as opposed to experience. In actual practice, other factors may be viewed as equally, or more, important. Actual divisional managers may be more concerned with divisional profit and personal goals.

The analysis of the post-negotiation attitudes also produced an unanticipated result. This study found more positive attitudes with a divisional performance evaluation basis than with a mixed scheme consisting of both divisional and corporate effects. Previous research has produced mixed results, but this outcome appears to be inconsistent with the underlying theory. Although there may be a flaw in the underlying theory, the inconsistency may also indicate a flaw in the research methodology. As previously discussed, the inconsistency may be caused by how the evaluation basis is defined differently in the various studies, or the increased complexity of the mixed scheme may affect the results. It is also possible that students are not effective surrogates for managers when attitudes are being studied [Copeland, Francia, and Strawser, 1973; Ashton and Kramer, 1980]. Additional research is needed to provide more evidence on the effects of the performance evaluation basis.

IMPLICATIONS FOR FUTURE RESEARCH

As a limited test of the transfer pricing theory, this study may be viewed as one piece of evidence in a body of research. Therefore, more research, both laboratory and field-based, is needed to thoroughly test the theory. It is difficult, however, to conduct effective field-based research in transfer pricing because it is one of the most sensitive of all managerial areas [Business International Corporation, 1973]. Actual observation of transfer pricing negotiations and follow-up interviews with the managers could be the most useful and enlightening form of research, but companies have not been willing to divulge sensitive internal information. Also, the use of practicing managers in transfer

pricing experiments would be beneficial and would eliminate many of the limitations of experimental research, but the time required of the managers usually prohibits their availability as subjects. A comparison of student surrogates, experienced managers without transfer pricing negotiation experience, and experienced transfer pricing negotiators would also be very informative, but may not be feasible.

Future research could attempt to examine the internal vs. external transaction theory. To overcome some of the constraints to the external transaction which appear to have been present in this study, a future study could include student surrogates representing the external buyers and sellers, either in face-to-face or computer-mediated negotiation. This approach would result in a more dynamic, and probably, more realistic negotiation setting. It also would seem to make the external alternative more viable.

The performance evaluation basis has generated mixed results in previous research and should, therefore, be examined further. Performance could be compared under three different performance evaluation bases: (1) divisional, (2) corporate, and (3) mixed divisional and corporate. In particular, the effects of the performance evaluation basis on post-negotiation attitudes should be studied further.

A future study could extend over several negotiation periods to develop a negotiation history between the participants and provide for the learning curve effects. Unfortunately, a study of this type must have very few periods, or the case must be simplified to enable the experiment to be conducted in a limited time frame. Two alternatives to help reduce the time required would be to choose a negotiation task which is already familiar to students, or to provide a schedule of outcomes at all possible transfer

prices to reduce or eliminate calculations. However, both of these alternatives may result in an experimental setting that is even further from reality.

Future research could remove some of the constraints in the present study, such as the quantity to be purchased, the quality of the merchandise, the purchase of specialized equipment for production, the time frame before the next negotiation, the cost structure (i.e., decreasing prices for lower quality and/or higher quantities), the amount of the opening bid, and the source of the opening bid (a "first move advantage" was found in a bargaining experiment by Ochs and Roth [1989]). Other possible extensions of this study may include: (1) A study concerning information constraints and participants' search for information in a negotiated transfer pricing context; (2) A study providing direct monetary incentives to student surrogates consistent with the bonus that may be paid to a manager; (3) A study of the personality and role characteristics, such as risk-aversion, authoritarianism, tolerance for ambiguity, decision style, and locus of control, which may affect negotiated transfer pricing; (4) A study using different approaches to the collection of the data, such as videotaping the negotiations; and (5) A study examining the conflict and fairness in transfer pricing negotiations.

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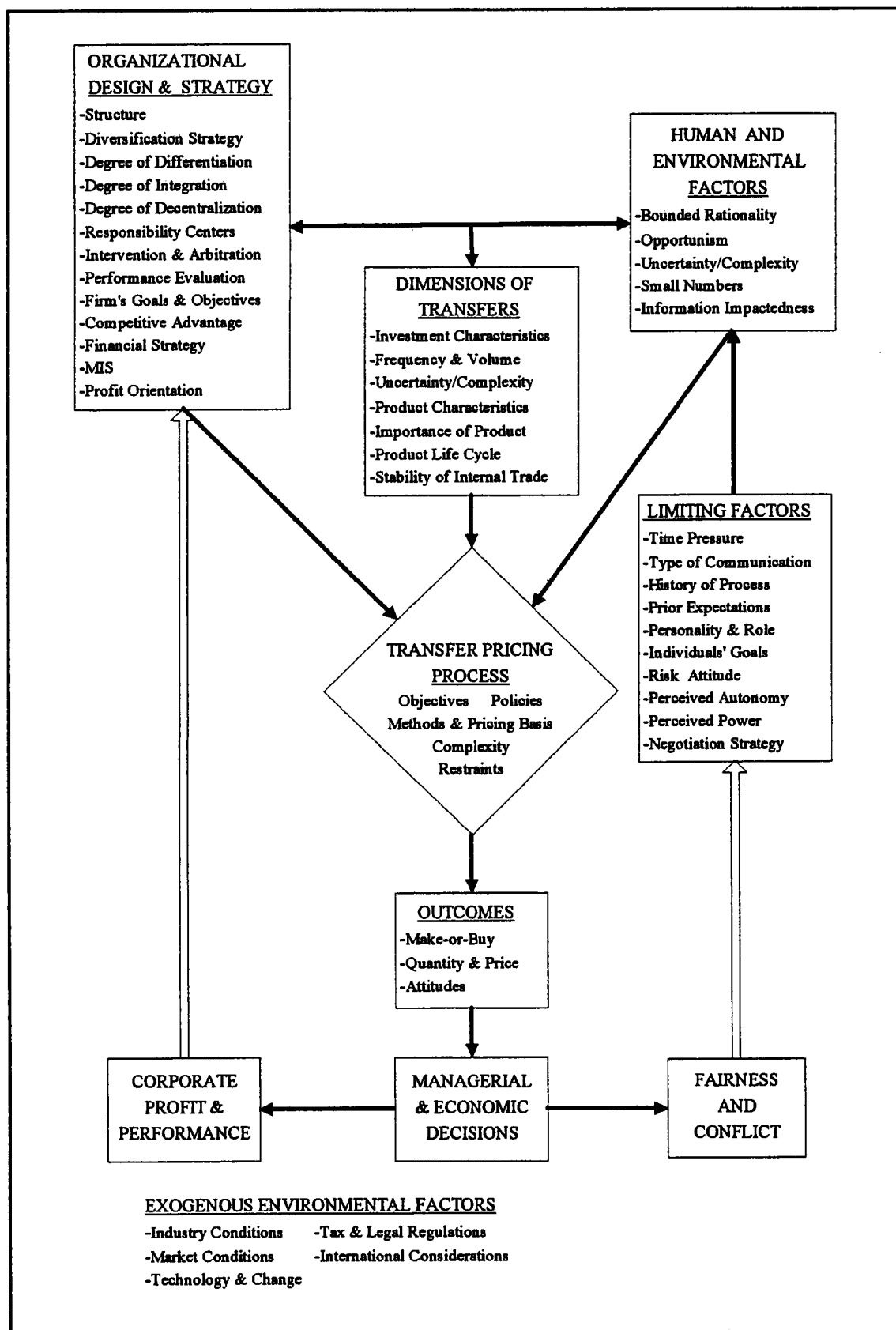
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APPENDICES

APPENDIX A

**MODEL OF TRANSFER PRICING
WITHIN AN ORGANIZATIONAL CONTEXT**



APPENDIX B

INSTRUCTIONS AND INFORMED CONSENT FORM

INSTRUCTIONS

Thank you very much for participating in this study of negotiation and decision-making. This study consists of three parts. Here is an overview of the procedures you will be asked to follow:

1. The first phase of this study is an introduction to the case and the procedures you will be asked to follow. First, please read all of the following instructions. Following this, you may read the introduction to the Compurite Electronics Company Case. This study involves a role-playing exercise. You will be asked to assume the role of a divisional manager of the Compurite Electronics Company and you will be provided with confidential information about your division. After you have become familiar with the general situation and your particular division, you will negotiate a contract with another divisional manager.
2. The second phase of this study will consist of the negotiating, or bargaining, session with another divisional manager. You will have a maximum of 30 minutes to negotiate. During the negotiation, you are free to share as little or as much of your confidential information as you may wish. Blank paper will be provided for any calculations or notes. You may also write on the case materials. You will be asked to return the case and all scrap paper. After negotiation, you may or may not have reached an agreement with the other divisional manager. At this time you must make a decision concerning the contract your division will accept. When you have reached this decision, please complete the agreement form and sign it. Your performance will be evaluated on the amount of bonus you earn. Calculation of this bonus is explained in your confidential information. Each participant in this study will earn one ticket for a cash drawing and additional tickets may be earned (based on the amount of bonus you earn).
3. The third phase of this study consists of a short questionnaire concerning your attitudes toward the negotiation.

Please play your role to the best of your ability. You may refer back to these instructions or the case information at any time during the negotiation. Also, please feel free to ask questions at any time. Please remember there are no right or wrong answers. Simply make the decision you would make if you were the divisional manager faced with this situation.

After the negotiation, please do not discuss any aspect of this study with anyone. Additional sessions will be held and it is important that participants do not have preconceived notions or expectations. If you would like additional information about the study results, please feel free to contact the researcher. Thank you again for your participation and effort in this study.

INFORMED CONSENT FORM

PLEASE READ THE FOLLOWING STATEMENT AND COMPLETE THE BOTTOM PORTION. THE BOTTOM PORTION SHOULD BE RETURNED TO THE RESEARCHER. YOU MAY RETAIN THE TOP PORTION OF THE FORM. THANK YOU FOR YOUR PARTICIPATION.

I understand that I am volunteering to participate in a study of bargaining behavior that requires my negotiating with another person. Additionally, I realize that I will be asked to complete a questionnaire concerning my attitudes toward the negotiation. All information will be anonymous and strictly confidential. The only person with access to the information will be the researcher. I understand that my participation is strictly voluntary and I may withdraw at any time.

Additional information may be obtained from the researcher:

Beth Walter
Department of Accounting & Business Law
The University of Tennessee
974-2551 or 974-6103

INFORMED CONSENT FORM

I understand that I am volunteering to participate in a study of bargaining behavior that requires my negotiating with another person. Additionally, I realize that I will be asked to complete a questionnaire concerning my attitudes toward the negotiation. All information will be anonymous and strictly confidential. The only person with access to the information will be the researcher. I understand that my participation is strictly voluntary and I may withdraw at any time.

Printed Name

Phone Number

Signature

Date

APPENDIX C

**INTRODUCTION TO
COMPURITE ELECTRONICS COMPANY CASE**

COMPURITE ELECTRONICS COMPANY CASE INTRODUCTION

Compurite Electronics Company (CEC) is a medium-size electronics firm with five decentralized divisions: (1) the Instrumentation division which produces various electronic parts, instruments, and supplies; (2) the Electronic Components division which produces computer chips, circuit boards, and other complex electronic components; (3) the Equipment division which produces office equipment, such as typewriters, calculators, and printers; (4) the Computer division which produces several different models of mini- and micro-computers; and (5) a centralized Marketing and Administration division.

Earlier this year, the Computer division finalized its design of a new microcomputer named "Innovation." CEC has high expectations for Innovation. Marketing research has indicated the expected sales for Innovation during the first year should be in excess of 100,000 units at a \$2,500 retail price. The volume should increase dramatically over the next three years if CEC can maintain a relatively low price and still retain high quality. However, the computer market is extremely competitive with several very powerful competitors. Although Innovation is revolutionary, it is expected that similar machines will be on the market from competitors in a short period of time. Also, the high-technology environment changes very quickly and even more revolutionary machines may soon be available. Therefore, the market for Innovation is still relatively uncertain. However, CEC considers its reputation for high quality and excellent service to be a major advantage in the market.

Innovation requires a very specialized set of components. The specifications for these components were given to CEC's Electronic Components division and two outside firms. Bids for the production of these components have been received. The bids from the two outside firms are non-negotiable. However, the bid from the Electronic Components division is negotiable. You will be assigned the role of the divisional manager of either the Computer division or the Electronic Components division. After reviewing confidential information on your division, you will meet with the manager of the other division and conduct a negotiation for the production of the Innovation components. You are free to accept the negotiated bid from the CEC division or one of the external bids. You should select the bid which you feel is best. Your performance will be evaluated on the amount of bonus you earn. The calculation of this bonus is explained in your confidential information.

APPENDIX D
CONFIDENTIAL CASE INFORMATION
FOR BUYER

APPENDIX D-1

**CONFIDENTIAL CASE INFORMATION FOR BUYER
WITH DIVISIONAL PERFORMANCE EVALUATION,
LOW MARKET UNCERTAINTY, AND
POSITIVE NEGOTIATION HISTORY**

CONFIDENTIAL INFORMATION FOR COMPUTER DIVISION (BUYER)

You are the manager of the Computer division of Compurite Electronics Company (CEC). As the manager, it is your responsibility to negotiate a contract for the components necessary for your newest product, Innovation. You are new to this position, so this is your first contract negotiation. Since you are anxious to succeed in this position, you have extensively researched the current situation, past negotiations, future expectations, and the financial ramifications of the various alternatives.

CURRENT SITUATION

You have requested bids for the production of the components from CEC's Electronic Components division and two outside contractors. The following bids have been received:

CEC Electronic Components division	\$ 600 per component set
Idea Industries	\$ 500 per component set
Cary Corporation	\$ 420 per component set

The bids from the external contractors are non-negotiable. However, you will attempt to negotiate a better offer from the Electronic Components division.

The contract will be for a period of six months, at which time you may renegotiate the terms. You have high hopes for Innovation and expect to have sales in excess of 100,000 units in the first year and increasing demand in future years. Therefore, for the first six-month contract, you will agree to purchase a minimum of 50,000 sets of components.

You have already negotiated a selling price for the final product to the Marketing division of \$1,000 per unit. In addition to the cost of the components, your division incurs \$200 in material and labor costs for each unit produced.

You are free to accept an offer from the Electronic Components division or one of the external bids. You should choose the offer which you believe will provide the best overall results.

PAST NEGOTIATIONS

CEC has a good working relationship with Idea Industries. In the past, they have delivered very high quality products and have provided excellent service. You have every reason to be confident of similar performance in fulfillment of this contract. In addition, Idea purchases material from CEC's Instrumentation division. Therefore, acceptance of Idea's bid would also increase sales for the Instrumentation division of CEC. You have included an estimate of the additional sales in the financial ramifications of the alternatives.

The Cary Corporation is a new firm and, therefore, CEC has not dealt with Cary in the past. You were favorably impressed with the representative from Cary, but since it is a new firm, there is no record of product quality or commitment to service. Therefore, there is more uncertainty associated with the Cary bid.

The bid from CEC's Electronic Components division is negotiable and you have scheduled a meeting with the division's manager to discuss this contract. You know the components manufactured by CEC will be of the highest quality. The two divisions have had a very positive and cooperative relationship in the past.

Since you are new as divisional manager, you have no direct experience with the Electronic Components division. You have, however, researched your predecessor's history of similar negotiations. You have found records which indicate the maximum your predecessor felt was reasonable prior to negotiation and the subsequent offer that was accepted in three previous negotiations for components for other computers.

<u>PRE-NEGOTIATION MAXIMUM</u>	<u>ACCEPTED OFFER</u>
\$115	\$110 from Electronic Components division
\$125	\$118 from Idea Industries
\$135	\$123 from Electronic Components division

Your predecessor was often praised for successful contract negotiation. You are expected to continue your predecessor's success in negotiations.

FUTURE EXPECTATIONS

Although the contract may be renegotiated in six months, you realize that changing suppliers at that time would involve substantial transaction costs. Therefore, unless serious problems arise with the present contract, the new contract in six months would probably involve only renegotiation of price and quantity terms from the same supplier. It is very important, therefore, that a beneficial contract be

negotiated at the present time. Although the computer market is complex and uncertain, you have no reason to foresee any major changes from the three suppliers in the near future.

FINANCIAL RAMIFICATIONS OF ALTERNATIVES

Based on past performance and future projections, you have estimated the financial ramifications of the alternative bids. Your performance is evaluated on the basis of your division's profit. Your bonus is computed as .02% of divisional profit. You have estimated the Computer division's profit under each of the external bids.

	<u>Without Innovation</u>	<u>With Idea bid</u>	<u>With Cary bid</u>
Net Sales	\$292,900,000	\$342,900,000	\$342,900,000
<u>Total Expenses</u>	<u>243,500,000</u>	<u>278,500,000</u>	<u>274,500,000</u>
Net Profit	\$ 49,400,000	\$ 64,400,000	\$ 68,400,000
Estimated Bonus	\$9,880	\$12,880	\$13,680

If a bid is accepted from the Electronic Components division, estimated profit and bonus could be computed as:

Net Sales	\$342,900,000
<u>Total Expenses</u>	<u>\$243,500,000 + [(\$200 + bid) x 50,000 units]</u>
Net Profit	Net Sales - Total Expenses

Estimated Bonus	Net Profit x .02%
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For example, at the original \$600 bid, the calculations would be:

Net Sales	\$342,900,000
<u>Total Expenses</u>	<u>283,500,000</u> [\$243,500,000 + (\$800 x 50,000)]
Net Profit	\$ 59,400,000

Estimated Bonus	(\$59,400,000 x .02%) = \$11,880
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Given this information, you will now meet with the manager of the Electronic Components division. Since you have already received the original bid of \$600 from the Electronic Components division, you should make the first counter-offer to begin the negotiation{. After negotiation, you must decide whether to accept a bid from the Electronic Components division or one of the outside offers for the Innovation components. You are not required to accept the negotiated price. Make the decision you feel you would make in an actual situation of this type. When you have made this decision, please complete the final agreement form on the next page. Then, please return all case materials and scrap paper to the researcher and complete the short questionnaire you will be given.

CALCULATIONS

FINAL AGREEMENT

I have accepted the bid from:

___ Idea Industries

___ Cary Corporation

___ CEC Electronic Components division at a price of \$_____ per set

This will result in an estimated bonus of \$_____.

Your signature

APPENDIX D-2

**CONFIDENTIAL CASE INFORMATION FOR BUYER
WITH MIXED DIVISIONAL AND CORPORATE PERFORMANCE
EVALUATION, HIGH MARKET UNCERTAINTY, AND
NEGATIVE NEGOTIATION HISTORY**

CONFIDENTIAL INFORMATION FOR COMPUTER DIVISION (BUYER)

You are the manager of the Computer division of Compurite Electronics Company (CEC). As the manager, it is your responsibility to negotiate a contract for the components necessary for your newest product, Innovation. You are new to this position, so this is your first contract negotiation. Since you are anxious to succeed in this position, you have extensively researched the current situation, past negotiations, future expectations, and the financial ramifications of the various alternatives.

CURRENT SITUATION

You have requested bids for the production of the components from CEC's Electronic Components division and two outside contractors. The following bids have been received:

CEC Electronic Components division	\$ 600 per component set
Idea Industries	\$ 500 per component set
Cary Corporation	\$ 420 per component set

The bids from the external contractors are non-negotiable. However, you will attempt to negotiate a better offer from the Electronic Components division.

The contract will be for a period of six months, at which time you may renegotiate the terms. You have high hopes for Innovation and expect to have sales in excess of 100,000 units in the first year and increasing demand in future years. Therefore, for the first six-month contract, you will agree to purchase a minimum of 50,000 sets of components.

You have already negotiated a selling price for the final product to the Marketing division of \$1,000 per unit. In addition to the cost of the components, your division incurs \$200 in material and labor costs for each unit produced.

You are free to accept an offer from the Electronic Components division or one of the external bids. You should choose the offer which you believe will provide the best overall results.

PAST NEGOTIATIONS

CEC has a good working relationship with Idea Industries. In the past, they have delivered very high quality products and have provided excellent service. You have every reason to be confident of similar performance in fulfillment of this contract. In addition, Idea purchases material from CEC's Instrumentation division. Therefore, acceptance of Idea's bid would also increase sales for the Instrumentation division of CEC. You have included an estimate of the additional sales in the financial ramifications of the alternatives.

The Cary Corporation is a new firm and, therefore, CEC has not dealt with Cary in the past. You were favorably impressed with the representative from Cary, but since it is a new firm, there is no record of product quality or commitment to service. Therefore, there is more uncertainty associated with the Cary bid.

The bid from CEC's Electronic Components division is negotiable and you have scheduled a meeting with the division's manager to discuss this contract. You know the components manufactured by CEC will be of the highest quality. The two divisions have had a very negative, competitive, and uncooperative relationship in the past.

Since you are new as divisional manager, you have no direct experience with the Electronic Components division. You have, however, researched your predecessor's history of similar negotiations. You have found records which indicate the maximum your predecessor felt was reasonable prior to negotiation and the subsequent offer that was accepted in three previous negotiations for components for other computers.

PRE-NEGOTIATION MAXIMUM

ACCEPTED OFFER

\$115	\$120 from Electronic Components division
\$125	\$132 from Idea Industries
\$135	\$143 from Electronic Components division

Your predecessor was not considered a successful contract negotiator, despite the fact that contract negotiation is considered a major aspect of the managerial position. You are expected to be more successful at negotiating an effective contract.

FUTURE EXPECTATIONS

Although the contract may be renegotiated in six months, you realize that changing suppliers at that time would involve substantial transaction costs. Therefore, unless serious problems arise with the present contract, the new contract in six months would probably involve only renegotiation of price and quantity terms from the same

supplier. It is very important, therefore, that a beneficial contract be negotiated at the present time.

The computer market is complex and uncertain, so there are no assurances that the suppliers will submit similar bids in the future. This uncertainty is particularly a problem in considering the Cary Corporation bid because there is no history of business dealings.

FINANCIAL RAMIFICATIONS OF ALTERNATIVES

Based on past performance and future projections, you have estimated the financial ramifications of the alternative bids. Your performance is evaluated on a combination of your division's profit and overall corporate profit. Your bonus is computed as .015% of divisional profit plus .001% of overall corporate profit. You have estimated the Computer division's profit and the overall corporate profit under each of the external bids. The estimates for corporate profit include approximations of the profit for the Electronic Components, Instrumentation, and Marketing divisions which will also be affected by the contract negotiation.

IDEA INDUSTRIES BID

	<u>Computer division</u>	<u>Total Corporate</u>
Net Sales	\$342,900,000	\$1,264,390,000
<u>Total Expenses</u>	<u>278,500,000</u>	<u>954,420,000</u>
Net Profit	\$ 64,400,000	\$ 309,970,000
Estimated Bonus	\$12,760	

CARY CORPORATION BID

	<u>Computer division</u>	<u>Total Corporate</u>
Net Sales	\$342,900,000	\$1,259,390,000
<u>Total Expenses</u>	<u>274,500,000</u>	<u>946,670,000</u>
Net Profit	\$ 68,400,000	\$ 312,720,000
Estimated Bonus	\$13,387	

You have also estimated the total corporate profit that would be earned if you accept an internal offer from the Electronic Components division.

	<u>Total Corporate</u>
Net Sales	\$1,273,390,000
<u>Total Expenses</u>	<u>950,170,000</u>
Net Profit	\$ 323,220,000

The corporate profit would not be affected by the value of the internal offer. However, the Computer division's profit would vary according to the offer accepted. If a bid is accepted from the Electronic Components division, estimated divisional profit and bonus could be computed as:

Net Sales	\$342,900,000
<u>Total Expenses</u>	\$243,500,000 + [(\$200 + bid) x 50,000 units]
Net Profit	Net Sales - Total Expenses
Estimated Bonus	Net Profit for Computer division x .015 % + \$3,232 (Corporate profit x .001 %)

For example, at the original \$600 bid, the calculations would be:

Net Sales	\$342,900,000
<u>Total Expenses</u>	<u>283,500,000</u> [\$243,500,000 + (\$800 x 50,000)]
Net Profit	\$ 59,400,000
Estimated Bonus	\$8,910 (\$59,400,000 x .015 %) + <u>3,232</u> (Corporate profit x .001 %) \$12,142 Total estimated bonus

Given this information, you will now meet with the manager of the Electronic Components division. Since you have already received the original bid of \$600 from the Electronic Components division, you should make the first counter-offer to begin the negotiations. After negotiation, you must decide whether to accept a bid from the Electronic Components division or one of the outside offers for the Innovation components. You are not required to accept the negotiated price. Make the decision you feel you would make in an actual situation of this type. When you have made this decision, please complete the final agreement form on the next page. Then, please return all case materials and scrap paper to the researcher and complete the short questionnaire you will be given.

CALCULATIONS

FINAL AGREEMENT

I have accepted the bid from:

___ Idea Industries

___ Cary Corporation

___ CEC Electronic Components division at a price of \$_____ per set

This will result in an estimated bonus of \$_____.

Your signature

APPENDIX E
CONFIDENTIAL CASE INFORMATION
FOR SELLER

APPENDIX E-1

**CONFIDENTIAL CASE INFORMATION FOR SELLER
WITH DIVISIONAL PERFORMANCE EVALUATION,
LOW MARKET UNCERTAINTY, AND
POSITIVE NEGOTIATION HISTORY**

**CONFIDENTIAL INFORMATION FOR
ELECTRONIC COMPONENTS DIVISION
(SELLER)**

You are the manager of the Electronic Components division of Computrite Electronics Company (CEC). As the manager, it is your responsibility to negotiate a contract for production of one of two products. The Computer division of CEC has requested a bid for production of components for their new computer, Innovation. You also have the opportunity to accept a special order from the Top Toy Company. Due to production constraints, however, you may only select one project. You are new to the position of divisional manager, so this is your first contract negotiation. Since you are anxious to succeed in this position, you have extensively researched the current situation, past negotiations, future expectations, and the financial ramifications of the various alternatives.

CURRENT SITUATION

You have submitted a bid of \$600 per component set to the Computer division for the Innovation components. You are, however, willing to negotiate. The Computer division will commit to the purchase of a minimum of 50,000 units for the first six-month contract and this volume is expected to increase in the near future. Each set of components will cost your division \$200 in material and labor costs. You purchase some of your material from the Instrumentation division of CEC. Therefore, acceptance of the Innovation contract would also increase sales for the Instrumentation division.

If you do not manufacture Innovation components, you will be free to accept a special order from the Top Toy Company. They have requested production of a special component and you have quoted a price of \$40 per component for a minimum of 500,000 units. This component will have a variable cost of \$16 per unit. You have prepared the following calculations in regard to this bid:

$$\text{Contribution per unit} = \$40 \text{ sales price} - \$16 \text{ variable cost} = \$24 \text{ per unit}$$

$$\text{Total contribution} = \text{Contribution per unit} \times \text{units ordered}$$

$$\text{Total contribution} = \$24 \text{ per unit} \times 500,000 \text{ units} = \$12,000,000$$

You are free to accept either the special order from Top Toy Company or an offer from the Computer division for the Innovation components. You should choose the offer which you believe will provide the best overall results.

PAST NEGOTIATIONS

CEC has not dealt with the Top Toy Company in the past, but they are a well-established and respected firm. Therefore, you do not anticipate problems with acceptance of their special order.

The bid to the Computer division is negotiable and you have scheduled a meeting with the division's manager to discuss this contract. Although you have no direct experience with the Computer division, you are aware that the two divisions have had a very positive and cooperative relationship in the past. You have researched your predecessor's history of similar negotiations for components for other computers. You have found records which indicate the minimum your predecessor felt was reasonable prior to negotiation and the subsequent offer that was accepted in three previous negotiations.

PRE-NEGOTIATION MINIMUM

\$ 95
\$120
\$110

ACCEPTED OFFER

\$110 from Computer division
Special order from G & R, Inc.
\$123 from Computer division

Your predecessor was often praised for successful contract negotiation. You are expected to continue your predecessor's success in negotiations.

FUTURE EXPECTATIONS

The special order from the Top Toy Company is for a component for a new toy they intend to produce. Their market research indicates that this new toy may become a "classic." If this does occur, increased orders for the component would be expected in the future. However, the toy industry is somewhat unpredictable, so future orders of the component are not guaranteed.

If the offer from the Computer division is accepted, the contract would be renegotiated in six months. Market research has indicated that Innovation should be a popular product and sales are expected to increase in the future. Although the computer market is complex and uncertain, you have no reason to foresee any major changes, except for quantity, at renegotiation.

FINANCIAL RAMIFICATIONS OF ALTERNATIVES

Based on past performance and future projections, you have estimated the financial ramifications of the two alternative bids. Your performance is evaluated on the basis of your division's profit. Your bonus is computed as .02 % of divisional profit. You have estimated your division's profit with acceptance of the Top Toy special order to be:

	<u>Without Special Order</u>	<u>With Top Toy Special Order</u>
Net Sales	\$156,600,000	\$176,600,000
<u>Total Expenses</u>	<u>104,200,000</u>	<u>112,200,000</u>
Net Profit	\$ 52,400,000	\$ 64,400,000
Estimated Bonus	\$10,480	\$12,880

If a bid is accepted from the Computer division, estimated profit and bonus could be computed as:

Net Sales	\$156,600,000 + (Bid x 50,000 units)
<u>Total Expenses</u>	\$114,200,000
Net Profit	Net Sales - Total Expenses
Estimated Bonus	Net Profit x .02%

For example, at the original \$600 bid, the calculations would be:

Net Sales	\$186,600,000 [\$156,600,000 + (\$600 x 50,000)]
<u>Total Expenses</u>	<u>114,200,000</u>
Net Profit	\$ 72,400,000
Estimated Bonus	(\$72,400,000 x .02%) = \$14,480

Given this information, you will now meet with the manager of the Computer division. Since you have offered an original bid of \$600, the Computer division manager should make the first counter-offer. After negotiation, you must decide whether to accept a bid from the Computer division or the Top Toy offer. You are not required to accept the negotiated price. Make the decision you feel you would make in an actual situation of this type. When you have made this decision, please complete the final agreement form on the next page. Then, please return all case materials and scrap paper to the researcher and complete the short questionnaire you will be given.

CALCULATIONS

FINAL AGREEMENT

I have accepted the bid from:

___ Top Toy Company

___ CEC Computer division at a price of \$_____ per component set

This will result in an estimated bonus of \$_____.

Your signature

APPENDIX E-2

CONFIDENTIAL CASE INFORMATION FOR SELLER WITH MIXED DIVISIONAL AND CORPORATE PERFORMANCE EVALUATION, HIGH MARKET UNCERTAINTY, AND NEGATIVE NEGOTIATION HISTORY

**CONFIDENTIAL INFORMATION FOR
ELECTRONIC COMPONENTS DIVISION
(SELLER)**

You are the manager of the Electronic Components division of Computrite Electronics Company (CEC). As the manager, it is your responsibility to negotiate a contract for production of one of two products. The Computer division of CEC has requested a bid for production of components for their new computer, Innovation. You also have the opportunity to accept a special order from the Top Toy Company. Due to production constraints, however, you may only select one project. You are new to the position of divisional manager, so this is your first contract negotiation. Since you are anxious to succeed in this position, you have extensively researched the current situation, past negotiations, future expectations, and the financial ramifications of the various alternatives.

CURRENT SITUATION

You have submitted a bid of \$600 per component set to the Computer division for the Innovation components. You are, however, willing to negotiate. The Computer division will commit to the purchase of a minimum of 50,000 units for the first six-month contract and this volume is expected to increase in the near future. Each set of components will cost your division \$200 in material and labor costs. You purchase some of your material from the Instrumentation division of CEC. Therefore, acceptance of the Innovation contract would also increase sales for the Instrumentation division.

If you do not manufacture Innovation components, you will be free to accept a special order from the Top Toy Company. They have requested production of a special component and you have quoted a price of \$40 per component for a minimum of 500,000 units. This component will have a variable cost of \$16 per unit. You have prepared the following calculations in regard to this bid:

$$\text{Contribution per unit} = \$40 \text{ sales price} - \$16 \text{ variable cost} = \$24 \text{ per unit}$$

$$\text{Total contribution} = \text{Contribution per unit} \times \text{units ordered}$$

$$\text{Total contribution} = \$24 \text{ per unit} \times 500,000 \text{ units} = \$12,000,000$$

You are free to accept either the special order from Top Toy Company or an offer from the Computer division for the Innovation components. You should choose the offer which you believe will provide the best overall results.

PAST NEGOTIATIONS

CEC has not dealt with the Top Toy Company in the past, but they are a well-established and respected firm. Therefore, you do not anticipate problems with acceptance of their special order.

The bid to the Computer division is negotiable and you have scheduled a meeting with the division's manager to discuss this contract. Although you have no direct experience with the Computer division, you are aware that the two divisions have had a very negative, competitive, and uncooperative relationship in the past. You have researched your predecessor's history of similar negotiations for components for other computers. You have found records which indicate the range your predecessor felt was reasonable prior to negotiation and the subsequent offer that was accepted in three previous negotiations.

PRE-NEGOTIATION MINIMUM

\$125

\$140

\$155

ACCEPTED OFFER

\$120 from Computer division

Special order from G & R, Inc.

\$143 from Computer division

Your predecessor was not considered a successful contract negotiator, despite the fact that contract negotiation is considered a major aspect of the managerial position. You are expected to be more successful at negotiating an effective contract.

FUTURE EXPECTATIONS

The special order from the Top Toy Company is for a component for a new toy they intend to produce. Their market research indicates that this new toy may become a new "fad." While they expect high sales in the short-run, Top Toy does not expect the toy to have long-run potential. Therefore, it is unlikely that substantial reorders of the components would be needed. However, the toy industry is somewhat unpredictable, so there may be future orders of the component. If there are no future orders from Top Toy, your division would have excess capacity. Special orders from other firms could be considered, but most would involve a substantial investment in fixed costs to customize machinery for production of a specialized component.

If the offer from the Computer division is accepted, the contract would be renegotiated in six months. Market research has indicated that Innovation should be a popular product and sales are expected to increase in the future. However, the computer market is extremely complex and uncertain. Therefore, you realize that Innovation may not perform as expected. If Innovation is successful, other suppliers may attempt to negotiate a contract for the components. You have no guarantee that the Computer division will continue to order the components from your division. However, substantial transaction costs are often associated with a change in suppliers, so the Computer division should accept a reasonable renegotiation offer.

FINANCIAL RAMIFICATIONS OF ALTERNATIVES

Based on past performance and future projections, you have estimated the financial ramifications of the two alternative bids. Your performance is evaluated on a combination of your division's profit and overall corporate profit. Your bonus is computed as .015% of divisional profit plus .001% of overall corporate profit. You have estimated the Electronic Components division's profit and the overall corporate profit if the Top Toy offer is accepted. The estimate for corporate profit includes an approximation of the profit for the Instrumentation, Marketing, and Computer divisions which will also be affected by the contract negotiation. You are aware that the Computer division has two other offers for the Innovation component. Therefore, you have calculated the corporate profit under two alternatives, based on your best guess of the two external offers from Idea Industries and Cary Corporation.

	Electronic Components division <u>with Top Toy offer</u>	<u>Total Corporate</u> with offers from Top Toy and: <u>Idea Industries</u> <u>Cary Corp.</u>	
Net Sales	\$176,600,000	\$1,264,390,000	\$1,259,390,000
<u>Total Expenses</u>	<u>112,200,000</u>	<u>954,420,000</u>	<u>946,670,000</u>
Net Profit	\$ 64,400,000	\$309,970,000	\$ 312,720,000
Estimated Bonus		\$12,760	\$12,787

You have also estimated the total corporate profit that would be earned if you accept an internal offer from the Computer division.

	<u>Total Corporate</u>
Net Sales	\$1,273,390,000
<u>Total Expenses</u>	<u>950,170,000</u>
Net Profit	\$ 323,220,000

The corporate profit would not be affected by the value of the internal offer. However, the Electronic Components division's profit would vary according to the offer accepted. If a bid is accepted from the Computer division, estimated divisional profit and bonus could be computed as:

Net Sales	\$156,600,000 + (Bid x 50,000 units)
<u>Total Expenses</u>	<u>\$114,200,000</u>
Net Profit	Net Sales - Total Expenses
Estimated Bonus	Net Profit for your division x .015 % + \$3,232 (Corporate profit x .001 %)

For example, at the original \$600 bid, the calculations would be:

Net Sales	\$186,600,000 [\$156,600,000 + (\$600 x 50,000)]
<u>Total Expenses</u>	<u>114,200,000</u>
Net Profit	\$ 72,400,000
Estimated Bonus	\$10,860 (\$72,400,000 x .015 %) + <u>3,232</u> (Corporate profit x .001 %) \$14,092 Total estimated bonus

Given this information, you will now meet with the manager of the Computer division. Since you have offered an original bid of \$600, the Computer division manager should make the first counter-offer. After negotiation, you must decide whether to accept a bid from the Computer division or the Top Toy offer. You are not required to accept the negotiated price. Make the decision you feel you would make in an actual situation of this type. When you have made this decision, please complete the final agreement form on the next page. Then, please return all case materials and scrap paper to the researcher and complete the short questionnaire you will be given.

CALCULATIONS

FINAL AGREEMENT

I have accepted the bid from:

___ Top Toy Company

___ CEC Computer division at a price of \$_____ per component set

This will result in an estimated bonus of \$_____.

Your signature

APPENDIX F
POST-NEGOTIATION ATTITUDE QUESTIONNAIRE

POST-NEGOTIATION QUESTIONNAIRE

The following questions measure how *you* feel about the previous negotiation process. Please remember that all information is strictly anonymous and confidential. Thank you for your participation.

Instructions

1. Circle the position that best describes *your* evaluation of the factor being judged.
2. Answer *every* question, please do not omit any.
3. Circle only *one* response for each question.
4. Work rapidly. Rely on your first impressions.

PLEASE INDICATE YOUR AGREEMENT WITH EACH OF THE FOLLOWING STATEMENTS.

1. I felt a high degree of conflict with the other negotiator.

Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
-------------------	---	---	---	---	---	---	---	----------------------

2. I felt the other negotiator was generally a cooperative bargainer.

Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
-------------------	---	---	---	---	---	---	---	----------------------

3. I felt the other negotiator was very competitive.

Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
-------------------	---	---	---	---	---	---	---	----------------------

4. I felt the other negotiator was very willing to concede.

Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
-------------------	---	---	---	---	---	---	---	----------------------

5. I believe the other negotiator and I had the same opportunity to perform well in the negotiation.

Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
----------------	---	---	---	---	---	---	---	-------------------

6. I felt the other negotiator and I worked well together.

Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
----------------	---	---	---	---	---	---	---	-------------------

7. I think the outcome of the negotiation was satisfactory for my division.

Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
----------------	---	---	---	---	---	---	---	-------------------

8. I think the outcome of the negotiation was satisfactory for the company as a whole.

Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
----------------	---	---	---	---	---	---	---	-------------------

9. I believe the outcome of the negotiation is fair to both divisions.

Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
----------------	---	---	---	---	---	---	---	-------------------

10. At the end of the negotiation, my relationship with the other negotiator was extremely positive.

Strongly Agree	1	2	3	4	5	6	7	Strongly Disagree
----------------	---	---	---	---	---	---	---	-------------------

Briefly describe how you arrived at your final decision and what factors were most important to you in reaching this decision.

PLEASE ANSWER THE FOLLOWING GENERAL DEMOGRAPHIC QUESTIONS.

Degree Program Attending: ☐ Ph.D. ☐ MBA ☐ MAcc ☐ BS

Gender: ☐ Female ☐ Male

Age: _____

Years of Work Experience in Business: _____

Briefly describe the nature of your work experience in business:

Negotiation Experience: ☐ Yes ☐ No

If "yes," briefly describe the nature and extent of your negotiation experience:

Please feel free to make any comments concerning the study on the back of this page.
Thank you again for your participation.

APPENDIX G
FINANCIAL ANALYSIS OF CASE

FINANCIAL ANALYSIS OF CASE

The financial analysis of the Compurite Electronics Company (CEC) case begins with a comparison of the financial effects of the different alternatives (i.e., internal vs. external transaction, different external offers, and different performance evaluation methods). A summary of the profit and managerial bonuses under a range of alternatives is shown below. Following this summary of alternatives is a discussion of the results of these alternatives. Various calculations used in the discussion are summarized at the end.

SUMMARY OF ALTERNATIVES

External Transfers with Idea Industries and Top Toy Company

	<u>Computer Division</u>	<u>Electronic Components Division</u>	<u>Total Corporate</u>
Net Sales	\$ 342,900,000	\$ 176,600,000	\$ 1,264,390,000
Total Expenses	<u>278,500,000</u>	<u>112,200,000</u>	<u>954,420,000</u>
Net Income	<u>\$ 64,400,000</u>	<u>\$ 64,400,000</u>	<u>\$ 309,970,000</u>

BONUS

Divisional Evaluation	\$12,880	\$12,880
Mixed Evaluation	\$12,760	\$12,760

External Transfers with Cary Corporation and Top Toy Company

	<u>Computer Division</u>	<u>Electronic Components Division</u>	<u>Total Corporate</u>
Net Sales	\$ 342,900,000	\$ 176,600,000	\$ 1,259,390,000
Total Expenses	<u>274,500,000</u>	<u>112,200,000</u>	<u>946,670,000</u>
Net Income	<u>\$ 68,400,000</u>	<u>\$ 64,400,000</u>	<u>\$ 312,720,000</u>

BONUS

Divisional Evaluation	\$13,680	\$12,880
Mixed Evaluation	\$13,387	\$12,787

Internal Transfer

	<u>Total</u> <u>Corporate</u>
Net Sales	\$ 1,273,390,000
Total Expenses	<u>950,170,000</u>
Net Income	<u>\$ 323,220,000</u>

Bonuses under a divisional performance evaluation basis:

<u>Transfer Price</u>	<u>Computer</u> <u>Division</u>	<u>Electronic</u> <u>Components</u> <u>Division</u>
\$420	\$13,680	\$12,680
\$440	\$13,480	\$12,880
\$470	\$13,180	\$13,180
\$500	\$12,880	\$13,480
\$600	\$11,880	\$14,480

Bonuses under a mixed performance evaluation basis:

<u>Transfer Price</u>	<u>Computer</u> <u>Division</u>	<u>Electronic</u> <u>Components</u> <u>Division</u>
\$422	\$13,477	\$12,757
\$426	\$13,447	\$12,787
\$434	\$13,387	\$12,847
\$470	\$13,117	\$13,117
\$518	\$12,757	\$13,477
\$600	\$12,142	\$14,092

RESULTS OF ALTERNATIVES

Divisional Performance Evaluation

The Computer division (buyer) may purchase components internally from the Electronic Components division of CEC or externally from either Idea Industries at \$500 per set or from Cary Corporation at \$420 per set. If the Idea bid is accepted, the manager's bonus will be \$12,880. The manager would earn a bonus equal to this amount or larger if the components are purchased internally at a transfer price of \$500 or less.

If the Cary bid is accepted, the manager's bonus will be \$13,680. The manager would earn a bonus equal to this amount or larger if the components are purchased internally at a transfer price of \$420 or less. Therefore, the manager should negotiate a transfer price less than or equal to \$420. However, if the manager considers the Cary bid too uncertain and risky, a transfer price less than or equal to \$500 should be negotiated.

The Electronic Components division (seller) may sell components to the Computer division of CEC or accept a special order from the Top Toy Company. If the order is accepted from Top Toy, the manager will earn a bonus of \$12,880. The manager would earn a bonus equal to this amount or larger if the components are sold internally at \$440 or more.

Therefore, if the Computer division considers Cary's bid to be a viable option, there is no overlap between the negotiators' optimal ranges (buyer requires a bid less than or equal to \$420 and the seller requires a bid greater than or equal to \$440), and an external transaction would be expected. However, if Cary's bid is not considered viable, especially under high uncertainty, an internal transfer would be expected with a transfer price within the range of \$440 - \$500.

Equal bonuses of \$13,180 could be earned by both managers at a transfer price of \$470 per set. The Idea Industries bid also results in equal bonuses, but the amount is only \$12,880 per manager.

Mixed Performance Evaluation

The Computer division (buyer) may purchase components internally from the Electronic Components division of CEC or externally from either Idea Industries at \$500 per set or from Cary Corporation at \$420 per set. If the Idea bid is accepted, the manager's bonus will be \$12,760. The manager would earn a bonus equal to this amount or larger if the components are purchased internally at a transfer price of \$518 or less. If the Cary bid is accepted, the manager's bonus will be \$13,387. The manager would earn a bonus equal to this amount or larger if the components are purchased internally at a transfer price of \$434 or less. Therefore, the manager should negotiate a transfer price less than or equal to \$434. If the manager considers the Cary bid too uncertain and risky, a transfer price less than or equal to \$518 should be negotiated.

The Electronic Components division (seller) may sell components to the Computer division of CEC or accept a special order from the Top Toy Company. If the order is accepted from Top Toy and the Computer division accepts Idea's offer, the manager of the Electronic Components division will earn a bonus of \$12,760. The manager would earn a bonus equal to this amount or larger if the components are sold internally at \$422 or more. If the order is accepted from Top Toy and the Computer division accepts Cary's offer, the

manager of the Electronic Components division will earn a bonus of \$12,787. The manager would earn a bonus equal to this amount or larger if the components are sold internally at \$426 or more.

Under a mixed performance evaluation system, an internal transfer would result in higher corporate profits and bonuses. Therefore, an internal transfer would be expected. If the Computer division considers Cary's bid to be a viable option, the expected negotiation range would be \$426 - \$434. If Cary's bid is not considered viable, due to high uncertainty, the range would be \$422 - \$518.

Equal bonuses of \$13,117 could be earned by both managers at a transfer price of \$470 per set. The Idea Industries bid also results in equal bonuses, but the amount is only \$12,760 per manager.

CALCULATIONS

Internal Transfer with Divisional Performance Evaluation

Computer Division (Buyer):

Net Sales	\$342,900,000
Total Expenses	$\frac{243,500,000}{+ [(\$200 + \text{bid}) \times 50,000 \text{ units}]}$
Net Profit	$\$ 99,400,000 - [(\$200 + \text{bid}) \times 50,000 \text{ units}]$
Bonus	$.02\% \times [\$99,400,000 - [(\$200 + \text{bid}) \times 50,000]]$

To equal or exceed bonus with Idea Industries bid:

$$\text{Bonus} = \$12,880 = .02\% \times [\$99,400,000 - [(\$200 + \text{bid}) \times 50,000]]$$

$$\text{Solve for Maximum Bid} = \$500$$

To equal or exceed bonus with Cary Corporation bid:

$$\text{Bonus} = \$13,680 = .02\% \times [\$99,400,000 - [(\$200 + \text{bid}) \times 50,000]]$$

$$\text{Solve for Maximum Bid} = \$420$$

Electronic Components Division (Seller):

Net Sales	\$156,600,000 + (Bid x 50,000 units)
Total Expenses	<u>114,200,000</u>
Net Profit	\$ 42,400,000 + (Bid x 50,000 units)
Bonus	.02% x [\$42,400,000 + (Bid x 50,000 units)]

To equal or exceed bonus with Top Toy Company:

$$\text{Bonus} = \$12,880 = .02\% \times [\$42,400,000 + (\text{Bid} \times 50,000 \text{ units})]$$

$$\text{Solve for Minimum Bid} = \$440$$

To achieve equal bonuses:

$$\begin{array}{ccc} \text{Buyer's Bonus} & = & \text{Seller's Bonus} \\ .02\% \times [\$99,400,000 - [(\$200 + \text{bid}) \times 50,000]] & = & .02\% \times [\$42,400,000 + (\text{Bid} \times 50,000)] \end{array}$$

$$\text{Solve for Bid} = \$470$$

Internal Transfer with Mixed Performance Evaluation**Computer Division (Buyer):**

Net Sales	\$342,900,000
Total Expenses	<u>243,500,000 + [(\$200 + bid) x 50,000 units]</u>
Net Profit	\$ 99,400,000 - [(\$200 + bid) x 50,000 units]

$$\text{Bonus} = .015\% \times [\$99,400,000 - [(\$200 + \text{bid}) \times 50,000]] + (.001\% \times \$323,220,000)$$

To equal or exceed bonus with Idea Industries bid (Bonus = \$12,760):

$$\$12,760 = .015\% \times [\$99,400,000 - [(\$200 + \text{bid}) \times 50,000]] + (.001\% \times \$323,220,000)$$

$$\text{Solve for Maximum Bid} = \$518 \text{ (Rounded to whole dollars)}$$

To equal or exceed bonus with Cary Corporation bid (Bonus = \$13,387):

$$\$13,387 = .015\% \times [\$99,400,000 - [(\$200 + \text{bid}) \times 50,000]] + (.001\% \times \$323,220,000)$$

$$\text{Solve for Maximum Bid} = \$434$$

Electronic Components Division (Seller):

Net Sales	\$156,600,000 + (Bid x 50,000 units)
Total Expenses	<u>114,200,000</u>
Net Profit	\$ 42,400,000 + (Bid x 50,000 units)

$$\text{Bonus} = .015\% \times [\$42,400,000 + (\text{Bid} \times 50,000 \text{ units})] + (.001\% \times \$323,220,000)$$

To equal or exceed bonus with Top Toy and Idea bids (Bonus = \$12,760):

$$\$12,760 = .015\% \times [\$42,400,000 + (\text{Bid} \times 50,000)] + (.001\% \times \$323,220,000)$$

Solve for Minimum Bid = \$422 (Rounded to whole dollars)

To equal or exceed bonus with Top Toy and Cary bids (Bonus = \$12,787):

$$\$12,787 = .015\% \times [\$42,400,000 + (\text{Bid} \times 50,000)] + (.001\% \times \$323,220,000)$$

Solve for Minimum Bid = \$426

To achieve equal bonuses:

$$\begin{array}{ccc} \text{Buyer's Bonus} & = & \text{Seller's Bonus} \\ .015\% \times [99,400,000 - ((200 + \text{bid}) \times 50,000)] & = & .015\% \times [42,400,000 + (\text{Bid} \times 50,000)] \end{array}$$

Solve for Bid = \$470

APPENDIX H

**POWER ANALYSIS FOR DETERMINATION
OF SAMPLE SIZE**

POWER ANALYSIS FOR DETERMINATION OF SAMPLE SIZE

The power analysis for this study was accomplished with the Table for Determining Sample Size for Analysis of Variance [Neter, Wasserman, and Kutner, 1985]. The power approach utilizes this table to analyze various sample sizes while controlling the risks of making Type I and Type II errors. The Type I error (α) is the probability of a false rejection of the null hypothesis or the recognition of a significant result when one does not exist. The Type II error (β) is the probability of a false acceptance of the null hypothesis or the failure to recognize a significant result. The power ($1 - \beta$) is the probability of recognizing significant results when they are present. Ideally, the Type I and Type II errors should be minimized and the power should be high. However, there is a trade-off between the Type I error, power, and the sample size. As Type I and/or Type II error is reduced, the sample size must be increased. It is important to understand this trade-off and plan a sample size "large enough to detect important differences with high probability . . . [but] not so large that the cost of the study becomes excessive and that unimportant differences become statistically significant with high probability" [Neter, Wasserman, and Kutner, 1985, p. 602]. The following specifications must be made to use the Table for Determining Sample Size for Analysis of Variance:

- (1) The magnitude of the minimum range (Δ) of the means which it is important to detect with high probability. This range is denoted by Δ as:

$$\Delta = \text{maximum } (\mu_i) - \text{minimum } (\mu_j)$$

Based on the data from the second pilot study, this range was estimated as $\Delta = 46$.

- (2) The magnitude of σ , the standard deviation of the probability distributions of Y . Since the standard deviation of the population is unknown, a sample standard deviation (s) was computed from the data obtained from the second pilot study. Therefore, the estimate of $\sigma = s = 24$.
- (3) The value of $\Delta / \sigma = 46 / 24 = 1.92$ (the closest value on the table is 2.0).
- (4) The number of factor levels or treatments (r). For this study, there are two levels of each factor, so $r = 2 \times 2 \times 2 = 8$. The Table for Determining Sample Size for Analysis of Variance is based on the assumption that all factor levels are to have equal sample sizes.
- (5) The levels of Type I error (α) and power ($1 - \beta$).

Using the Table for Determining Sample Size for Analysis of Variance, the power approach allows the consideration of various levels of Type I error (α) and power ($1 - \beta$) and the required sample size (η). Listed below are the results of the power analysis at two levels of Type I error (α) and four levels of power ($1 - \beta$).

<u>Type I Error</u>	<u>Power</u>	<u>Sample Size</u>
$\alpha = .05$	$1 - \beta = .70$	$\eta = 7$
$\alpha = .05$	$1 - \beta = .80$	$\eta = 9$
$\alpha = .05$	$1 - \beta = .90$	$\eta = 11$
$\alpha = .05$	$1 - \beta = .95$	$\eta = 12$
$\alpha = .10$	$1 - \beta = .70$	$\eta = 6$
$\alpha = .10$	$1 - \beta = .80$	$\eta = 7$
$\alpha = .10$	$1 - \beta = .90$	$\eta = 9$
$\alpha = .10$	$1 - \beta = .95$	$\eta = 11$

From this power analysis, it appears that $\eta = 7$ would be the minimum sample size required. At $\eta = 7$ representing the number of teams for the study and $r = 8$ treatment levels, this would indicate that a minimum of 112 subjects will be necessary for the study [(2 subjects/team) x (η teams) x (r treatment levels) = 112 subjects].

APPENDIX I

**ANALYSIS OF VARIANCE TABLES FOR
POST-NEGOTIATION ATTITUDES**

**ANOVA TABLE FOR
QUESTION #1 - CONFLICT
WITH POTENTIAL COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	18.57	1	18.57	9.0564	.0031
Uncertainty	3.26	1	3.26	1.5909	.2094
History	12.51	1	12.51	6.1011	.0148
Eval x Uncert	8.49	1	8.49	4.1438	.0438
Eval x Hist	.00	1	.00	.0007	.9786
Uncert x Hist	.05	1	.05	.0260	.8721
Eval x Uncert x Hist	2.45	1	2.45	1.1975	.2758
Degree	5.50	1	5.50	2.6837	.1038
Gender	.43	1	.43	.2097	.6477
Age	9.08	1	9.08	4.4316	.0372
BusiExp	1.95	1	1.95	.9505	.3314
NegExp	.35	1	.35	.1712	.6797
Error	268.58	131	2.05		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

**ANOVA TABLE FOR
QUESTION #1 - CONFLICT
WITHOUT COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	16.00	1	16.00	7.7224	.0062
Uncertainty	2.25	1	2.25	1.0860	.2992
History	9.00	1	9.00	4.3438	.0390
Eval x Uncert	11.11	1	11.11	5.3628	.0221
Eval x Hist	.03	1	.03	.0134	.9080
Uncert x Hist	.44	1	.44	.2145	.6440
Eval x Uncert x Hist	3.36	1	3.36	1.6222	.2050
Error	281.78	136	2.07		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

**ANOVA TABLE FOR
QUESTION #2 - COOPERATION
WITH POTENTIAL COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	4.52	1	4.52	1.6566	.2033
Uncertainty	18.02	1	18.02	6.5998	.0113
History	2.46	1	2.46	.9010	.3443
Eval x Uncert	.10	1	.10	.0374	.8469
Eval x Hist	1.82	1	1.82	.6658	.4160
Uncert x Hist	2.90	1	2.90	1.0624	.3046
Eval x Uncert x Hist	17.53	1	17.53	6.4183	.0125
Degree	1.43	1	1.43	.5250	.4700
Gender	1.65	1	1.65	.6058	.4378
Age	1.28	1	1.28	.4706	.4939
BusiExp	.47	1	.47	.1714	.6796
NegExp	.39	1	.39	.1444	.7046
Error	357.77	131	2.73		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

**ANOVA TABLE FOR
QUESTION #2 - COOPERATION
WITHOUT COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	3.36	1	3.36	1.2340	.2686
Uncertainty	23.36	1	23.36	8.5765	.0040
History	4.69	1	4.69	1.7235	.1915
Eval x Uncert	.00	1	.00	.0000	1.0000
Eval x Hist	1.78	1	1.78	.6527	.4206
Uncert x Hist	7.11	1	7.11	2.6107	.1085
Eval x Uncert x Hist	20.25	1	20.25	7.4343	.0072
Error	370.44	136	2.72		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

**ANOVA TABLE FOR
QUESTION #3 - COMPETITION
WITH POTENTIAL COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	10.27	1	10.27	3.4688	.0648
Uncertainty	1.00	1	1.00	.3374	.5623
History	.15	1	.15	.0513	.8211
Eval x Uncert	13.73	1	13.73	4.6359	.0331
Eval x Hist	.38	1	.38	.1300	.7190
Uncert x Hist	.04	1	.04	.0152	.9020
Eval x Uncert x Hist	.56	1	.56	.1892	.6643
Degree	5.51	1	5.51	1.8599	.1750
Gender	.47	1	.47	.1591	.6906
Age	.02	1	.02	.0056	.9405
BusiExp	8.99	1	8.99	3.0379	.0837
NegExp	8.20	1	8.20	2.7685	.0985
Error	387.89	131	2.96		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

**ANOVA TABLE FOR
QUESTION #3 - COMPETITION
WITHOUT COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	15.34	1	15.34	4.9957	.0270
Uncertainty	.34	1	.34	.1108	.7397
History	.84	1	.84	.2736	.6017
Eval x Uncert	9.51	1	9.51	3.0960	.0807
Eval x Hist	.56	1	.56	.1832	.6693
Uncert x Hist	1.17	1	1.17	.3822	.5375
Eval x Uncert x Hist	.06	1	.06	.0204	.8868
Error	417.61	136	3.07		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

**ANOVA TABLE FOR
QUESTION #4 - CONCILIATION
WITH POTENTIAL COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	10.21	1	10.21	3.7143	.0561
Uncertainty	8.56	1	8.56	3.1127	.0800
History	3.46	1	3.46	1.2583	.2640
Eval x Uncert	27.27	1	27.27	9.9196	.0020
Eval x Hist	4.71	1	4.71	1.7149	.1926
Uncert x Hist	.97	1	.97	.3537	.5530
Eval x Uncert x Hist	8.91	1	8.91	3.2408	.0741
Degree	.19	1	.19	.0701	.7916
Gender	.55	1	.55	.2018	.6540
Age	7.96	1	7.96	2.8946	.0912
BusiExp	7.20	1	7.20	2.6195	.1080
NegExp	2.22	1	2.22	.8068	.3707
Error	360.14	131	2.75		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

**ANOVA TABLE FOR
QUESTION #4 - CONCILIATION
WITHOUT COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	10.56	1	10.56	3.8749	.0510
Uncertainty	10.56	1	10.56	3.8749	.0510
History	2.51	1	2.51	.9197	.3393
Eval x Uncert	27.56	1	27.56	10.1113	.0018
Eval x Hist	5.06	1	5.06	1.8572	.1752
Uncert x Hist	.84	1	.84	.3083	.5797
Eval x Uncert x Hist	8.51	1	8.51	3.1208	.0795
Error	370.72	136	2.72		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

**ANOVA TABLE FOR
QUESTION #5 - OPPORTUNITY
WITH POTENTIAL COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	3.37	1	3.37	1.9934	.1604
Uncertainty	7.48	1	7.48	4.4236	.0374
History	.45	1	.45	.2684	.6053
Eval x Uncert	1.89	1	1.89	1.1179	.2923
Eval x Hist	1.73	1	1.73	1.0244	.3134
Uncert x Hist	3.75	1	3.75	2.2193	.1387
Eval x Uncert x Hist	1.25	1	1.25	.7400	.3912
Degree	.59	1	.59	.3484	.5560
Gender	13.50	1	13.50	7.9860	.0055
Age	.25	1	.25	.1511	.6982
BusiExp	1.03	1	1.03	.6077	.4371
NegExp	3.22	1	3.22	1.9036	.1700
Error	221.41	131	1.69		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

**ANOVA TABLE FOR
QUESTION #5 - OPPORTUNITY
WITH GENDER COVARIATE**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	2.51	1	2.51	1.5013	.2226
Uncertainty	8.21	1	8.21	4.9173	.0283
History	.46	1	.46	.2786	.5985
Eval x Uncert	2.51	1	2.51	1.5013	.2226
Eval x Hist	2.15	1	2.15	1.2870	.2586
Uncert x Hist	4.08	1	4.08	2.4442	.1203
Eval x Uncert x Hist	1.69	1	1.69	1.0111	.3164
Gender	16.73	1	16.73	10.0186	.0019
Error	370.72	135	2.72		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

**ANOVA TABLE FOR
QUESTION #5 - OPPORTUNITY
WITH PAIR COVARIATE**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	3.11	1	3.11	1.8228	.1792
Uncertainty	11.68	1	11.68	6.8580	.0098
History	.26	1	.26	.1530	.6963
Eval x Uncert	1.96	1	1.96	1.1509	.2853
Eval x Hist	1.90	1	1.90	1.1174	.2924
Uncert x Hist	6.90	1	6.90	4.0530	.0461
Eval x Uncert x Hist	2.48	1	2.48	1.4581	.2293
Pair	12.19	1	12.19	7.1547	.0084
Error	229.98	135	1.70		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

**ANOVA TABLE FOR
QUESTION #6 - COMPATIBILITY
WITH POTENTIAL COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	5.86	1	5.86	4.0835	.0453
Uncertainty	.22	1	.22	.1570	.6925
History	.50	1	.50	.3509	.5546
Eval x Uncert	.01	1	.01	.0054	.9415
Eval x Hist	2.64	1	2.64	1.8406	.1772
Uncert x Hist	.01	1	.01	.0075	.9309
Eval x Uncert x Hist	9.49	1	9.49	6.6133	.0112
Degree	.01	1	.01	.0062	.9375
Gender	.90	1	.90	.6252	.4305
Age	.23	1	.23	.1621	.6878
BusiExp	.68	1	.68	.4735	.4926
NegExp	.74	1	.74	.5135	.4749
Error	188.06	131	1.43		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

**ANOVA TABLE FOR
QUESTION #6 - COMPATIBILITY
WITHOUT COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	4.69	1	4.69	3.2592	.0732
Uncertainty	.69	1	.69	.4821	.4886
History	.11	1	.11	.0771	.7816
Eval x Uncert	.03	1	.03	.0193	.8898
Eval x Hist	2.78	1	2.78	1.9285	.1672
Uncert x Hist	.44	1	.44	.3086	.5795
Eval x Uncert x Hist	11.11	1	11.11	7.7141	.0063
Error	195.89	136	1.44		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

**ANOVA TABLE FOR
QUESTION #7 - DIVISION SATISFACTION
WITH POTENTIAL COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	11.47	1	11.47	6.5613	.0116
Uncertainty	.17	1	.17	.0954	.7579
History	.50	1	.50	.2872	.5929
Eval x Uncert	.86	1	.86	.4924	.4841
Eval x Hist	5.31	1	5.31	3.0354	.0838
Uncert x Hist	.06	1	.06	.0374	.8470
Eval x Uncert x Hist	8.09	1	8.09	4.6252	.0333
Degree	2.25	1	2.25	1.2898	.2582
Gender	.28	1	.28	.1598	.6900
Age	.46	1	.46	.2663	.6067
BusiExp	1.13	1	1.13	.6474	.4225
NegExp	5.79	1	5.79	3.3114	.0711
Error	229.11	131	1.75		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

**ANOVA TABLE FOR
QUESTION #7 - DIVISION SATISFACTION
WITHOUT COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	9.51	1	9.51	5.4440	.0211
Uncertainty	.34	1	.34	.1949	.6596
History	.56	1	.56	.3221	.5713
Eval x Uncert	.34	1	.34	.1949	.6596
Eval x Hist	6.67	1	6.67	3.8215	.0526
Uncert x Hist	.06	1	.06	.0358	.8502
Eval x Uncert x Hist	9.51	1	9.51	5.4440	.0211
Error	237.50	136	1.75		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

**ANOVA TABLE FOR
QUESTION #8 - COMPANY SATISFACTION
WITH POTENTIAL COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	2.27	1	2.27	1.4248	.2348
Uncertainty	2.52	1	2.52	1.5811	.2108
History	.28	1	.28	.1786	.6733
Eval x Uncert	.11	1	.11	.0703	.7913
Eval x Hist	4.53	1	4.53	2.8430	.0942
Uncert x Hist	.68	1	.68	.4262	.5150
Eval x Uncert x Hist	9.33	1	9.33	5.8591	.0169
Degree	.91	1	.91	.5720	.4508
Gender	2.23	1	2.23	1.4001	.2389
Age	.02	1	.02	.0140	.9060
BusiExp	.31	1	.31	.1927	.6614
NegExp	3.76	1	3.76	2.3582	.1270
Error	208.59	131	1.59		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

**ANOVA TABLE FOR
QUESTION #8 - COMPANY SATISFACTION
WITHOUT COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	3.36	1	3.36	2.1327	.1465
Uncertainty	2.25	1	2.25	1.4277	.2342
History	.44	1	.44	.2820	.5963
Eval x Uncert	.25	1	.25	.1586	.6910
Eval x Hist	5.44	1	5.44	3.4546	.0652
Uncert x Hist	.11	1	.11	.0705	.7910
Eval x Uncert x Hist	11.11	1	11.11	7.0503	.0089
Error	214.33	136	1.58		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

**ANOVA TABLE FOR
QUESTION #9 - FAIRNESS
WITH POTENTIAL COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	2.82	1	2.82	1.8472	.1764
Uncertainty	.04	1	.04	.0301	.8625
History	.21	1	.21	.1385	.7104
Eval x Uncert	2.71	1	2.71	1.7754	.1850
Eval x Hist	.55	1	.55	.3626	.5481
Uncert x Hist	3.54	1	3.54	2.3239	.1298
Eval x Uncert x Hist	12.21	1	12.21	8.0088	.0054
Degree	.01	1	.01	.0039	.9506
Gender	2.95	1	2.95	1.9326	.1668
Age	.24	1	.24	.1573	.6923
BusiExp	.10	1	.10	.0679	.7948
NegExp	1.55	1	1.55	1.0139	.3158
Error	199.81	131	1.52		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

**ANOVA TABLE FOR
QUESTION #9 - FAIRNESS
WITHOUT COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	2.01	1	2.01	1.3189	.2528
Uncertainty	.01	1	.01	.0046	.9462
History	.56	1	.56	.3697	.5442
Eval x Uncert	3.06	1	3.06	2.0126	.1583
Eval x Hist	.84	1	.84	.5522	.4587
Uncert x Hist	2.01	1	2.01	1.3189	.2528
Eval x Uncert x Hist	14.06	1	14.06	9.2416	.0028
Error	206.94	136	1.52		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

**ANOVA TABLE FOR
QUESTION #10 - RELATIONSHIP
WITH POTENTIAL COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	10.52	1	10.52	8.0844	.0052
Uncertainty	1.16	1	1.16	.8899	.3472
History	.29	1	.29	.2208	.6392
Eval x Uncert	.34	1	.34	.2610	.6103
Eval x Hist	.05	1	.05	.0362	.8494
Uncert x Hist	.02	1	.02	.0135	.9077
Eval x Uncert x Hist	8.74	1	8.74	6.7139	.0107
Degree	.45	1	.45	.3440	.5585
Gender	1.34	1	1.34	1.0276	.3126
Age	2.40	1	2.40	1.8460	.1766
BusiExp	1.15	1	1.15	.8877	.3478
NegExp	1.69	1	1.69	1.2965	.2569
Error	170.47	131	1.30		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)
 Degree = participant's degree program (graduate or undergraduate)
 Gender = participant's gender (female or male)
 Age = participant's age (in years)
 BusiExp = participant's business experience (in years)
 NegExp = participant's negotiation experience

**ANOVA TABLE FOR
QUESTION #10 - RELATIONSHIP
WITHOUT COVARIATES**

Source of Variation	Sum-of-Squares	Degrees of Freedom	Mean-Square	F-statistic	p-value
Evaluation	9.00	1	9.00	6.9545	.0093
Uncertainty	1.36	1	1.36	1.0518	.3069
History	.11	1	.11	.0859	.7700
Eval x Uncert	.44	1	.44	.3434	.5588
Eval x Hist	.25	1	.25	.1932	.6610
Uncert x Hist	.11	1	.11	.0859	.7700
Eval x Uncert x Hist	10.03	1	10.03	7.7487	.0061
Error	176.00	136	1.29		

Key: Eval = evaluation basis (divisional or mixed)
 Uncert = uncertainty (high or low)
 Hist = history of negotiation (positive or negative)

APPENDIX J

**MARGINAL MEANS FOR
POST-NEGOTIATION ATTITUDES**

**MARGINAL MEANS FOR
QUESTION #1 - CONFLICT**

Marginal Means	Attitude Score
Low Uncertainty	2.389
High Uncertainty	2.139
Divisional Evaluation	1.931
Mixed Evaluation	2.597
Positive History	2.014
Negative History	2.514
Low Uncertainty / Divisional Evaluation	2.333
Low Uncertainty / Mixed Evaluation	2.444
High Uncertainty / Divisional Evaluation	1.528
High Uncertainty / Mixed Evaluation	2.750
Low Uncertainty / Positive History	2.083
Low Uncertainty / Negative History	2.694
High Uncertainty / Positive History	1.944
High Uncertainty / Negative History	2.333
Divisional Evaluation / Positive History	1.694
Divisional Evaluation / Negative History	2.167
Mixed Evaluation / Positive History	2.333
Mixed Evaluation / Negative History	2.861

**MARGINAL MEANS FOR
QUESTION #2 - COOPERATION**

Marginal Means	Attitude Score
Low Uncertainty	2.181
High Uncertainty	2.986
Divisional Evaluation	2.431
Mixed Evaluation	2.736
Positive History	2.764
Negative History	2.403
Low Uncertainty / Divisional Evaluation	2.028
Low Uncertainty / Mixed Evaluation	2.333
High Uncertainty / Divisional Evaluation	2.833
High Uncertainty / Mixed Evaluation	3.139
Low Uncertainty / Positive History	2.139
Low Uncertainty / Negative History	2.222
High Uncertainty / Positive History	3.389
High Uncertainty / Negative History	2.583
Divisional Evaluation / Positive History	2.722
Divisional Evaluation / Negative History	2.139
Mixed Evaluation / Positive History	2.806
Mixed Evaluation / Negative History	2.667

**MARGINAL MEANS FOR
QUESTION #3 - COMPETITION**

Marginal Means	Attitude Score
Low Uncertainty	3.514
High Uncertainty	3.611
Divisional Evaluation	3.236
Mixed Evaluation	3.889
Positive History	3.486
Negative History	3.639
Low Uncertainty / Divisional Evaluation	3.444
Low Uncertainty / Mixed Evaluation	3.583
High Uncertainty / Divisional Evaluation	3.028
High Uncertainty / Mixed Evaluation	4.194
Low Uncertainty / Positive History	3.528
Low Uncertainty / Negative History	3.500
High Uncertainty / Positive History	3.444
High Uncertainty / Negative History	3.778
Divisional Evaluation / Positive History	3.222
Divisional Evaluation / Negative History	3.250
Mixed Evaluation / Positive History	3.750
Mixed Evaluation / Negative History	4.028

**MARGINAL MEANS FOR
QUESTION #4 - CONCILIATION**

Marginal Means	Attitude Score
Low Uncertainty High Uncertainty	3.389 3.931
Divisional Evaluation Mixed Evaluation	3.389 3.931
Positive History Negative History	3.528 3.792
Low Uncertainty / Divisional Evaluation Low Uncertainty / Mixed Evaluation High Uncertainty / Divisional Evaluation High Uncertainty / Mixed Evaluation	3.556 3.222 3.222 4.639
Low Uncertainty / Positive History Low Uncertainty / Negative History High Uncertainty / Positive History High Uncertainty / Negative History	3.333 3.444 3.722 4.139
Divisional Evaluation / Positive History Divisional Evaluation / Negative History Mixed Evaluation / Positive History Mixed Evaluation / Negative History	3.444 3.333 3.611 4.250

**MARGINAL MEANS FOR
QUESTION #5 - OPPORTUNITY**

Marginal Means	Attitude Score
Low Uncertainty	2.681
High Uncertainty	2.222
Divisional Evaluation	2.319
Mixed Evaluation	2.583
Positive History	2.528
Negative History	2.375
Low Uncertainty / Divisional Evaluation	2.417
Low Uncertainty / Mixed Evaluation	2.944
High Uncertainty / Divisional Evaluation	2.222
High Uncertainty / Mixed Evaluation	2.222
Low Uncertainty / Positive History	2.528
Low Uncertainty / Negative History	2.833
High Uncertainty / Positive History	2.528
High Uncertainty / Negative History	1.917
Divisional Evaluation / Positive History	2.528
Divisional Evaluation / Negative History	2.111
Mixed Evaluation / Positive History	2.528
Mixed Evaluation / Negative History	2.639

**MARGINAL MEANS FOR
QUESTION #6 - COMPATIBILITY**

Marginal Means	Attitude Score
Low Uncertainty	2.056
High Uncertainty	2.194
Divisional Evaluation	1.944
Mixed Evaluation	2.306
Positive History	2.097
Negative History	2.153
Low Uncertainty / Divisional Evaluation	1.889
Low Uncertainty / Mixed Evaluation	2.222
High Uncertainty / Divisional Evaluation	2.000
High Uncertainty / Mixed Evaluation	2.389
Low Uncertainty / Positive History	1.972
Low Uncertainty / Negative History	2.139
High Uncertainty / Positive History	2.222
High Uncertainty / Negative History	2.167
Divisional Evaluation / Positive History	2.056
Divisional Evaluation / Negative History	1.833
Mixed Evaluation / Positive History	2.139
Mixed Evaluation / Negative History	2.472

**MARGINAL MEANS FOR
QUESTION #7 - DIVISION SATISFACTION**

Marginal Means	Attitude Score
Low Uncertainty	2.181
High Uncertainty	2.083
Divisional Evaluation	1.875
Mixed Evaluation	2.389
Positive History	2.069
Negative History	2.194
Low Uncertainty / Divisional Evaluation	1.972
Low Uncertainty / Mixed Evaluation	2.389
High Uncertainty / Divisional Evaluation	1.778
High Uncertainty / Mixed Evaluation	2.389
Low Uncertainty / Positive History	2.139
Low Uncertainty / Negative History	2.222
High Uncertainty / Positive History	2.000
High Uncertainty / Negative History	2.167
Divisional Evaluation / Positive History	2.028
Divisional Evaluation / Negative History	1.722
Mixed Evaluation / Positive History	2.111
Mixed Evaluation / Negative History	2.667

**MARGINAL MEANS FOR
QUESTION #8 - COMPANY SATISFACTION**

Marginal Means	Attitude Score
Low Uncertainty	1.806
High Uncertainty	2.056
Divisional Evaluation	2.083
Mixed Evaluation	1.778
Positive History	1.986
Negative History	1.875
Low Uncertainty / Divisional Evaluation	2.000
Low Uncertainty / Mixed Evaluation	1.611
High Uncertainty / Divisional Evaluation	2.167
High Uncertainty / Mixed Evaluation	1.944
Low Uncertainty / Positive History	1.889
Low Uncertainty / Negative History	1.722
High Uncertainty / Positive History	2.083
High Uncertainty / Negative History	2.028
Divisional Evaluation / Positive History	2.333
Divisional Evaluation / Negative History	1.833
Mixed Evaluation / Positive History	1.639
Mixed Evaluation / Negative History	1.917

**MARGINAL MEANS FOR
QUESTION #9 - FAIRNESS**

Marginal Means	Attitude Score
Low Uncertainty	2.375
High Uncertainty	2.361
Divisional Evaluation	2.250
Mixed Evaluation	2.486
Positive History	2.431
Negative History	2.306
Low Uncertainty / Divisional Evaluation	2.111
Low Uncertainty / Mixed Evaluation	2.639
High Uncertainty / Divisional Evaluation	2.389
High Uncertainty / Mixed Evaluation	2.333
Low Uncertainty / Positive History	2.556
Low Uncertainty / Negative History	2.194
High Uncertainty / Positive History	2.306
High Uncertainty / Negative History	2.417
Divisional Evaluation / Positive History	2.389
Divisional Evaluation / Negative History	2.111
Mixed Evaluation / Positive History	2.472
Mixed Evaluation / Negative History	2.500

**MARGINAL MEANS FOR
QUESTION #10 - RELATIONSHIP**

Marginal Means	Attitude Score
Low Uncertainty	2.028
High Uncertainty	1.833
Divisional Evaluation	1.681
Mixed Evaluation	2.181
Positive History	1.903
Negative History	1.958
Low Uncertainty / Divisional Evaluation	1.722
Low Uncertainty / Mixed Evaluation	2.333
High Uncertainty / Divisional Evaluation	1.639
High Uncertainty / Mixed Evaluation	2.028
Low Uncertainty / Positive History	1.972
Low Uncertainty / Negative History	2.083
High Uncertainty / Positive History	1.833
High Uncertainty / Negative History	1.833
Divisional Evaluation / Positive History	1.694
Divisional Evaluation / Negative History	1.667
Mixed Evaluation / Positive History	2.111
Mixed Evaluation / Negative History	2.250

VITA

Theresa Beth Walter was born in Urbana, Ohio on September 17, 1957. She attended the Urbana and Champaign County public schools and graduated from Triad High School, North Lewisburg, Ohio in June of 1975. She entered Wittenberg University, Springfield, Ohio and received the Bachelor of Arts in Business Administration in June of 1979. After working in the accounting field for several years, she entered the Master of Business Administration program at Wright State University, Dayton, Ohio in June of 1984, and graduated with the M. B. A. degree in June of 1986. She was an Assistant Professor of Business Administration at Ohio Dominican College, Columbus, Ohio for one year before entering the doctoral degree program in accounting at The University of Tennessee, Knoxville in August of 1987. While at The University of Tennessee, she was a Graduate Teaching Assistant in the Department of Accounting and Business Law. From August 1991 through May 1994, she was an Assistant Professor of Accounting at Central Michigan University, Mount Pleasant, Michigan. She was an Adjunct Instructor of Business Administration at Wittenberg University, Springfield, Ohio from September 1994 to June 1995. She became a Certified Public Accountant (Ohio) in April of 1995. The Doctor of Philosophy degree in Accounting was received in August of 1995.