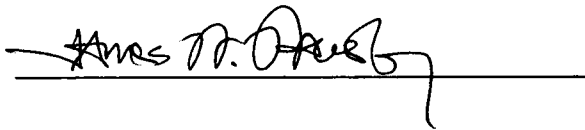


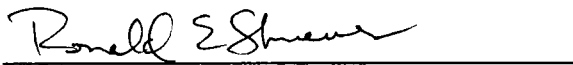
To the Graduate Council:

I am submitting herewith a dissertation written by Amitabh Shanker Dutta entitled "An Analysis of the Effects of Ownership Structure on Corporate Policy Choices." 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 Business Administration.


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AN ANALYSIS OF THE EFFECTS OF OWNERSHIP STRUCTURE
ON CORPORATE POLICY CHOICES

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Amitabh Shanker Dutta

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DEDICATION

This dissertation is dedicated to my parents
Shanker and Ruby Dutt
and to my wife and son
Manjushree and Kunal
whose love, faith and support
made it possible.

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ABSTRACT

The effects of ownership structure on corporate policy choices are examined. Insider holdings and institutional holdings are the two classes of corporate ownership and the policy choices studied are the levels of debt and dividend yield.

The analysis is conducted in three stages, namely, descriptive statistics analysis, panel data analysis, and three-stage least squares simultaneous system of equations regression analysis. A sample of 516 firms that have ownership data available over the period 1988 to 1994 is collected from Disclosure data base.

The results of the study show that a determination of the true relation between corporate ownership and corporate policy must include institutional ownership.

When the full sample of firms is examined, insider holdings shows no significant relation with either debt or dividend yield. Institutional ownership shows a strong negative relation with debt, and no significant relation with dividend yield.

On dividing the sample into sub-samples based on level of insider holdings, it is seen that a non-linear relation exists between corporate policy and insider holdings. At low levels, insider holdings has a negative relation with dividends and a positive relation with debt. At higher levels of insider

holdings, the relation between debt and insider ownership is negative, while the relation with dividends is now insignificant.

For the sample studied, the role of institutional ownership is not endogenous to the system, but more appropriately should be treated as an exogenous variable.

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CHAPTER 1

INTRODUCTION

1.1 Theoretical Background

Berle and Means (1932) were among the earliest researchers to refer to what is currently termed 'agency theory', namely the fact that managers may be regarded as agents managing a firm for the true owners, that is, shareholders. In the first chapter of their book "The Modern Corporation and Private Property", the authors discuss how the corporate form of organization has created "separation of ownership and control". Berle and Means also point out that there exist varying degrees of separation, and cite examples of corporations under majority control, minority control, and management control.

Jensen and Meckling (1976) develop a theory of the firm incorporating the effects of agency costs. They highlight the existing potential for shareholders having to bear the agency costs of managerial behavior, which is seen to be a declining function of the manager's share of firm equity. If management owns 100% of the firm's equity, there are no agency costs to the firm. The fact that managers hold less than 100% equity gives rise to the possibility that managers may engage in non-value maximizing (NVM) behavior, whether in the form of excessive perquisite consumption, or non-synergistic growth through diversification, mergers and acquisitions, or even

under-investment by passing up positive net present value (NPV) opportunities.

Since the Jensen and Meckling study, the literature on agency theory has been developed and enriched through several research streams. For instance, Fama and Jensen (1983) develop a theory of the organization as a nexus of contracts, both written and unwritten, and explore the optimal ways to control agency problems within different organizational forms. Research has focused on two issues as the prime sources of agency costs to shareholders:

- (1) management's decisions regarding capital structure and
- (2) allocation of cash flow.

Evidence shows that corporations differ greatly in their choice of financing and dividend policies. Firms may choose to operate with no debt in their capital structure (unlevered firms), or may opt to be highly leveraged. Some firms pay no dividends, others pay out practically all their earnings. Researchers have examined these two issues, the dividend and financing policies of firms, under several different hypotheses. One well developed hypothesis regarding observed choices is based on the concept of asymmetric information. The managers of a firm are privy to inside information regarding current (short term) profitability, as well as future (long term) prospects of the firm. Thus, they can convey this information to the market through the judicious use of dividend and financing policy choices.

Under the agency theory hypothesis, managers are assumed to be rational, utility maximizing individuals, who determine corporate policy based on self-serving desires. Hence, actions that maximize managerial utility do not necessarily maximize shareholder wealth. If the managers of a firm also have an ownership stake in their firm ("insider holdings"), they are more likely to maximize shareholder wealth. Individual shareholders, who are not involved in the day-to-day operations of a firm, are unlikely to influence corporate policies, unless they own sufficient stock to guarantee some degree of control over management [Shleifer and Vishny (1986)].

While earlier studies examine the relation between ownership structure and corporate policy, none examines the effect of the level of insider ownership on the debt structure and dividend policy of corporations. Also, prior research focuses primarily on insider holdings as the determining measure of ownership, whereas today institutional investors form a significant ownership block. Some recent studies examine the role of institutional ownership in determining corporate policy, but none analyze the interdependencies between these two important classes of ownership - insider holdings and institutional holdings, and the implications that potential interactions have on corporate policy choices¹.

¹ Bathala, Moon and Rao (1994) is one exception. However, this study is just a partial examination of the issue, as it uses just one year of data, and does not include dividend

1.2 Motivation and Relevance of This Research

Healy and Palepu (1989) state "Academic research has confirmed what practicing businessmen have long suspected- namely, that changes in corporate financial policies affect stock prices in systematic and thus fairly predictable ways". The authors go on to mention though that Wall Street analysts and corporate executives do not agree with finance scholars on the explanations for the market's responses to changes in corporate policy. Citing empirical research, Healy and Palepu then examine how investors view three events: (1) Dividend initiations (2) Stock offerings, and (3) Stock splits. While no obvious reasons can be identified why stock prices should be systematically affected by these corporate policy changes, the authors conclude that managers formulate corporate policy changes when they foresee changes in their companies' business risk or earnings levels. Sophisticated investors then incorporate such implied managerial forecasts into their own forecasts of a firm's future performance.

This dissertation examines the role that corporate ownership structure has on the choices of corporate policy. As Healy and Palepu (1989) outline, the two decisions of managers that generally have a significant impact on stock price are: (1) Choice of how much debt to hold in the firms' capital structure, and (2) Choice of how much of earnings to pay out as dividends, if any.

policy in the model.

The ownership structure of corporations has changed significantly in the last 10-15 years, with institutional holdings becoming a significant factor, especially in larger corporations such as Fortune 500 firms². Coffee (1991) points out that not all institutional investors are equal, and that pension funds are typically the most effective monitors. He attributes the trend of increased activism by institutional investors to their increased ownership of firm equity, which lowers the costs of monitoring relative to the benefits of monitoring. Smith (1996) details how one such institutional shareholder, California Public Employees Retirement System (CalPERS), influences corporate policy through shareholder activism³. Even institutions who do not engage in shareholder activism can show disapproval of management's policy choices by selling or reducing their stock ownership⁴.

A recent study by Noe and Rebello (1996) defines firms with high levels of insider holdings as managerially-

² Dutta, Dean and Collins (1996) find that average institutional shareholdings for a sample of 221 Fortune 500 firms over the period 1990-1994 is 56.2% (median 59.4%).

³ This study is discussed in more detail in Chapter 2.

⁴ Coffee (1991) refers to such action as an "exit" policy, i.e., institutional investors choosing to sell rather than use their "voice" to effect corporate governance changes. Lakonishok, Shleifer and Vishny (1992) find no evidence that institutional investors destabilize individual firm stock prices. However, they mention two caveats: (1) Their study uses quarters as the time frame of evaluation, and the results may differ measuring over shorter time intervals such as daily or weekly and (2) If demands for stocks are highly inelastic, then institutional trading could have large effects on stock price.

controlled firms; firms with high levels of institutional holdings are defined as shareholder-controlled firms. The authors show that dividend policy and the desire to seek external financing differs across firms, based on whether a firm is managerially-controlled or shareholder-controlled. Assuming that managers wish to engage in opportunism, managerially-controlled firms will prefer lower levels of outside financing and lower dividend payout. By not seeking external financing, they are insulated from the scrutiny and discipline of the capital market⁵. For the same reason, shareholder-controlled firms will prefer higher levels of debt and dividends, so that managers have to subject themselves to market discipline and/or commit themselves to paying out operating cash flows [Jensen (1986)]. Thus, institutional ownership in today's corporate America is a factor that affects managerial decisions⁶.

Besides the increasing importance of institutional ownership, research has documented a non-linear relation between ownership (defined as insider holdings) and firm value/corporate policy choices. Morck, Shleifer and Vishny (1988) document this non-linearity in a study of the relation between the market value of the firm (proxied by Tobin's q)

⁵ Demsetz (1983) discusses how capital markets discipline managers, who desire lowest cost financing of projects, through pricing of the firm's securities.

⁶ International corporations and institutional influence are beyond the scope of this dissertation and left for future study.

and insider holdings (defined as shares owned by the directors of the board). The authors find that Tobin's q increases over the insider holding range 0-5%, then decreases as insider holdings increase from 5-25%, and finally increases slightly as insider holdings rises above 25%.

Wruck (1989) examines the effect of insider holdings on the decision to raise private equity financing, as opposed to a public issue. This study finds that for a sample of firms announcing private equity sales, firm value increases when the level of insider holdings is either low or high. In a middle range of insider holdings, a private sale negatively affects firm value. The author performs sensitivity analyses to determine the appropriate bounds of this middle range of insider holdings. Results confirm the findings of Morck, Shleifer and Vishny (1988) that the 5% and 25% level of insider holdings best capture the non-linear effects.

Thus, current research on the impact of ownership structure on corporate policy must account for several factors: (1) the level of insider holdings will affect the observed relationships, (2) the level of institutional ownership and (3) the interaction between insider holdings and institutional holdings.

Contributing to both strands of ownership literature, this dissertation extends prior work examining the relation between ownership structure and corporate policy choices. This dissertation examines the non-linear nature of insider

ownership, by analyzing the effect levels of insider ownership have on debt and dividend policy. Earlier studies have not analyzed the level of ownership in their examination of the effects of insider holdings, but have primarily observed cross-sectional averages. By focusing on levels of ownership and the accompanying effect on capital structure and dividend policy, this dissertation provides a clearer picture of the existing relations. This analysis also extends the body of knowledge on agency theory, as it illuminates the fact that insider holdings is a two-edged sword. Agency theory postulates that higher levels of insider holdings align management's interests with that of other stockholders, and enhance firm value. Conversely, decreases in insider holdings imply a higher probability of management engaging in non-value maximizing (NVM) behavior. However, given that the relation between insider holdings and corporate policy is a function of the initial level or range, increases in insider holdings may lead to increases in NVM behavior, and vice versa.

The second area of contribution of this dissertation is the inclusion of the impact of institutional ownership in determining corporate policy. In addition to insider holdings and in keeping with prior research, the importance of institutional ownership on corporate policy choices is assumed to be increasing with their increasing level of equity ownership. Higher levels of institutional holdings should lead to increased monitoring of management, decreasing the

possibility of NVM behavior going undetected [Smith (1996), Agrawal and Mandelker (1990)].

Lastly, prior research demonstrates the simultaneity of the decisions management makes regarding debt and dividend policy [Ravid and Sarig (1991)], and the jointness of the relationship between insider holdings, debt and dividend policy [Jensen, Solberg and Zorn (1992)]. This dissertation extends the work of these earlier studies in two ways; first, by modeling the non-linear aspect of insider holdings, and second, by including institutional holdings in the model, given that currently institutional owners form a significant ownership block [Perlman (1993), Nesbitt (1994)].

1.3 Hypotheses to be Tested

Prior research and the scope of this dissertation lead to the following testable hypotheses.

Morck, Shleifer and Vishny (1988) document a non-linear relation between insider ownership and the market value of a firm. As Healy and Palepu (1989) state, a firm's stock price is related in a systematic manner to its corporate financial policies. Wansley, Collins and Dutta (1996a) document a non-linear relation between debt and insider holdings. Schooley and Barney (1994) and Wansley, Collins and Dutta (1996b) find a non-linear relation between dividends and insider ownership. Thus, the hypotheses H1a and H1b follow.

As insider holdings increase, debt initially increases. Using the concepts of the agency costs of debt and agency costs of equity developed by the Jensen and Meckling (1976) model, over an initial range of low insider holdings the agency cost of debt, on average, is lower than the agency cost of equity financing. Then, beyond five percent insider holdings, debt decreases with increases in insider holdings. Over a middle range of insider holdings, five to twenty-five percent, the agency costs of debt outweigh the agency costs of equity. When insider holdings is greater than twenty-five percent, the relation with debt is again positive.

H1a: There exists a non-linear relation between insider ownership and the level of debt a firm chooses to hold.

As the level of insider holdings increases, dividend yield decreases monotonically. Higher levels of insider holdings lead to lower levels of dividends paid. Wansley, Collins and Dutta (1996b) document this relationship, and posit that as insiders equity stake in the firm increases, they are reluctant to subject themselves to higher levels of taxable dividends. Alternately, Rozeff (1982) and Jensen, Solberg and Zorn (1992) hypothesize that insider holdings serve as a substitute agency cost-reducing mechanism for dividends.

H1b: There exists a non-linear relation between insider ownership and the dividend yield of a firm.

Prior research, as well as anecdotal evidence, indicates the current importance of shareholders in corporate America⁷. Noe and Rebello (1996) theorize that when a firm is shareholder-controlled (for example, institutional ownership), they will opt for higher levels of debt as well as dividends. The higher debt will ensure scrutiny of management by the capital market, while the higher pay out will prevent management from engaging in wasteful expenditure. Thus, a direct, positive relation is expected with both, and hypotheses H2a and H2b follow.

H2a: Institutional ownership will be significantly positively related to the level of debt that a firm chooses to hold.

H2b: Institutional ownership will be significantly positively related to the level of dividends that a firm chooses to pay out.

Given that prior research has not modeled the role of

⁷ In an extreme example, a group of disgruntled shareholders, unhappy about stock performance, banded together as a group named "Shareholders' Committee to Remove Entrenched and Arrogant Management" and ousted the Chairman and another director from the board of Talley Industries Inc. (The Wall Street Journal, June 5, 1997).

institutional ownership within a simultaneous system examining the impact of corporate ownership on choosing corporate policy, there is no empirical expectations on the role of such owners. There is theoretical ambiguity on the role of institutional ownership. The model of Shleifer and Vishny (1986) assumes a large shareholder's stake as exogenous, while Admati, Pfleiderer and Zechner (1994) develop a scenario whereby the level of equity holdings of an institutional investor (a mutual fund) is determined endogenously. Statistical testing of the regression models will determine whether there is empirical support for the following hypothesis.

H3: The role of institutional ownership is exogenous to the system of ownership and corporate policy choices.

1.4 Dissertation Outline

The dissertation is structured as follows. Chapter two presents a literature review, and discusses the current state of the literature in agency theory as it pertains to insider holdings, defined as the share of equity owned by the management of a firm. Chapter two also reviews the current state of the literature on institutional shareholdings. This chapter is divided into two parts. The first part reviews studies that have researched the relationship between insider holdings and performance, management buyouts, and corporate

policy choices. The second part reviews the literature on institutional holdings and discusses the rise and role of shareholder activism.

Chapter three presents the data and methodology. First the sample collection process is described. Then a framework for analysis is outlined. The variables to be used in the three-stage least squares regression analysis and the models to be tested are presented.

Chapter four discusses the results and findings of this study. First the descriptive statistics of the entire sample are presented. The sample is then divided into three sub-samples based on insider holdings, and descriptive statistics are presented. Next, panel data analysis is performed on a sample of eight firms that underwent extreme changes in ownership over the study period 1988 to 1994. Then the results of the three-stage least squares regression analysis are discussed and the model that most closely represents the true relation between ownership structure and corporate policy choices is identified.

Chapter five summarizes and concludes the dissertation. The implications of the findings of this dissertation for future research are discussed.

CHAPTER 2

LITERATURE REVIEW

This chapter is divided into two parts. The first part reviews the insider holdings literature. It discusses the impacts of such ownership on performance, valuation of the firm, management buyouts, debt and dividend policy. The second part reviews the literature on institutional holdings, which has primarily examined the role of such ownership in monitoring management.

2.1 Insider Holdings Literature

The studies reviewed here have investigated the relation between insider holdings and firm performance, firm value, debt and dividend policies.

Market valuation and performance studies are reviewed to summarize the findings by prior research on the relation between these and a firm's insider holdings. The implications for this dissertation are then highlighted.

The section on debt and dividends discusses prior research findings on the effect of insider holdings in determining the capital structure and payout policies of firms. Studies examining management buyouts are treated as a special case of extreme debt assumption and are reviewed separately. The findings of these earlier studies are

summarized and their applicability to this dissertation is discussed.

2.1.1 Performance

Since the Jensen and Meckling (1976) study, researchers have examined the impact of insider holdings on firm performance. While the approach towards testing this relation has been varied, in general the findings support the notion of insider holdings leading to better performance.

Mehran (1995) analyzes executive compensation structure for a random sample of 153 manufacturing firms, over 1979-1980. The study finds that the form of incentives motivates managers to maximize firm value, rather than the level. Results show firm performance is positively related to the level of insider holdings, as well as the percentage of executive compensation that is equity-based. The results also show that firms with higher insider holdings or outside blockholders use less equity-based compensation, while firms with more outside directors use more equity-based compensation.

Khanna and Poulsen (1995) study a sample of firms filing for Chapter 11 to determine whether management engaged in NVM behavior, thus causing financial distress. The actions of managers of sample firms for the 3-year period prior to bankruptcy filing are compared with a control sample of better performing firms. The results show both sets of managers make

similar decisions, that is, neither set is seemingly engaging in NVM behavior. The study controls for both managerial turnover and insider holdings. Thus, the authors conclude that, for their sample of firms, insider holdings do not lead to NVM behavior nor to subsequent bankruptcy.

Gilson (1990) examines changes in corporate ownership post-bankruptcy or debt restructuring. For a sample of 111 publicly traded firms that filed for bankruptcy, or restructured their debt, over the period 1979 to 1985, the author finds that bankruptcy or private restructuring leads to a significant reduction in incumbent directors (54%), lower insider holdings and increased blockholdings. These results indicate that post-default, the market believes blockholders' abilities to manage corporate assets are greater than those of the new management team.

Saunders, Strock and Travlos (1990) in a study of bank risk taking and ownership structure, hypothesize that managerially-controlled banks will be less inclined to take risks compared to stockholder-controlled banks. The authors analyze a sample of banks, in a period of relative deregulation, and find support for this hypothesis⁸.

Loderer and Sheehan (1989) investigate the stock selling behavior of insiders prior to bankruptcy in a sample of firms filing for bankruptcy, to gauge the relation between insider

⁸ It should be noted that in some cases, a propensity for lower risk-taking need not necessarily be the optimal value-maximizing strategy. See for example, May (1995).

holdings and the decline in equity value. The authors find that insider holdings of bankrupt firms are not lower than the level of insider holdings in a control sample; moreover, the levels and changes in holdings show that the insiders of bankrupt firms do not 'bail out' prior to bankruptcy.

Agrawal and Knoeber (1996) is a recent study that casts doubt on the relation between firm performance and insider holdings. The authors examine seven mechanisms to control agency problems between managers and shareholders, namely: insider holdings, institutional holdings, large blockholders, use of outside directors, debt policy, the managerial labor market, and the market for corporate control. Tobin's q is chosen as a proxy for firm performance. For a sample of 383 firms in 1987, results show that a weakly positive relation between insider holdings and performance in OLS regression analysis becomes insignificant when the relationship is modeled as a system of simultaneous equations with the seven control mechanisms as the endogenous variables. The authors state that cross-sectional OLS regressions of performance with single dependent variables may lend support to spurious significant relations⁹.

While Mehran (1995) provides the most direct support for a positive relation between insider holdings and performance, Khanna and Poulsen (1995) and Loderer and Sheehan (1989)

⁹ Two points should be noted as a caveat to this study's findings: (1) Besides Tobin's q , no other performance measure is tested and (2) The study is based on a single year's data.

demonstrate that NVM behavior on the part of insider owners do not contribute to financial distress. Agrawal and Knoeber (1996) caution against accepting a spurious relation between performance and insider holdings¹⁰.

This dissertation also concurs with prior research in hypothesizing a direct, positive relation between insider holdings and firm performance. However, there is a caveat to the above, which differs with the research efforts reviewed above. The caveat is the relation is non-linear, as will be elaborated on in the next section.

2.1.2 Market Valuation

Studies have also focused on the relation between insider holdings and the market valuation of the firm. These studies directly bear on the dissertation's contention of a non-linear relation between insider holdings and firm performance.

Morck, Shleifer and Vishny (1988) model the relation between the market value of the firm (proxied by Tobin's q) and insider holdings. The authors define insider holdings as shares owned by directors of the board, with a minimum stake of 0.2% of total shares outstanding. The authors report a non-linear relation exists, with Tobin's q first increasing (over the 0-5% insider holding range), then decreasing (5-25%

¹⁰ This dissertation includes Tobin's q as a proxy for a firm's growth options and uses it as a control variable. For firm performance, the ratio of operating income to total assets is used.

insider holding range), and then increasing slightly as board director ownership rises above 25%¹¹.

McConnell and Servaes (1990) in an extension of the Morck, Shleifer and Vishny study, examine the relation between equity ownership by corporate insiders and institutional investors and the value of the firm. This study, while confirming the non-linear relation, finds only one breakpoint such that the relationship is curvilinear. Tobin's q first increases, until insider holdings is approximately 40-50%, and then slopes downward¹². A significant, positive relation between Tobin's q and institutional holdings is also found¹³.

These two studies emphasize that the relation between

¹¹ The authors explain this phenomenon by hypothesizing that over the middle range of insider holdings (5-25%), there exists the possibility of managerial entrenchment, whereby the costs to managers of NVM behavior on their equity holdings are outweighed by the benefits of such behavior. For a theoretical development of the managerial entrenchment hypothesis, see Shleifer and Vishny (1989).

¹² This result supports the theoretical framework developed by Stulz (1988), which analyzed the value of a firm with respect to the proportion α of the voting rights controlled by insiders. As α is critical in determining the probability and the outcome of a hostile takeover attempt, insiders of potential target firms who value control will increase α . This increase can impact firm value either positively or negatively, depending on the initial level of α . A target firm's value is increasing in α , as the expected premium of a successful takeover bid is increasing; however, the probability of a successful bid is decreasing in α . The potential increase in firm value is bounded by α equal one-half, when no bid would succeed.

¹³ Several studies document the positive relation between firm value and large shareholders and/or blockholders, e.g. Shleifer and Vishny (1986), Holderness and Sheehan (1985), and Holderness and Sheehan (1988), amongst others.

insider holdings and the market's valuation of a firm is non-linear. Given that the market is rational, the valuation of a firm should be based on the current period performance plus the potential for future performance. Hence, this non-linearity that the above studies have documented between insider holdings and valuation can be extended to the relation between insider holdings and current period performance, as proxied by current period earnings. The sample of firms for this study are tested to check whether the breakpoints in insider holdings agree with the Morck, Shliefer and Vishny study or the McConnell and Servaes study¹⁴.

2.1.3 MBOs, LBOs, and Recapitalizations

Several studies analyze the announcement effects and post operating performance of management buyouts (MBOs) and leveraged buyouts (LBOs). These studies focus attention on the impact of insider holdings on firm performance, after the firm undergoes a drastic change in the level of debt in its capital

¹⁴ In this context, an interesting result is provided by Wruck (1989). This study examines the effect of insider holdings on the decision by firms to raise private equity financing, as opposed to a public issue. The announcement of a private sale shows a 4.5% increase in nonparticipating shareholder wealth, compared to a 3% decline on the announcement of a public sale of equity. However, firm value increases only when insider holdings is low or high; for some middle range of insider holdings a private sale negatively impacts firm value. Wruck performs sensitivity tests across a broad range of insider holdings to determine these breakpoints; her findings show that the 5% and 25% level of insider holdings best capture this non-linear relation between insider holdings and firm value changes on the announcement of a private equity sale.

structure.

Lehn and Poulsen (1989) examine the sources of gains from going private transactions, in a test of Jensen's (1986) free cash flow (FCF) hypothesis. For a sample of 263 going private transactions between 1980 to 1987, findings reveal a significant relation between undistributed cash flow and the decision to go private, thus supporting the FCF hypothesis. The results are stronger over the sub-period 1984 to 1987. Interestingly, this study finds that shareholders of firms with lower insider holdings prior to the going private decision, earn a higher premium. This implies that while higher insider holdings may benefit shareholders in ordinary circumstances, it is a disadvantage if management wishes to take a publicly traded firm private, as higher insider holdings leads to a smaller premium to outside shareholders.

Baker and Wruck (1989) use the case study method to analyze the post LBO performance of O. M. Scott & Sons Co. The managers of Scott and a firm specializing in LBOs, Clayton & Dubilier (C&D), jointly purchased Scott and W. Atlee Burpee Company from ITT. C&D acquired 61.4% of the shares, while 17.5% of equity were held by Scott management and employees¹⁵. Post-buyout, Scott had 91% debt in its capital structure. This study finds significant performance improvements due to changes in the incentive, monitoring, and

¹⁵ The CEO plus seven other top managers jointly owned 11.6% (Table 6).

governance structure of the firm. In the 21 months following the buyout, Scott's sales increased 25%, and EBIT was up by 56%. The authors state this dramatic improvement is not a result of changes in R&D and advertising expenditures, nor to short-term value reducing measures to generate cash flow. The pressure of insider ownership, combined with the burden of servicing the high debt lead to this performance improvement.

Smith (1990) examines the changes in post operating performance of a sample of MBOs and finds a similar significant increase in operating returns between the year before and the year after the MBO. The sample consists of 58 publicly-held firms that underwent an MBO over the period 1977 to 1986. This increase is not attributable to layoffs, reductions in advertising, maintenance and repairs, R&D, or property, plant, and equipment. Thus, it is concluded that the increase in operating efficiency is due to the improved management incentives, namely, corporate ownership.

Denis (1994) compares the LBO of Safeway Stores with the leveraged recapitalization of Kroger Co. to determine the impact of organizational form on highly leveraged transactions (HLTs). Safeway and Kroger, two firms in the grocery store industry, both received buyout offers from Kohlberg, Kravis and Roberts (KKR). While KKR succeeded in taking Safeway private, Kroger resisted their offer and chose to undergo a leveraged recapitalization. Both firms ended up with greater than 90% debt in their capital structure. Kroger had little

change in managerial ownership or board composition, while Safeway's LBO led to higher managerial holdings plus majority ownership and majority board representation by KKR. Kroger's insider holdings changed from 1.4% pre-recap to 3% post-recap. In comparison, Safeway's insider holdings changed from 0.7% pre-LBO to 10.3% post-LBO. Besides, executive compensation (salary, bonus and stock options) is linked more closely to firm performance at Safeway, while Kroger's HLT did not change any of these control dimensions. The study finds that Safeway's management is more efficient in generating cash flow than Kroger's, concluding that insider holdings and equity-based managerial incentives do impact post HLT performance.

The above studies prove that given an extremely high debt load, the spur of high insider holdings causes management to improve firm performance. This result also agrees with the finding of Agrawal and Knoeber (1996), that debt needs to be controlled for in any examination of insider holdings and performance. This dissertation treats both debt policy and insider holdings as jointly determined, thus controlling for this finding of a positive relation by prior research.

2.1.4 Debt and Dividends

Researchers study the effects of insider holdings on dividend policy, corporate debt and corporate financing

choices¹⁶. Jensen (1989) states that corporations are increasingly seeking capital as public or private debt, rather than public equity. Prior research shows that the choice of financing impacts the valuation of common stock significantly. As insider holdings increase, managers are expected to optimize corporate policy decisions, as increases in firm value will translate into personal wealth increases through their equity stake.

Noe and Rebello (1996) define firms with high level of insider holdings as managerially-controlled firms; firms with high levels of institutional holdings are defined as shareholder-controlled firms. The authors develop a model and show that dividend policy and the desire to seek external financing differs across firms, based on whether a firm is managerially-controlled or shareholder-controlled. Noe and Rebello emphasize the importance of the locus of decision control in a firm. The authors model two alternatives - either a large shareholder is in control or management is in control. It is assumed that management is trying to engage in opportunism, and will try to earn managerial rents if they are in control. The authors show that financial policies of a firm should differ radically across these two control scenarios. As debt financing strengthens shareholders'

¹⁶ Books and articles have explored the relationship between capital structure and managerial incentives. One such example is Grossman and Hart (1982).

negotiating position, they prefer debt; for the same reason managers would rather avoid issuing debt. However, in the presence of asymmetric information, the model shows that shareholder control leads to lower debt, lower outside equity and lower dividend payout in an effort to minimize mispricing losses. Conversely, manager-controlled firms avoid such losses by increasing dependence on debt and outside capital, and paying out higher dividends.

Constantinides and Grundy (1989) develop a model based on private information possessed by management driving their financing choices. Given that insiders are the best judge of whether the firm's securities (debt or equity) are under- or over-priced, the overpriced security will be issued. The authors show that a fully revealing equilibrium is reached when a firm issues a security for an amount greater than that required to invest in a new project and must use the excess proceeds to repurchase outsiders' equity. In such a scenario, overstating the value of the newly-issued security is counter-productive to the value of managements' stake in the firm. Thus, insider holdings drive management to seek optimal financing choices.

Kim and Sorenson (1986) test for the existence of agency costs of debt [Jensen and Meckling (1976)] and the effect of insider holdings on the debt policy of a firm. The authors split a sample of firms based on insider holdings into heavy insider ownership (more than twenty-five percent equity) and

low insider ownership (less than five percent). The mean insider holdings for these two groups are 43% and 2%, respectively. ANOVA comparison of debt ratios across these two groups for the years 1978, 1979 and 1980 show that high insider holding firms have significantly higher debt in all three years. Then the authors run OLS regressions with debt as the dependent variable, and control for firm size as a determinant of debt. The results show that high insider holdings lead to greater levels of corporate debt as compared to firms with low insider holdings. The authors state that this may be interpreted as signifying the existence of lower agency costs of debt or the higher agency costs of equity for high insider holdings firms. Alternately, regardless of any agency-related optimal behavior, high insider holdings firms may finance growth through debt simply to avoid diluting their control over the firm.

Ofek (1993) examines the relation between capital structure and response to short-term financial distress. In a sample of firms that perform poorly for a year, the author finds that higher predistress leverage leads to a greater probability of operational actions such as dividend cuts, asset restructuring or layoffs. This is consistent with Jensen's (1989) hypothesis of leverage leading to quicker firm responses. However, this study finds that higher insider holdings reduce the probability of operational actions - which agrees with the Jensen, Solberg, and Zorn findings that higher

levels of insider holdings, on average, result in lower levels of debt.

Bagnani, Milonas, Saunders and Travlos (1994) examine the effect of insider holdings and the risk premium paid on corporate bonds. The authors hypothesize that initially higher insider holdings aligns managements' interests with that of shareholders, at the expense of bondholders. However, at greater levels of insider holdings, managements' wealth portfolio is so highly concentrated in the firm, that managers become more risk averse, and their interests are aligned more closely to that of bondholders. This study finds a positive relation between bond return premia and insider holdings in the low to medium range (5% to 25%) and weak evidence for a nonpositive relation when insider holdings is greater than 25%.

McConnell and Servaes (1995) in a study of the relation between equity ownership, leverage, and firm value report that debt policy and equity ownership differ across high-growth and low-growth firms. The value of low-growth firms is positively correlated with leverage, and the distribution of equity across insider holdings, institutional holdings, and blockholdings across low-growth firms is more significant than for high-growth firms.

Schooley and Barney (1994) report a nonmonotonic relation between CEO stock ownership and dividend yield. The results show that dividend yield is initially decreasing as CEO stock

ownership increases, with the minimum dividend yield occurring when CEO ownership is approximately 14.9%. Beyond this level, increases in ownership lead to increases in dividend yield. The authors state that the turning point is the level of stock ownership at which the CEO becomes "entrenched"¹⁷.

Crutchley and Hansen (1989) test whether insider holdings lead to lower agency costs by analyzing the relation between leverage, dividend policy and insider holdings. The authors find that higher earnings volatility is positively related to higher insider holdings, larger dividends and lower debt. On the other hand, if managers face lower costs of diversification, it leads to higher insider holdings, lower dividends, and lower debt. The authors conclude that managers control agency costs through financial policy trade-offs.

Jensen, Solberg and Zorn (1992) analyze the determinants of cross-sectional differences in insider holdings, debt and dividend policies of firms. The authors contend that these three policies are related, both directly and indirectly, with the operating characteristics of firms. This is the first study to explicitly state that while prior research assumes insider ownership to be an exogenous determinant of debt and/or dividend policy, rightfully it should be treated as a variable that is endogenously determined by many of the same firm-specific attributes that affect debt and dividend policy.

¹⁷ Wansley, Collins and Dutta (1996b) document a significant non-linear relation between insider holdings and dividend yield and insider holdings and dividend payout.

The interdependence of insider holdings, debt and dividend policies is tested for by the authors in a simultaneous equations framework, namely, three-stage least squares (3SLS). Two years of data are tested, 1982 and 1987. In contrast to Kim and Sorenson (1982), the results show a negative relation between insider ownership and debt. The authors argue higher insider ownership should have lower agency costs of equity and higher agency costs of debt - the exact opposite of the Kim and Sorenson study. This anomaly could be a result of two factors: (1) Kim and Sorenson perform only a single equation OLS regression, which does not capture the true nature of the relation between insider holdings and debt, or (2) Jensen, Solberg and Zorn do not control for the level of insider holdings being a factor in determining the true relation between these two attributes¹⁸. Insider holdings is also seen to be significantly negatively related to dividend payout. This finding supports Rozeff (1982), who proposed that high insider holdings acts as a substitute for dividends as a agency cost reducing benefit. Also, the authors state that insiders may be choosing to realize capital gains over taxable dividends.

This dissertation follows the approach proposed by Jensen, Solberg and Zorn and asserts that corporate ownership choices and corporate policy choices are determined

¹⁸ The average insider holdings for their sample is 15.2%, which places it midway between the Kim and Sorenson sub-samples of below 5% and above 25% insider holdings.

simultaneously. Currently, the level of insider holdings, institutional holdings, and the interdependencies that these ownership blocks exert on each other are pertinent to a firm's choice of corporate policy. Most prior research has examined the relation between ownership and corporate policy in the 1980s; but current research in this area must factor in the influence of institutional ownership¹⁹.

The above literature review on prior research on insider ownership does however indicate two factors that this dissertation needs to incorporate or control for in its empirical design:

- (1) The results on the relation between insider holdings and debt is mixed. Kim and Sorenson (1982) find a significantly positive relation, while Jensen, Solberg and Zorn (1992) document a significantly negative one. This arises due to the differences in the manner of empirical testing employed. This dissertation will shed further light on this issue as it examines the effect of the level of insider holdings, as well as models the relation in a simultaneous equations framework.
- (2) The relation between insider holdings and dividends is seen to be negative [Jensen, Solberg and Zorn (1992)], but

¹⁹ Nesbitt (1994) notes that in 1993 institutional investors collective ownership of the U.S. equity market crossed 50%, with the 50 largest pension funds total assets close to \$1 trillion. More illuminating about the importance of institutional investors in today's market is the fact that these owners now account for 80% of all shares traded.

the relation is non-monotonic [Schooley and Barney (1994), Wansley, Collins and Dutta (1996b)]. As with debt, after determining the appropriate non-linear breakpoints for insider holdings for the sample of firms under study, this non-linearity is controlled for in examining the relation between dividends and ownership.

Besides furthering the understanding of the mixed results documented by prior research on the relation between insider holdings and corporate policy, the direct hypotheses that will be tested are as under:

H1a: There exists a non-linear relation between insider ownership and the level of debt a firm chooses to hold.

H1b: There exists a non-linear relation between insider ownership and the dividend yield of a firm.

2.2 Institutional Ownership Literature

Institutional ownership of corporate common stock has increased tremendously over the past decade. Today, institutional investors are the largest owners of common equity of publicly traded companies in the United States [Pozen (1994), Nesbitt (1994)], especially amongst Fortune 500 firms [Dutta, Dean and Collins (1996), Wohlstetter (1993)]. Besides the fact that institutional investors now own a

majority of corporate voting stock, there is an increasing trend towards shareholder activism on the part of these owners. Thus, any examination of the true nature of the relation between corporate ownership and corporate policy choices currently has to incorporate the impact of this significant ownership block, namely, institutional ownership. First, a review of the theoretical role of institutional investors is undertaken. Next, a brief outline of the rise and potential of shareholder activism is discussed. Finally, empirical evidence examining the impact of institutional ownership on corporate management is reviewed.

2.2.1 Theoretical Approach

Two papers are reviewed below that have both developed a theoretical model on the role of a large shareholder (read institutional investors) in improving firm performance. One makes a case for such ownership to be exogenous, while the second study proposes a scenario where such ownership is endogenous.

One of the earliest studies to incorporate the essence of the potential importance of high institutional holdings was Shleifer and Vishny (1986). In their analysis, a large shareholder is beneficial for other atomistic shareholders, as they perform the function of monitoring managers. The presence of the large shareholder overcomes the free rider problem, and increases the likelihood that ineffective managers are

disciplined in the market for takeovers. Also, the threat of a takeover leads to an improvement in firm performance. By virtue of its' high ownership, the large shareholder is seen to reap sufficient benefit on the increase in value of its' equity holdings to more than offset the costs incurred in monitoring management behavior. In their model, the authors assume investors to be risk neutral, and the large shareholder's ownership as being exogenously determined.

Admati, Pfleiderer and Zechner (1994) also develop a model wherein a large shareholder has to weigh the costs and benefits of monitoring management of the firms in its' portfolio. The most salient differences between this model and the earlier Shliefer and Vishny one are: (1) The monitoring activity is modeled in a portfolio setting with multiple risky securities, (2) Investors are assumed to be risk-averse, and (3) The model, while developed with the level of ownership being given exogenously, presents a simple example whereby the large shareholder's level of ownership is determined endogenously. This example (section VI) is particularly pertinent to the issue under study by this dissertation - as it assumes the large shareholder to be an institutional fund representing a group of small investors, who can choose between investing through the fund or investing directly on their own.

Thus, there exists theoretical ambiguity on the role of institutional ownership in its efforts to monitor management

behavior. Given the simultaneous framework of analysis in determining the relation between ownership and corporate policy, the implications are that institutional ownership could be endogenous (that is, a dependent variable), or it could be exogenous to the system (an explanatory variable only).

2.2.2 Brief History of Shareholder Activism

Black (1992), in an examination of institutional investors and corporate governance, presents a thorough and cogent argument for moderate political reform requiring U.S. corporate managers to share power with institutional shareholders. The author states that shareholders, even institutional investors, are generally weak and passive. He contends that this passivity is enforced by legal rules that hinder institutional oversight and control of corporations. Moreover, corporate managers reinforce this passivity by opposing legal reform, raising the specter of powerful institutions running amuck, gaining control of corporate America and causing irreparable financial damage²⁰. Black proposes a sharing of power which he terms "institutional voice", a state midway on a continuum with passivity as one

²⁰ Wohlstetter (1993), in an extreme opinion of this view states, "...we are headed straight for bureaucratic control of corporate America", and "In sum, we have a group of people with increasing control of the Fortune "500" who have no proven skills in management, no experience at selecting directors, no believable judgement in how much should be spent for research or marketing...".

extreme and institutional control as the other extreme. This approach is validated by an enumeration of the potential costs and benefits, as the expected gains outweigh the expected costs.

Pozen (1994) presents a more detailed, "nuts and bolts" analysis of the costs and benefits of shareholder activism. The author stresses the fact that the results of activism are not easy to interpret. Two factors play a role in the difficulty of assessing the benefits of shareholder activism: (1) Many issues involving activist behavior, such as better procedures for corporate governance, are difficult to link directly to financial returns, and (2) Even if a firm's stock price increases post-activist behavior, there is still some doubt as to whether such intervention caused the price increase²¹. As far as the costs of activism are concerned, while these are more easily calculable, the problem of who should bear them arises. Moreover, there exists a potential downside risk of litigation against the institutional investor by the portfolio firm, when the costs of activism increase substantially. The author then ranks a list of issues in decreasing importance to institutional investors for shareholder activism and at the same time offers different modes and levels of potential intervention. He then presents advice to corporate executives on how to diffuse and avoid

²¹ This point is elaborated on by the author in a chronology of an institutional shareholder's campaign against Sears from November 1990 to September 1992.

potential shareholder activism behavior. In Pozen's analysis, "shareholder activism is the best strategy in very few cases".

Perlman (1993) states "Shareholder activism is fundamentally a good thing for corporate America", though the author cautions that "The greatest threat to shareholder activism lies in it becoming trivialized". The author is Chairman and CEO of Ceridian Corporation, a \$900 million spin-off of Control Data. In the early 1980s, Control Data was a \$3 billion company, which during the 80s lost 90% of its shareholder value. The mismanagement led to the firm being ultimately divided into two separate entities, of which Ceridian was one. Perlman makes a case for management cooperating with its largest shareholders, which in most firms are the institutional investors. 75% of Ceridian stock is owned by institution, the ten largest owners holding over 50%. As the author notes, public and private institutions own between 50% to 60% of the market capitalization of all listed firms in the U.S. - and the sooner that corporate management realizes the importance of such ownership, the better.

Skowronski and Pound (1993) is a case study of Lockheed Corporation's response to an active individual investor's attempt to wrest control of the firm from incumbent management. The investor, Harold Simmons, acquired 20% of Lockheed's stock and mounted a proxy challenge during the 1990 annual meeting. Though the challenge was defeated, management was amazed at the significant support of Simmons by investors,

including some leading active institutional investors. The firm's investor relations activities had always been viewed positively by the market. The authors point out that Lockheed, as most other big corporations, had always focused on investor communications being targeted towards financial analysts, who were presumably communicating to shareholders. This incident stressed the importance of management opening direct communication with its largest owners, the institutional investors. Lockheed decided to take a pro-active stance, and promised to involve institutional owners in changing the status quo. The two most significant issues that were decided to embark on were: (1) The board of directors would be expanded to include one to three outside directors and (2) An ongoing process to solicit shareholder input on major corporate issues. For the first pledge, the authors document the process of director selection, in which the institutional owners also participated, that culminated in four outside directors being added to the board. The second pledge was initiated as an ongoing series of individual meetings with major shareholders throughout the year, in addition to regular quarterly reviews held in New York and Boston for shareholders and analysts. The authors state "shareholder feedback provided valuable inputs for Lockheed's decisions on dividends and the structuring of a major share repurchase program". Management's response to the concerns of institutional owners led to the firm being praised by CalPERS in 1992, a leading opponent in

the 1990 proxy contest. In conclusion, this case study suggests that firms may benefit from re-examining policy in response to any owner concerns, and that extensive consultation with responsive institutional investors should not be equated with losing control of the firm.

Nesbitt (1994), in addressing the issue of whether shareholder activism by CalPERS has resulted in shareholder value being created, reports a fundamental change in the focus of activist behavior over time. In the study period 1987 to 1992, CalPERS targeted 42 firms for various issues that it felt needed addressing. While all the firms targeted underperformed the market, not all successful initiatives resulted in an excess return over market on the firm's stock. Further analysis shows that the initiatives can be divided into two broad categories, those that focused on changes in technical issues such as anti-takeover devices, and those that were concerning purely poor operating and stock performance. The latter initiatives lead to CalPERS earning significant positive abnormal returns. Also, the data show that CalPERS has shifted its' focus over time. From 1987 to 1989, firms were targeted for issues such as poison pills and confidential voting. Since 1990, poor performance has been practically the sole reason for activist behavior²².

Thus, shareholder activism has arisen out of two primary

²² Wahal (1996) also documents a similar trend in a change of focus for shareholder activism in a study of nine pension funds, including CalPERS.

causes: (1) The increase in institutional ownership, which has increased the benefits of monitoring and activism relative to its cost and (2) The perception of such owners that management is not responsive to their needs and concerns. The majority of activist behavior is trending towards a focus on poor performance, an area with potential for rich rewards to the institutional owners. Managers are understandably reluctant to allow institutional owners to control corporate policy [Wohlstetter (1993)], though some are advocating the benefits of working together with such owners [Perlman (1993), Skowronski and Pound (1993)]. While the cost-benefit tradeoffs of shareholder activism are open to debate [Black (1992), Pozen (1994)], current research must incorporate institutional ownership in any study examining the relation between corporate ownership and corporate policy choices.

2.2.3 Empirical Research

Most of the empirical research on institutional ownership has examined its' role in monitoring management behavior. As Nesbitt (1994) noted, in the 1980s such monitoring focused on getting management to rescind anti-takeover protections, and only recently have several studies analyzed the impact of institutional ownership on corporate performance. After reviewing prior literature, the implications of this literature review for this dissertation are discussed.

Agrawal and Mandelker (1990) test the role of

institutional holdings in monitoring when managers propose amending corporate charters to include antitakeover defenses. Two hypotheses are proposed, namely the 'passive voting hypothesis' and the 'active monitoring hypothesis'. The passive voting hypothesis implies no relation should exist between institutional holdings and the stock price reaction to announcements of antitakeover charter amendments. The active monitoring hypothesis predicts a positive relation between institutional holdings and stock price effects of such announcements. The study finds support for the active monitoring hypothesis, and the results hold after controlling for insider holdings and firm size.

Brickley, Lease and Smith (1988) examine the monitoring role of institutional holdings by examining voting patterns on corporate proposals of antitakeover amendments. The results support the premise of active monitoring, as institutional investors are shown to vote more often on such amendments. Also, institutional opposition is greatest when the proposal is harmful to stockholders, supporting the Shleifer and Vishny hypothesis. The authors show that institutions that are less subject to management control are more likely to oppose management²³.

A recent study by Karpoff, Malatesta and Walkling (1996) examines the empirical evidence on the effect of shareholder

²³ Gordon and Pound (1993) also show that ownership structure significantly impacts the outcome of shareholder sponsored proposals to change corporate governance structure.

initiatives on corporate governance issues. The sample consists of 583 shareholder proposals initiated at 290 firms traded on the NYSE, ASE and Nasdaq, over the period 1986 to 1990. The sample is partitioned based on the type of issue raised and the type of the proposer, whether the sponsor is a public or a private institution, an individual investor, or if joint sponsors initiate the proposal. Standard event study methodology is used to test for abnormal stock returns around three event dates: (1) Wall Street Journal announcement (2) Proxy mailing date and (3) Shareholder meeting date. The results show that, on average, shareholder initiated proposals have negligible valuation effects. The only potential positive abnormal return is when a proposal is successful, that is, receives a majority of votes. On further examining the 22 proposals that were successful at 15 firms, the authors find no significant returns. In conclusion, the authors state that for their sample, shareholder activism is unproductive - that such activity does not enhance firm value, does not improve performance, and has no influence on firm policies.

Smith (1996) is the first study to examine in detail the process and outcome of management monitoring by a large institutional shareholder. The author examines how the California Public Employees Retirement System (CalPERS), the single largest institutional investor in America today, selects and pursues corporate managements to influence change. This process is referred to as 'shareholder activism'. Results

show that over the period 1988 to 1994, CalPERS successfully settled with 72% of the firms it targeted. The cost of this activism is estimated to have been \$3.5 million, which resulted in stock price gains of about \$19 million. Firms that agreed to/settled with CalPERS demands of changes in corporate governance and/or policy earned significantly positive stock price gains, while firms that resisted CalPERS experienced significantly negative abnormal stock price effects. One interesting point in the process of selecting firms as targets by CalPERS is that if a firm has high insider holdings, they do not pursue an explanation of poor performance. By implication, CalPERS equates high insider holdings with the idea that managers are not engaging in NVM behavior²⁴.

Wahal (1996) examines nine of the most active public pension funds shareholder activism and its impact on firm performance over the period 1987 to 1993. He supports the findings of Nesbitt (1994) that the focus of shareholder activism has changed from governance related proxy proposals to one more concerned with poor financial performance (which he terms nonproxy proposal targetings). This study's findings are similar to Karpoff, Malatesta and Walkling (1996), that no significant abnormal returns are earned to institutional

²⁴ While one possible reason for CalPERS not to target such firms is the low likelihood of successful conflict resolution, the study gives no indication that this is the case. If CalPERS believed high insider holdings firms to be NVM, it is reasonable to expect that it would "vote with its' feet".

owners who engage in activism. However, he does find that institutions initiatives against the subset of firms targeted solely for poor financial performance experience a significant positive wealth effect. However, on examining the long-term performance of firm stock post-activism behavior, it is found that there is no improvement. The author concludes that the results do not support the premise that pension fund activism improves firm performance.

Bathala, Moon and Rao (1994) investigate the effect of institutional ownership on debt policy and insider holdings, in a simultaneous system of equations (two stage least squares). The sample consists of 516 firms with ownership data available for 1988. The mean insider holdings for the sample is 16.1%, and the mean institutional holdings is 38.8%. After controlling for size, the authors report that institutional holdings is negatively related to the level of debt and the level of insider holdings in the firm. They conclude that institutional ownership reduces agency costs as it effectively monitors management. While this is a commendable first effort in examining the interaction of institutional ownership and insider holdings on corporate debt policy, there are several shortcomings to this study. First, the study uses just one year of data, 1988, to arrive at its results and conclusions. Also, it makes no allowance for the fact that the level of insider holdings impacts corporate policy choices. Lastly, as demonstrated theoretically by Ravid and Sarig (1990) and

empirically by Jensen, Solberg and Zorn (1992), corporate decisions on debt and dividend policies are made simultaneously; the study fails to include the impact of dividend policy in its analysis.

The above literature review poses two issues for this dissertation:

- (1) Institutional ownership may be exogenous to the system of ownership's impact on corporate policy choices [Shliefier and Vishny (1986)] or it may be endogenous to it [Admati, Pfleiderer and Zechner (1994)].
- (2) The impact of shareholder activism is ambiguous, both from a theoretical perspective [Black (1992), Pozen (1994)] as well as empirical evidence [Agrawal and Mandelker (1990), Karpoff, Malatesta and Walkling (1996), Nesbitt (1994), Smith (1996)]. Though there is some evidence that activist behavior focused solely on performance results in initial gains, no long-term benefits seem to accrue to institutional owners [Wahal (1996)]. On the other hand, individual cases reflect a growing attitude amongst top managers that institutional owners are here to stay [Perlman (1993)] and also that the process of allowing such owners to participate in corporate policy making can be beneficial to all the parties involved [Skowronski and Pound (1993)].

This dissertation will be the first study to tie together

the findings of prior research on both classes of ownership that are significantly involved in corporate policy choices in today's America - insider owners and institutional owners. It will do so by examining the joint effect of these two classes of owners on the level of debt and dividend policy in a simultaneous equations framework. The fact that insider holdings has a non-linear relation with firm performance and policy choices will be examined in the regression analysis. Lastly, this dissertation will examine whether institutional ownership is endogenous or exogenous to the framework of ownership and corporate policy choices.

The direct hypotheses that will be tested by this dissertation are:

H2a: Institutional ownership will be significantly positively related to the level of debt that a firm chooses to hold.

H2b: Institutional ownership will be significantly positively related to the level of dividends that a firm chooses to pay out.

H3: The role of institutional ownership is exogenous to the system of ownership and corporate policy choices.

CHAPTER 3

DATA AND METHODOLOGY

This chapter discusses the collection of data and the methodology used to conduct the analyses. The period of study is from 1988 to 1994, and the screening process leads to a final sample of 516 firms. The study progresses through these stages: (1) Descriptive statistics are examined (2) Eight firms that saw extreme changes in ownership are studied in detail, and (3) The relation between corporate ownership and corporate policy are analyzed in a simultaneous regressions analysis framework.

3.1 Data Collection²⁵

Insider and institutional holdings data for a sample of firms over the period 1988 to 1994 are taken from Disclosure's CD-ROM files. All firms in regulated industries such as banking and electric utilities are deleted [Bradley, Jarrell and Kim (1987)], as regulators generally perform the function of monitoring management. Each firm is required to have insider holdings data available for at least five of the seven years of the study period, resulting in an initial sample of 1,085 firms. Next, each firm is required to have institutional

²⁵ The screening process which results in the final sample of 516 firms over the period 1988 to 1994 is presented as Table 1. All tables may be found in Appendix B.

holdings data for at least five of the seven years of the study period, reducing the sample size to 897 firms²⁶. In collecting the percentage of institutional holdings, no attempt is made to separate the types of institution²⁷. Then, all firms are required to have at least five years of data for each of the variables used in the empirical analysis, reducing the sample to 573 firms. Lastly, given that industry effects need to be controlled for, the sample is grouped by two-digit SIC codes. Then, each industry is required to have data available for at least five firms to be included in the study [Jensen, Solberg and Zorn (1992)]. This reduces the final data set to 516 firms. Financial information for the sample firms is from Standard and Poor's COMPUSTAT tapes for the period 1988 to 1994.

3.2 Framework of Analysis

The analysis proceeds in three stages, after the sample is collected. The first stage involves calculating descriptive statistics, and determining if the sample exhibits a non-linear relation between insider holdings and corporate policy.

²⁶ The smallest number of firms in any one year is 810, and the maximum number of firms in a year is 930. Requiring the firms to have institutional data for each year, drastically reduces the sample size.

²⁷ Disclosure reports the level of all institutional holdings jointly, including pension funds, banks, trusts, and mutual funds. While individual institutional holdings are also mentioned, an examination of individual institutional types is beyond the scope of this dissertation.

The second stage of analysis is a detailed examination of eight firms that underwent extreme changes in ownership over the study period, 1988-1994. The firms are chosen such that two firms saw a big increase in insider holdings, two firms a big decrease in insider holdings, two firms underwent a big increase in institutional holdings, and two firms a big decrease in institutional holdings. This in-depth examination leads to some inferences regarding the regression analysis results. The third stage involves an examination of the relation between corporate ownership structure and corporate policy in a simultaneous equations system, namely, three-stage least squares (3SLS) regression analysis.

3.2.1 Stage I: Descriptive Statistics

The first stage involves looking at the descriptive statistics of the entire sample of 516 firms, and subsequently at three different subsets created by splitting the sample based on level of insider holdings. Table 2 Panel A presents a description of the dependent and explanatory variables that will be used in the regression analysis, along with their mean, median, lower and upper quartile values, minimum and maximum value for the entire sample of firms. Next, given that prior research [Morck, Shleifer and Vishny (1988), Wruck (1989)] documents a non-linear effect between insider holdings and firm value, the sample of firms is divided into three groups based on insider holdings: (1) below five percent

insider ownership, (2) insider holdings between five to twenty-five percent, and (3) insider holdings above twenty-five percent. The results are presented as Table 2, Panels B, C, and D, respectively.

Significance difference of means tests are used to verify whether the levels of insider holdings exhibit a non-linear relation between insider holdings and corporate policy choices. The results are presented as Table 3.

Figure 1 shows how the mean insider holdings and institutional holdings changed on an annual basis over the study period, 1988 to 1994. As is evident, institutional ownership has steadily increased, as insider ownership declined.

3.2.2 Stage II: Panel Data Analysis

The second stage of the analysis involves a detailed examination of a small sample of firms that underwent an extreme change in either insider holdings or institutional shareownership over the study period from 1988 to 1994. This case study approach is undertaken to glean some insight into changes in corporate policy that accompany changes in corporate ownership. It is a first step in examining the impact of institutional ownership on corporate policy choices, a topic that has not previously been empirically examined.

The process of identifying eight firms to examine in depth, using panel data format, is as follows:

First, for each firm ratios are created to measure the percentage change in insider holdings and institutional holdings.

Insider holdings change = $[(PCTHOLD_{1994} - PCTHOLD_{1988}) / PCTHOLD_{1988}]$

Institutional holdings

change = $[(PCTINST_{1994} - PCTINST_{1988}) / PCTINST_{1988}]$

These ratios are used to list four samples each:

Sample 1 - firms with the greatest percentage decrease in institutional holdings.

Sample 2 - firms with the greatest percentage increase in institutional holdings.

Sample 3 - firms with the greatest percentage decrease in insider holdings.

Sample 4 - firms with the greatest percentage increase in insider holdings.

The first approach to selecting the two firms to examine in each sub-sample is to simply take the two with the greatest percentage increase or decrease in ownership. However, given that the study sample includes a range of small firms, the problem of data availability arises. Thus, for firms in these four samples, the initial year (1988) and terminal year (1994) size is listed as the dollar value of total assets. Two of the larger firms in each sample are selected for examining in

depth. As larger firms have more public data available, scrutinizing corporate events as ownership structure changes is more likely to offer discernible patterns and motives tying together ownership and corporate policy. The list of eight firms is attached, along with company highlights over the study period, as Appendix A.

This detailed analysis, coupled with the findings of prior research, will help in determining what the expected relations between the endogenous variables of the simultaneous regression analysis should be.

3.2.3 Stage III: 3SLS System of Equations

The last stage of the analysis models the simultaneity of decisions regarding ownership, capital structure, and dividend policy. It extends the prior research of Jensen, Solberg and Zorn (1992) by including institutional ownership as a significant factor in determining the relation between ownership structure and corporate policy choices. Also, the question whether institutional ownership is endogenous or exogenous to the system is determined.

The 3SLS system is modeled in three stages. First a base case result is obtained for the entire sample of firms with a three equation simultaneous system - model 1. Next the system is augmented by including institutional ownership as an exogenous variable (explanatory variable) - model 2. Lastly, institutional ownership is treated as an endogenous variable

(dependent variable) by modeling the system as a four equation system - model 3. The results of model 2 and model 3 regressions are compared to determine whether institutional ownership functions as an endogenous variable, or is purely an explanatory variable in its relation with corporate policy choices. The models are evaluated using Bozdogan's Information Complexity (ICOMP) Criteria (1988, 1990a, 1990b), which has been designed to compare multivariate linear and non-linear models and determine the model that best fits observed data. The measure ICOMP is calculated using three elements of the model, namely, its lack of fit, level of parsimony, and complexity of the model.

This analysis sheds new light on the role of institutional ownership, by determining whether such ownership is endogenous or exogenous to management's decisions regarding corporate policy.

Then, to check whether the non-linear relation between insider ownership and corporate policy choices exists for this sample, the data is divided into three sub-samples based on insider holdings. The most appropriate regression model is then used to run 3SLS regressions on each sub-sample of firms.

3.3 Framework for Regression Analysis

The following section starts by defining the three simultaneous equations models to be tested. Then the criteria for model selection is outlined. Finally, the variables to be

used in the regression analysis are defined.

3.3.1 Model Definition

The regression analysis is performed in a simultaneous system of equations framework. As prior research has demonstrated, ownership and corporate policy choices are determined contemporaneously. This study looks at a time frame of seven years, from 1988 to 1994. First, the three models are run using the entire sample of firms. Next, the sample is divided into three sub-samples, based on the level of insider holdings. The sub-samples are (1) Insider holdings less than five percent, (2) Insider holdings equal to or greater than five percent but less than twenty-five percent and (c) Insider holdings greater than or equal to twenty-five.

The first model is a replication of earlier research [Jensen, Solberg and Zorn (1992)], which has modeled the relation between ownership and corporate policy as a three equation system. The three endogenous variables are insider holdings, dividend yield, and the debt ratio²⁸. The second model incorporates institutional ownership as a new explanatory variable in the three structural equations. The third and last model treats institutional ownership as an endogenous variable and the simultaneous system of equations

²⁸ Using dividend yield, instead of dividend payout, is the only difference between model 1 and the Jensen, Solberg and Zorn model. Restricting the sample to only firms that had positive operating income leads to severe selection bias.

is modeled as a four equation system. The four endogenous variables are insider holdings, institutional ownership, dividend yield, and the debt ratio.

Model 1

The first model is a three equation system, with dividend yield, debt ratio, and insider ownership as the three endogenous variables. The model is:

$$\begin{aligned} \text{Debt ratio} &= f(\text{Dividend yield, Insider holdings,} \\ &\quad \text{Profits, R\&D, Size, Tobin's } q, \text{ Fixed} \\ &\quad \text{assets}) \end{aligned}$$

$$\begin{aligned} \text{Dividend yield} &= f(\text{Debt, Insider holdings, Profits, R\&D,} \\ &\quad \text{Size, Tobin's } q) \end{aligned}$$

$$\begin{aligned} \text{Insider holdings} &= f(\text{Dividend yield, Debt, Profits, R\&D,} \\ &\quad \text{Size, Tobin's } q) \end{aligned}$$

Model 2

The second model is an augmented three equation system, with dividend yield, debt ratio, and insider ownership as the three endogenous variables. A new variable, institutional ownership, is introduced as an explanatory variable into each of the three structural equations of Model 1. The model is:

$$\begin{aligned} \text{Debt ratio} &= f(\text{Dividend yield, Insider holdings,} \\ &\quad \text{Profits, R\&D, Size, Tobin's } q, \text{ Fixed} \end{aligned}$$

assets, Institutional ownership)

Dividend yield = $f(\text{Debt, Insider holdings, Profits, R\&D, Size, Tobin's } q, \text{ Institutional ownership})$

Insider holdings = $f(\text{Dividend yield, Debt, Profits, R\&D, Size, Tobin's } q, \text{ Institutional ownership})$

Model 3

The last model takes the variable, institutional ownership, and treats it as an endogenous variable. Thus, the system is modified into a four equation system, with dividend yield, debt ratio, insider ownership, and institutional ownership as the four endogenous variables. The model is:

Debt ratio = $f(\text{Dividend yield, Insider holdings, Profits, R\&D, Size, Tobin's } q, \text{ Fixed assets, Institutional ownership})$

Dividend yield = $f(\text{Debt, Insider holdings, Profits, R\&D, Size, Tobin's } q, \text{ Institutional ownership})$

Insider holdings = $f(\text{Dividend yield, Debt, Profits, R\&D, Size, Tobin's } q, \text{ Institutional ownership})$

Institutional ownership = $f(\text{Dividend yield, Debt, Insider holdings, Profits, R\&D, Size, Tobin's } q)$

Expected signs on regression model variables

Based on the literature review of prior research, both theoretical and empirical, the following signs denote the expected relationships across the structural equations to be

tested in the regression analysis:

$$\begin{array}{rcl}
 & & \begin{array}{cc} (-) & (?) \end{array} \\
 \text{Debt ratio} & = f(\text{Dividend yield, Insider holdings,} & \\
 & \begin{array}{ccccc} (-) & (-) & (+) & (+) & (+) \end{array} & \\
 & \text{Profits, R\&D, Size, Tobin's } q, \text{ Fixed} & \\
 & \begin{array}{c} (+) \end{array} & \\
 & \text{assets, Institutional ownership)} & \\
 & & \begin{array}{cccc} (-) & (-) & (+) & (-) \end{array} \\
 \text{Dividend yield} & = f(\text{Debt, Insider holdings, Profits, R\&D,} & \\
 & \begin{array}{ccc} (+) & (-) & (+) \end{array} & \\
 & \text{Size, Tobin's } q, \text{ Institutional ownership) & \\
 & & \begin{array}{cccc} (-) & (-) & (+) & (+) \end{array} \\
 \text{Insider holdings} & = f(\text{Dividend yield, Debt, Profits, R\&D,} & \\
 & \begin{array}{ccc} (-) & (+) & (-) \end{array} & \\
 & \text{Size, Tobin's } q, \text{ Institutional ownership) & \\
 & & \begin{array}{ccc} (+) & (+) & (-) \end{array} \\
 \text{Institutional} & = f(\text{Dividend yield, Debt, Insider holdings,} & \\
 & \begin{array}{cccc} (+) & (+) & (+) & (+) \end{array} & \\
 \text{ownership} & \text{Profits, R\&D, Size, Tobin's } q) &
 \end{array}$$

3.3.2 Model Selection

After the 3SLS regressions have been performed, this dissertation determines whether, for this data set, the

institutional ownership variable is endogenous or exogenous to the system. It is possible that where the relation between ownership structure and the choice of corporate policies are concerned, institutional ownership may be an endogenous, or dependent, variable, that is, such ownership has an effect on the system being studied and is affected by the system. On the other hand, institutional ownership may function as an exogenous, or independent, variable, having an effect on the system but not affected by the system.

The simultaneous regression analysis makes three important contributions over the results reported by prior research [Kim and Sorenson (1986), Jensen, Solberg and Zorn (1992), Bathala, Moon and Rao (1994)].

First, new light is shed on the contradictory results reported on the relation between insider holdings and debt by examining the relationship in a simultaneous equation framework while controlling for the non-linear effect of insider holdings.

Second, the true impact of ownership on debt and dividend policy choices is explored by including institutional ownership into the framework of analysis.

Third, given the possibility that the role of institutional ownership in the system under study may be endogenous (dependent variable) or exogenous (independent variable) to the system, this dissertation statistically determines the role that this ownership plays.

The method of determining the above is done by statistical model selection, using the informational approach proposed by Bozdogan (1988). This is the most appropriate test given the nature of the model, a multivariate simultaneous system of equations. Bozdogan's (1988, 1990a, 1990b) Informational Complexity Criterion, ICOMP, is designed for "model selection in general multivariate linear and nonlinear structural models" [Bearse, Bozdogan and Schlottmann (1997)].

3.3.3 Bozdogan's Informational Complexity (ICOMP) Criterion²⁹

The ICOMP criterion is designed to test the lack of fit of a particular model to a given data set. Given several different multivariate linear (and non-linear) structural models, this measure estimates the lack of fit for each model. The model with the lower ICOMP is chosen to be the best model, that is, the model most likely to reflect the true relationship between the endogenous and exogenous variables.

The ICOMP measure is based on van Emden's (1971) covariance complexity measure. The design of ICOMP is to estimate a loss function for each model tested where:

$$\text{Model} = \text{Signal} + \text{Noise}$$

$$\begin{aligned} \text{and Loss} = & \text{Lack of fit} + \text{Lack of Parsimony} \\ & + \text{Profusion of Complexity} \end{aligned}$$

²⁹ The following is cited from Bozdogan (1997), Bearse, Bozdogan and Schlottmann (1997) and Bearse and Bozdogan (1997), by permission of Dr. Hamparsum Bozdogan.

For this study, the ICOMP is operationalized using the estimated inverse-Fisher information matrix (IFIM), which is also known as the Cramer-Rao lower bound matrix.

ICOMP is calculated using the system-weighted R^2 of the 3SLS regression and $\text{Cov}(\theta^*)$, the covariance matrix of the parameter estimates, as under:

$$\text{ICOMP}(\text{IFIM}) = - N \cdot \log(1-R^2) + 2 \cdot C_1(\text{Cov}(\theta^*))$$

where

N = Total sample size

$$C_1(\text{Cov}(\theta^*)) = 0.5s \cdot \log[(\text{tr Cov}(\theta^*)) / s] - 0.5 \cdot \log(\det \text{Cov}(\theta^*))$$

$$s = \dim(\text{Cov}(\theta^*)) = \text{rank}(\text{Cov}(\theta^*))$$

$$\det \text{Cov}(\theta^*) = \text{determinant}(\text{Cov}(\theta^*))$$

In the above equation, the first term, $- N \cdot \log(1-R^2)$, measures the lack of fit of the model. The second term, $C_1(\text{Cov}(\theta^*))$ represents an information-theoretic maximal complexity measure of $\text{Cov}(\theta^*)$, the covariance matrix of the parameter estimates of the 3SLS regression system of equations.

For the sample of firms in the study period from 1988 to 1994, 3SLS regression is performed with institutional holdings as a purely exogenous variable (3 equation system, with debt, dividend, and insider holdings as the endogenous variables). Then a regression with institutional holdings as an endogenous variable (4 equation system, with institutional holdings as the fourth endogenous variable) is performed. The ICOMP

measure will determine which model, the 3 equation model or the 4 equation model, is a better fit of the data. Evaluating the models solely on the basis of the lack of fit (the first term) would be inaccurate, as the more complex the model the worse the fit. This means that the 3 equation model will always have a better fit (that is, a lower "lack of fit" figure) than the 4 equation model. ICOMP controls for this effect with the second term, which compensates for the complexity of a model being tested. Thus, the role of institutional ownership may be seen to be either exogenous or endogenous.

3.4 Prior Expectations On the Role of Institutional Owners

As the literature review in chapter 2 revealed, there is considerable ambiguity about the manner in which institutional ownership accumulates, as also the role that institutional ownership plays in its effect on corporate management and corporate policy choices.

Shleifer and Vishny (1986) develop their model of a large shareholder, assuming that the ownership is "given", that is, exogenously determined. Admati, Pfleiderer and Zechner (1994) theorize about an institutional fund as a large shareholder representing a group of small individual investors, and demonstrate that such ownership would be determined endogenously.

Noe and Rebello (1996) theorize about the relationship

between institutional ownership, insider holdings, debt and dividend policy. The authors show that dividend policy and the desire to seek external financing differs across firms, based on whether a firm is managerially-controlled or shareholder-controlled. As managers are self-seeking opportunists, they will finance growth with internally-generated funds, to avoid submitting themselves to the evaluation of the capital market. This implies firms with higher insider holdings will have lower levels of debt, as well as lower levels of dividend payout. Shareholder-controlled firms will prefer higher levels of debt and dividends, so that managers have to subject themselves to market discipline and/or commit themselves to paying out operating cash flows [Jensen (1986)].

Skowronski and Pound (1993) state that in the case of Lockheed Corporation, management uses its largest institutional shareholders advice on matters relating to dividends, share repurchase, and debt structure. Yet, no prior research exists to determine whether Lockheed is an isolated example, or whether more and more corporations are inviting institutional shareholders to offer their inputs.

Also, the role that institutional owners see themselves playing has changed over time. As Nesbitt (1994) reports, from 1987 to 1992 CalPERS underwent a major shift in the issues that it focused on for targeting firms. While the late 1980s saw more concern with governance issues such as poison pill adoptions, from the 1990s, the primary concern has been on

poor financial performance³⁰.

Thus, there is no clear cut prior expectations on the role of institutional holdings in the joint determination of corporate ownership and corporate policy.

A point worth noting is that prior research demonstrates that institutions differ in their interactions and relationships with insiders³¹. Thus, while the level of institutional ownership matters, it is possible that the entire block may not act as one. Individual institutional owners, however, could express displeasure with insiders and/or corporate policy choices by simply selling their shares.

3.5 Dependent Variables

The four dependent variables for the system of simultaneous equations that will be modeled in the 3SLS regressions are:

Debt ratio - ratio of long term debt to total assets.

This measure is chosen as Jensen, Solberg and Zorn (1992) state a market value debt ratio can potentially create

³⁰ The same trend for CalPERS is also reported by Smith (1996), and a similar trend for a sample of nine pension funds (including CalPERS) is reported by Wahal (1996).

³¹ A more detailed analysis of institutional ownership by type of institutions is beyond the scope of this dissertation. This is planned as a potential extension for future research.

spurious relationships.

Dividend yield - ratio of dividends per share to price per share.

This measure is chosen as a payout ratio (dividends paid over operating income) would be meaningless for firms with negative operating income, and excluding such firms leads to a sample selection bias.

Insider holdings - ratio of common shares owned by officers and directors to total shares outstanding.

Institutional
holdings - ratio of common shares owned by
institutions to total shares
outstanding.

3.6 Explanatory and Control Variables

Prior research documents the fact that the level of debt and dividend yield of a firm is related to several exogenous variables in a systematic fashion, for example, size and industry. Hence, if these are not controlled for, no meaningful causalities can be interpreted amongst the endogenous variables. The explanatory and control variables

included in the regression analysis are:

Profits - ratio of operating income to total assets.

While this is a control variable for level of debt and dividend yield, it is included as a measure of profitability and serves as an explanatory variable.

Logsize - natural log of total assets.

As per prior research, the natural log of the size proxy is taken to control for the highly skewed nature of this variable.

R&D expenses - ratio of R&D expenses to total assets.

The R&D variable was missing for 120 firms in the sample (Table 2 Panel A). For firms missing R&D expenses, the average R&D for the industry was substituted. This is borrowed from Jensen, Solberg and Zorn (1992).

Tobin's q - ratio of replacement value of assets to book value of assets.

Tobin's q is calculated using the approximation developed by

Chung and Pruitt (1994). This is included as a control variable for growth. Noe and Rebello (1996) suggest Tobin's q as a control variable, proxying for potential managerial rents.

Fixed assets - ratio of net fixed assets to total assets.

This is only relevant as a control variable in the debt equation.

Industry dummies - Twenty three industry dummies are created, based on two-digit SIC codes. They take the value of 1 if a firm is in a given industry, zero otherwise.

Only those industries with five or more firms are retained in the sample.

All the above variables are created based on prior research. For example, Jensen, Solberg and Zorn (1992) employ profits, logsize, R&D expenses, fixed assets, and the industry dummies in their study of corporate policy and ownership. The variables are created as averages over the study period, 1988 through 1994, with each firm having between five and seven years of data.

CHAPTER 4

EMPIRICAL RESULTS

4.1 Descriptive Statistics

The sample consists of 516 firms in 23 unregulated industries that have insider ownership and institutional ownership data available over the period 1988 to 1994. Each industry has at least five firms in the sample.

Table 2 presents the mean, median, upper and lower quartile, minimum and maximum values for the variables used in the 3SLS regression analysis. The sample mean for insider ownership is 20.61%, and the mean institutional ownership is 34.96%. The firms provide an average dividend yield of 1.59% and carry an average debt of 15.73% of total assets. Profits are 12.13% of total assets, where total assets are an average of \$ 1.08 billion³².

Prior research demonstrates that the level of insider ownership has an effect on firm value and corporate policy choices. The data for this study is similarly analyzed to test for conformity with prior results.

Based on prior research [Morck, Shleifer and Vishny (1988), Wruck (1989)], the appropriate levels of insider holdings that best capture the non-linear effect of insider

³² It should be noted that average total assets is a highly skewed variable, as is shown in Table 2, Panels B, C and D.

holdings is five percent and twenty-five percent. Thus, the entire sample of firms is divided into three sub-samples based on insider holdings. The three sub-samples created are insider holdings less than five percent (109 firms, Table 2 Panel B), insider holdings five percent or greater, but less than twenty-five percent (235 firms, Table 2 Panel C), and insider holdings twenty-five percent or greater (172 firms, Table 2 Panel D).

4.2 The Three Sub-samples of Firms

The descriptive statistics of these three sub-samples are analyzed to verify differences in profitability, debt, dividend policy across groups.

Firms with insider holdings less than five percent are the largest firms in the sample, with average total assets of over \$3.7 billion. Sample mean insider holdings is just 2.34%, with mean institutional ownership of 55.72%. The firms pay the highest average dividend yield (2.62% of common share price) and have the highest level of debt (18.25% of total assets). They also have the highest average profitability (15.34%).

Firms with insider holdings five percent or greater, but less than twenty-five percent have average firm total assets worth \$521 million. Sample mean insider holdings is 13.99%, with mean institutional ownership of 35.91%. The firms have a lower average dividend yield (1.32% of common share price) and have a lower level of debt (14.43% of total assets). Average

profitability for firms in this group is about 33% lower (10.46%, as compared to 15.3% for firms with less than five percent insider ownership).

Firms with insider holdings twenty-five percent or greater comprise the smallest firms in the data set, with average total assets worth just \$147 million. Firms have on average 41.23% insider ownership, and 20.5% institutional ownership. Dividend yield is almost the same for this group compared to the second one (1.31% of common share price) while level of debt is marginally higher (15.93%). Profitability, on average, is 12.4%, which places it between the two previous sub-samples of firms.

4.3 Comparing the Sub-samples of Firms

Table 3 presents results of significant differences of means tests performed between the sample of firms with less than five percent insider holdings (Groups I) and the sample of firms with insider holdings between five and twenty-five percent (Group II). Similar tests are performed between the sample of firms with insider holdings between five and twenty-five percent (Group II) and the sample of firms with insider holdings greater than twenty-five percent (Group III), as well as between Group I and Group III. The results confirm that insider ownership has a non-linear relation with corporate policy choices. Profitability is seen to differ across groups, insider holdings does not have a monotonically increasing

relation with firm profitability. Also, level of debt and dividend yield differ significantly across groups.

4.3.1 Firm Profitability

Group II firms, those with insider holdings between five and twenty-five percent, have significantly lower profits than firms in groups I and III. Thus, when insider ownership increases from less than five percent to any level below twenty-five percent ownership, the firm performs worse, on average. This is contrary to what agency theory postulates. The same applies in reverse, that is, when insider ownership drops from above twenty-five percent to any level greater than five percent, conventional theory states that firm performance should suffer - but that is not supported by the sample of firms in this study. The average profitability of firms with less than five percent insider holdings is significantly higher than the average for firms with twenty-five percent or greater insider holdings.

The above results support the model of managerial entrenchment developed by Shleifer and Vishny (1989), with the range of entrenchment being insider holdings between five and twenty-five percent.

4.3.2 Dividend Yield

Dividend yield, on the other hand, has a monotonically decreasing relationship with insider holdings. Group I firms

provide the highest level of dividend yield, on average dividends paid per share are 2.62% of the common share price. Group II firms offer a significantly lower dividend yield of 1.32%. Group III firms provide a dividend yield of 1.31%, almost identical to the yield of Group II. The yield of Group III firms is significantly lower than that provided by Group I firms.

4.3.3 Debt Ratio

Group I firms have the highest level of debt in their capital structure, an average of 18.25% of total assets. Group II firms, those with insider holdings between five and twenty-five percent, choose to carry a significantly lower amount of debt, 14.43% of total assets. The level of debt opted for by group III firms, is only marginally higher than the average of group II, and the difference is not significant. Nor is the level of debt of Group III firms significantly different from that of Group I firms.

4.3.4 Implications of the Descriptive Statistics Analysis

The above descriptive statistics analysis confirms that the sample under study does exhibit the non-linear effect of insider holdings documented by Morck, Shleifer and Vishny (1988) and Wruck (1989). Besides profitability, the non-linearity is also confirmed to exist between insider holdings and corporate policy choices, namely level of debt and level

of dividend yield³³. Thus, this non-linearity may explain the difference in the results of Kim and Sorenson (1986) and Jensen, Solberg and Zorn (1992). To determine the true nature of the relation between ownership structure and corporate policy choices, this non-linear effect must be controlled for in regression analysis.

4.4 Panel Data Analysis

The second stage of analysis revolves around identifying eight firms that experienced extreme changes of ownership; two each that saw significant decreases in institutional and insider ownership, respectively, and two each that saw significant increases in institutional and insider ownership, respectively. These firms are then examined to identify if any patterns exist between changes in ownership and changes in corporate policies.

This case study approach is applied to the sample under study primarily to observe what, if any, changes in corporate financial policies accompany changes in institutional ownership. While prior research has studied the relation between insider holdings and both debt and dividend policies, no study has looked at institutional ownership in this regard. Conventional wisdom holds that institutional owners seek

³³ The non-linear relation between debt and insider holdings is also reported by Wansley, Collins and Dutta (1996a). The non-linear relation between dividends and insider holdings is reported by Schooley and Barney (1994) and Wansley, Collins and Dutta (1996b).

regular dividends, and this in turn reinforces a short-term focus by corporate management. Theoretically, Noe and Rebello (1996) state that institutional ownership should lead to higher dividend payout and higher level of debt financing. So this analysis is a first step in determining the true nature of the relation between institutional ownership and corporate policy.

In the context of this dissertation, it is felt that eight firms, two in each sub-sample of ownership change, is the optimal number to conduct a detailed examination. As sample sizes of two are too small for statistical tests of significance, panel data analysis is an alternative way to evaluate changes in corporate policy as ownership changes. While one drawback is that no causality can be inferred, this analysis can be summarized to indicate the expected relation between the variables of interest in the regression modeling analysis.

In determining which eight firms to examine from the study sample of 516 firms, there are several ways that the firms could be chosen. However, given that the main attribute of interest for this sub-sample is a change in the level of ownership, it is logical to stratify the sample based on the percentage change in ownership over the study period, 1988 to 1994. Thus, this process identifies the firms with the most extreme decreases and increases in both institutional ownership and insider ownership. If there is any potential

pattern to changes in ownership and changes in corporate policy, firms that experienced extreme changes in ownership are most likely to reveal the same.

4.4.1 Choosing the Sample

From the data set of 516 firms, eight firms are chosen to examine in depth, using panel data format. These firms have been identified as having undergone extreme changes in ownership over the course of the study period, 1988 to 1994. First, ratios are created to measure the percentage change in insider holdings and institutional holdings as follows:

Insider holdings change = $[(PCTHOLD_{1994} - PCTHOLD_{1988}) / PCTHOLD_{1988}]$

Institutional holdings

change = $[(PCTINST_{1994} - PCTINST_{1988}) / PCTINST_{1988}]$

These ratios are used to list four samples of twenty firms each:

Sample 1 - firms with the greatest % decrease in institutional holdings.

Sample 2 - firms with the greatest % increase in institutional holdings.

Sample 3 - firms with the greatest % decrease in insider holdings.

Sample 4 - firms with the greatest % increase in insider holdings.

While selecting the two firms to examine in each sub-

sample, taking the two with the greatest percentage increase or decrease in ownership leads to a data availability problem. Thus, for firms in these four samples, the initial year (1988) and terminal year (1994) size is listed as the dollar value of total assets. Two of the larger firms in each sample are selected for examining in depth to ensure that public data is available. Appendix A gives details of the eight firms, along with a brief mention of significant events that occurred for these firms over the study period, as their ownership structure changed.

While every firm has some unique characteristics that are particular to its own history, there are interesting insights to be gained from dissecting similarities/dissimilarities across firms with extreme changes in ownership.

4.4.2 Institutional Ownership Changes

The business press in recent years has bemoaned the "short-sightedness" of corporate America, with its supposedly myopic focus on short-term profits, namely, quarterly profits and regular dividends. In this regard, institutional owners have been cited as a prime reason for this "short-term-itis", with their supposed need for consistent earnings payout.

4.4.2.1 Decreased Institutional Ownership

Of the twenty firms identified that had the greatest decrease in institutional ownership between 1988 to 1994, the

two firms chosen to analyze are Arco Chemical Company and National Sanitary Supply Company. Table 4 shows pertinent corporate financial information for each year in the study period for these two firms.

Arco Chemical Company: News and Events³⁴

Arco Chemical Company (ARCO) manufactures and markets intermediate chemicals and specialty products used in a broad range of consumer goods. It also markets industrial chemicals. This firm is majority owned by Atlantic Richfield Company, which admittedly leaves a very minor portion of its shares available to the general public. However, the firm saw its institutional ownership nearly halved from 16.11% in 1988 to 8.18% in 1994.

Over this period, ARCO ratcheted up its dividend payout, with a 25% increase in 1988, followed by a 150% increase in payout in 1989. From a dividend payout ratio of 4.3% of earnings in 1988, ARCO paid 39.15% of earnings as dividends in 1994. Given the belief that institutional owners are looking for regular cash dividends, the above facts would indicate an increase in institutional shareholdings - or at least continuing ownership. There is no further change in payout from 1990 to 1994, but ARCO continues to make quarterly

³⁴ The data reported on all the eight firms has been collected by scanning the Wall Street Journal, Annual Reports, and corporate filings such as 10-Ks, 10-Qs etc. on the internet.

dividend payments.

While dividend payout was increasing, so was debt as a fraction of total assets. From 6.6% debt in 1988, the firm ended 1994 with debt comprising 25.4% of total assets. Over the same period, total assets rose from \$2.5 billion in 1988 to \$3.7 billion in 1994. Though the total assets of the firm increased close to 48% over the seven year period, profitability was down (except for a couple of years), and the market-to-book ratio is stagnant.

While higher dividend payout may be a sign of a firm's lack of investment opportunities, this does not seem to be the case with ARCO. The company has been expanding operations, through acquisition (1990), increased production capability (1992), and marketing products manufactured by others (1994). The picture that emerges from the financial ratio analysis is that the firm is financing its growth through borrowings, while paying out higher level of earnings. The strategy does not seem to have been rewarded by the market, and the drop in institutional holdings is one indicator of the same.

Summary: As institutional ownership decreased, ARCO increased dividend payout, and increased the firm's level of debt.

National Sanitary Supply Company: News and Events

National Sanitary Supply Company (NSS) distributes sanitary maintenance and paper supplies to commercial, institutional, and industrial customers. NSS saw its

institutional ownership drop by 66%, from 27.69% in 1988 to 9.31% in 1994.

The case of NSS again belies the belief that institutional owners are solely looking for quarterly dividend payout. This firm increased dividends in each year of the study period, that is from 1988 to 1994, albeit the increases were by modest amounts, going from 6.8% of earnings in 1988 to a little over 10% of earnings in 1994³⁵. One factor that may have had some impact on the level of ownership was NSS amended its certificate of incorporation to reduce the number of authorized shares of common stock in 1992. However, that would not explain why institutions would reduce ownership, while dividend payout was steadily increasing.

The firm's debt policy when comparing the beginning and ending year ratios shows a marginal decrease. However, looking at debt as a percentage of total assets on a year-by-year basis, the biggest percentage drop in institutional ownership (from 27.7% to 8.2%) occurs in the year that debt jumps from 17.6% to over 40%.

NSS was expanding, making related acquisitions in 1993 and 1994, and total assets increased from \$107 million to about \$124 million. However, profitability was lower than the 1988 figure for each year in the study period, and the market-to-book ratio reflects the market's lack of confidence in the

³⁵ Beginning 1988, NSS paid a dividend of \$.025 per common share. By third quarter 1994, this had increased to \$.065 per common share, an increase of 260% over seven years.

firm's operations.

Summary: As institutional ownership decreased, NSS increased dividend payout, and increased the level of debt.

4.4.2.2 Increased Institutional Ownership

The two firms chosen to analyze that show extreme increases in institutional ownership are Cavalier Homes and Excel Industries. Again, given the premise that institutional owners desire regular dividend payout, the expectation for this increased institutional ownership would be that firms increased dividends. Table 5 presents financial ratios on these two firms.

Cavalier Homes Inc.: News and Events

Cavalier Homes Inc. (CHI) designs, produces, and sells manufactured homes (mobile homes). CHI saw its institutional ownership increase over eighteen-fold, from 2.15% in 1988 to 39.61% in 1994.

In 1989, CHI declared an initial dividend, three years after inception. However, the big jump in institutional ownership seems to have been spurred by record sales and earnings in 1992. Sales exceeded \$100 million in 1992, and institutional ownership went from 12.94% in 1992 to 27.70% in 1993. The firm also paid stock dividends, with two consecutive 5-for-4 splits in 1992 and 1993.

One intriguing feature of CHI is the firms' attitude towards debt management. The firm chooses to be an unlevered firm, and has no debt on its' balance sheet. The firm had 14.4% debt to total assets in 1988, which it steadily lowered to just 1.09% in 1992. Then in 1993 and 1994, CHI had no debt in its capital structure.

Now, given that debt has some tax benefits, this should theoretically lower the value of the firm. The market, recognizing this, should penalize the firm's choice of a zero-debt position. This does not seem to be the case. While total assets quadrupled from \$15.4 million in 1988 to \$63.8 million in 1994, the market-to-book ratio increased about 2.5 times (from 1.27 in 1988 to 3.14 in 1994). Profits, similar to NSS, have been lower each year than the initial year. Also, the fact that CHI has no debt is not due to the fact that the firm has no investment or expansion opportunities. CHI chooses to expand using internal funds and raising equity financing. In 1993, CHI saw its interest rate on an existing revolving line of credit lowered from prime plus 1.5% to prime.

Summary: As institutional ownership increased, CHI initiated and maintained dividends, while reducing debt to zero, operating the last two years as an unlevered firm.

Excel Industries Inc.: News and events

Excel Industries Inc. (EXCEL) manufactures and sells framed windows to manufacturers of automotive vehicles. The

firm saw its institutional ownership increase seven-fold, from 10.08% in 1988 to 72.74% in 1994.

EXCEL, while founded in 1928, went public in 1984. In 1986, the firm privately placed common equity with Ford in exchange for cash, a long-term supply contract, and ownership of a related-business Ford subsidiary.

In 1988, EXCEL acquired Nyloncraft Inc., manufacturer of thermoplastic automotive products. Also, a 10% stock dividend was declared. In 1989, the firm had lower third- and fourth-quarter earnings, as the auto industry was experiencing a slowdown. However, in this year, institutional ownership more than doubled to 20.77%. EXCEL acquired the window regulator business of Hoover International Inc. in 1990. The firm chose to raise financing through the common equity market in 1992 and 1993. Ford owned 40% of the outstanding common equity of Excel in 1991. This percentage declined to 24% by year-end 1993, and in January 1994 Ford announced that it was selling its' entire stake in the firm. In 1993, sales were up by 21% and EXCEL increased dividends in the second quarter by 33.3%, from \$.06 to \$.08 per share. Dividends were again increased in the third quarter by 12.5%, to \$.09.

In its policy toward debt management, after an early increase in 1989, the firm steadily lowered its level of debt, from 29.3% of total assets in 1988 to 15.3% in 1994, a drop of about 48%. Over this period, total assets doubled from \$123 million to \$254 million.

The fact that Ford, a corporate owner, liquidated its' ownership block, was definitely a factor in the increase in institutional ownership. But that does not fully explain the increase. Dividends have increased, as expected, and sales are up. Excel seems to prefer financing growth through equity, rather than internally generated funds, using the latter to pay higher dividends.

Summary: As institutional ownership increased, EXCEL increased dividend payout, while decreasing its level of debt.

4.4.3 Comparing Institutional Ownership Changes

The two firms which experienced decreased institutional ownership, Arco Chemical and National Sanitary Supply, both paid regular and increasing dividends. So, if quarterly cashflow was the sole determinant of institutional holdings, both these firms should have seen increasing institutional ownership. While they were increasing payout of earnings, both firms were financing growth through increased debt. Using the market-to-book ratio as a proxy for the market's belief in the long-term prospects of these two firms, it is evident that the vote is not a positive one.

On the other hand, Cavalier Homes and Excel Industries, two firms that experienced increased institutional holdings, share the fact that both were experiencing booming sales growth. Also, while dividend payout increased, along with regular dividends both firms have paid stock dividends, too.

Regarding debt policy, both firms decreased the amount of debt, with Cavalier going to a zero-debt position in the last two years of the study period. The market's evaluation of these two firms is positively reflected in the increase in their market-to-book ratio.

The change in ownership is not proportional to regular dividend payouts, or the lack thereof. The firms that saw a decrease in institutional ownership were paying out a greater percentage of earnings than the firms that saw an increase in ownership. In fact, there seems to be more of a pattern to ownership changes and debt policy - the firms that experienced increased ownership were reducing debt in their capital structure, while the firms that were increasing debt saw decreasing institutional ownership.

In examining these four firms, no directional causalities can be inferred. Change in institutional ownership is seen to move inversely with the level of debt, while with regard to dividend policy, changes in ownership do not seem to follow a pattern. The market-to-book ratios of the firms that increased ownership have increased, while the market-to-book ratios of the two firms that saw ownership decrease stagnate³⁶. These four firms belie the conventional wisdom of institutional investors as being myopic, or short-term owners. The data indicate that institutional owners seem to prefer potential

³⁶ Again, causality issues arise - did the increase in ownership lead to the higher market-to-book, or did the ownership increase follow?

growth over current earnings pay out.

4.4.4 Insider Ownership Changes

Agency theory postulates that higher levels of insider ownership should lead to lower NVM behavior on the part of management - and hence better firm performance and higher firm values. From the viewpoint of signalling firm value, higher insider holdings should serve as a substitute signal for dividends and level of debt. Thus, it is expected that firms which decreased insider holdings should increase dividend payout, or level of debt or both. Also, they should perform relatively poorer post-ownership changes. The reverse should hold true for firms that increased insider holdings.

4.4.4.1 Decreased Insider Ownership

Of the twenty firms that saw the greatest decrease in insider holdings, the two firms chosen to analyze are Mattel Inc. and Rohm & Haas. Table 6 shows the financial policy changes and other pertinent data for the two firms.

Mattel Inc.: News and Events

Mattel Inc. (MATTEL) designs, develops and markets toys. This firm saw its insider holdings drop about 85%, from 23.49% in 1988 to 3.48% in 1994.

An investment group announced in 1988 that it had raised its shareholdings to 20.4% of total outstanding common shares.

In 1989, two vice-presidents sold their entire holding of stock at year-high prices.

In 1990, firm announced its first dividend in seven years (\$.03). In 1991, the Board declared a five-for-four stock split dividend. By 1993 the firm had raised dividends to \$.06 per share, maintaining the level of payout in spite of losses and lower earnings. From paying no dividends in the first three years, the firm was paying 5.6% of earnings as dividends in 1994. In 1994, it also announced another five-for-four stock split, and boosted dividend payout by maintaining per share dividend at \$.06.

Over the study period, the firm embarked on an aggressive growth strategy, both by acquisitions and licensing agreements. Total assets increased from being about \$700 million in 1988 to almost \$2.5 billion in 1994. At the same time, debt went from being about 32% of total assets, to less than 17% by 1994. Profitability almost doubled during this time. As the total assets of the firm increased about 3.5 times, the market-to-book ratio increased almost 50%. In 1994, MATTEL pre-paid debt totalling \$100 million.

The decrease in insider holdings has not led to NVM behavior, as agency theory would indicate. In fact, MATTEL seems to be performing better, as its strategy of growth has propelled it to the position of the second largest toy company in the world. The firm does raise dividend payout, both in cash and stock, after lowering insider ownership, and at the

same time also lowers the proportion of debt in its capital structure³⁷.

Summary: As insider holdings decreased, MATTEL re-initiated and increased dividend payout, as well as paid two five-for-four stock splits. At the same time, level of debt was decreased.

Rohm & Haas: News and Events

Rohm & Haas (R & H) manufactures and sells specialty chemicals. This company saw its insider holdings fall by about 98%, from 49.36% in 1988 to 1.12% in 1994.

The firm increased dividends in six of the seven years of the study period. This is expected, given the hypothesized negative relation between insider holdings and dividend payout. However, the increase in payout as a percentage of earnings has been modest, rising from 14.5% in 1988 to about 15.9% of earnings by 1994.

The firm's debt as a proportion of total assets has increased from 13.2% to 19.6% - as total assets increased from \$2.2 billion to \$3.8 billion. R & H has been growing by adding production capacity and some acquisitions of related businesses. Earnings has been generally improving, certain losses being attributed to charges related to non-operating expenses. Profitability, as measured by ROA has been slightly

³⁷ This agrees with the theoretical model of Noe and Rebello (1996), where the authors show that higher insider holdings would lead to lower dividends.

lower, declining from 20.9% in 1988 to 15.9% by 1994. However, the market seems to approve the firm's operations, as the market-to-book ratio increased by 50% over the study period.

Dividends have been increasing post-ownership decreases, as expected, as has debt. However, performance does not seem to have suffered greatly due to much lower insider holdings.

Summary: As insider holdings decreased, R & H increased dividend payout, and increased its level of debt.

4.4.4.2 Increased Insider Ownership

Increased insider ownership should lead to higher firm performance. It should also lead to lower dividend payout, and lower levels of debt in the capital structure [Noe and Rebello (1996)]. From the sample of firms with extreme increases in insider holdings, the two firms chosen to analyze are Best Buy Company and Phillips Petroleum Company. Table 7 presents financial information on these two firms.

Best Buy Company: News and Events

Best Buy Company (BEST) is a leading, fast-growing discount retailer of name brand consumer electronics. This firm saw its insider holdings rise more than twelve-fold, from 1.89% in 1988 to 24.07% in 1994.

Over the study period, the firm had two stock splits, a three-for-two in 1993, and a two-for-one in 1994. The company follows a non-cash dividend paying policy, which did not

change during the seven year period.

The level of debt decreased from being 24.9% of total assets in 1988 to just about 15% in 1994, which is as per expectations. This is all the more remarkable, given that total assets increased almost sevenfold, from \$139.9 million to \$952 million.

Yet, while profitability decreased by about 10%, the firm's market-to-book ratio tripled, from 1.15 in 1988 to 3.51 in 1994. This is explained in great part by the fact that the retail electronics industry was engaged in a price war beginning in 1993. In 1989, BEST introduced a new retail store format, labeled its "Concept II" strategy, a self-service discount store eliminating the traditional commission sales approach of its consumer electronics competitors. Interestingly, this was also the year insider holdings jumped from 1.89% in 1988 to almost 43%. This new strategy found favor with customers, as well as the market, and a Wall Street Journal article in 1994 states that "investors appear to have declared electronics retailer Best Buy the winner...".

From a 1990 high in insider holdings of 43.06%, it decreases to 24.07% by 1994. In 1994, BEST announced the introduction of a new, evolutionary store format, "Concept III", in fiscal 1995. Thus, while the increased insider holdings may not have increased profitability in absolute terms, that can be seen to be a function of industry conditions. It is harder to claim one way or another, whether

BEST would have pursued the same strategy, with as much success, in the absence of higher insider ownership.

Summary: As insider holdings increased, BEST paid two stock splits, while reducing the firm's level of debt.

Phillips Petroleum Company: News and Events

Phillips Petroleum Company (PHILLIPS) engages in exploration, production, refining and selling of petroleum and natural gas. The firm's insider holdings increased more than forty-five times, from 0.53% in 1988 to 24.35% in 1994.

The firm had three consecutive years of dividend increases, which is contrary to expectation. Payout almost tripled, increasing from 7.4% of earnings in 1988 to 20.7% in 1994.

Debt policy, however, shows the firm embarking on lowering debt through early redemption of outstanding callable security issues. The debt to total assets ratio, 44.7% in 1988, decreases steadily over the study period till it is 29.5% by 1994. Total assets decreased slightly over the period, from about \$12 billion to just about \$11.5 billion.

Theoretically, higher insider holdings should lead to lower dividends and lower debt. While debt policy is seen to follow expectations, dividend policy does not.

Agency theory postulates that higher insider holdings should result in higher profitability, and higher firm value. This does not hold for PHILLIPS, as both return on assets and

return on sales are lower, post-increased insider holdings. Again, business conditions are a large part of the picture. In 1993, crude oil prices dropped significantly - in part due to OPEC's high production, coupled with world wide weak economies, which led to depressed prices due to oversupply.

During the study period, the firm defeated two takeover raids, which is a potential explanation of insiders needs to increase control of PHILLIPS through ownership.

Summary: As insider holdings increased, PHILLIPS increased dividend payout, while decreasing the level of debt.

4.5 Comparing Insider Ownership Changes

The two firms that decreased insider holdings, Mattel and Rohm & Haas, both saw improved performance rather than the reverse. One point to note is that the level of insider ownership may be a factor that helps explain this relationship. At the start of the study period, Mattel had insider holdings of 23.49%, which as the descriptive statistics show, is in the range of lowest firm performance, on average. This dropped to 3.48% insider ownership, a level at which, on average, firms have the highest performance. Similarly, Rohm & Haas' insider ownership dropped from close to 50% to little over 1%. Mattel re-initiated dividends, while Rohm & Haas left its practically unchanged. Regarding debt, Mattel reduced its leverage ratio, while Rohm & Haas increased its level of debt.

The two firms that increased insider ownership, Best Buy and Phillips Petroleum, also show mixed signals. While Best Buy paid out two stock dividends through splits, Phillips Petroleum increased dividends. Both firms do not reduce dividends, as per theoretical expectations. However, Phillips and Best Buy both embark on a strategy of debt reduction, which is as expected.

Thus, there seems to be no identifiable pattern between insider ownership changes and dividend policy, based on the four firms observed. Regarding debt, both firms that increase insider holdings decrease their debt level. But of the two firms that decrease insider holdings, one increases its debt level, while the other decreases it. A case could be made for a weak inverse relationship between debt and insider owners.

Using the market-to-book ratio as a proxy for the market reaction to changes in insider holdings, also does not lead to any clear cut signals. While all the firms experience a rise in this ratio, only one of the increased ownership firms (Best Buy) sees a higher percentage increase in its market-to-book than the two firms which greatly reduced insider holdings.

4.6 Regression Results

Before discussing the regression results, a brief discussion highlights the variability in ownership and policy choices across industries, presented as Table 8. The regression results for the full sample of firms is presented

in Tables 9. Table 10 presents the results of selecting the best model for the study sample. Tables 11 through 13 show the regression results for the sub-samples based on level of insider holdings.

4.6.1 Industry Averages

The firms in the sample comprise twenty-three industries, with at least five firms in each industry group. As Table 8 shows, there is a wide range across industries for both ownership and corporate policy.

Insider holdings range from a low of 6.37% (Primary metal industry) to a high of almost 40% (Stone, clay, glass, concrete, etc.). Institutional holdings has a low of 19.72% (Miscellaneous retail industry) and a high of 49.12% (Paper products). The lowest average debt ratio is 7.75% (Apparel and accessories industry) while the high is 29.21% (Paper products). Dividend yield ranges from a low of just 0.13% (Miscellaneous retail) to a high of 3.86% (Petroleum refining).

In terms of the number of industries below the mean, insider holdings and dividend yield both have 12 of 23 industry means below the sample mean. Institutional holdings has 11 and debt ratio has 8 industry means below their respective sample means.

4.6.2 Full Sample Results

Model 1

Model 1 is the simultaneous system of three equations, with insider holdings, debt ratio, and dividend yield as the three endogenous variables. This is similar to the framework tested by Jensen, Solberg and Zorn (1992), except that this dissertation uses dividend yield instead of dividend payout as a proxy for dividend policy.

1. Debt Equation

The relation of debt with insider holdings do not support the findings of Jensen, Solberg and Zorn (1992) (JSZ) (the authors find a significantly negative relationship), but agree with the findings of Kim and Sorenson (1986) (who report a positive relationship). As Table 9 Panel A shows, for model 1 there is a significant positive relation between insider holdings and debt. Debt and dividend yield also show a significantly positive relation. Other than these results, all other relationships in the debt equation for this model match the findings reported by JSZ. The relation between debt and profits is negative, while the relation with both size and fixed assets is positive.

2. Dividend Equation

The relation between dividend yield and insider holdings is significantly negative, which supports the results reported by JSZ. This is also consistent with Rozeff (1982), who pointed out that insider holdings substitutes for dividends as

an agency cost reducing mechanism. Also, this equation finds the positive relation between dividends and profits reported by JSZ.

3. Insider Equation

There is a positive relation between debt and insider holdings, and a significant negative relation between dividend yield and insider holdings. Both these findings are contrary to the findings of JSZ. The results of this model support the notion that a firm's dividend policy does affect the level of insider ownership. Insiders it seems, prefer capital gains over taxable dividend income, or at least prefer to retain free cash flow rather than pay it out to shareholders. There is no relation between insider holdings and profitability. Agency theory would submit that a positive relationship should be evidenced, assuming all other things were equal.

Model 2

Model 2 is the simultaneous system of three equations, with insider holdings, debt ratio, and dividend yield as the three endogenous variables, and institutional ownership being added as the only new explanatory variable.

1. Debt Equation

The results are dissimilar to those found by Model 1. Insider holdings now shows no significant relation with the debt ratio. Institutional ownership, the new explanatory variable, is significantly negatively related to debt. These

results indicate that firms with high institutional ownership choose lower amounts of debt in their capital structure³⁸. Dividend yield and debt, as well as profits and debt still show the same relations - positive for the former and negative for the latter.

2. Dividend Equation

The results of the dividend equation in model 2 are also changed from those of model 1. Though debt and profits are still significantly positively related with dividend yield, insider holdings is now insignificant in its relation with dividend policy. Institutional ownership, too, shows no relation to dividend yield. This is contrary to common wisdom that institutional owners are focused on short-term gains³⁹.

3. Insider Equation

In model 2, no relation is found between insider ownership and either dividend yield or the debt ratio. Institutional ownership is significantly negative (as expected). Profits now shows a significant positive relation with insider holdings, support for the idea of the level of insider holdings being determined by the profitability of the firm.

³⁸ This finding is supported by the panel data analysis of firms that underwent extreme changes in institutional ownership.

³⁹ Again, this finding is in keeping with the panel data analysis, which showed no discernible pattern between institutional ownership changes and dividend payout policy.

Model 3

Model 3 is the simultaneous system of four equations, with insider holdings, debt ratio, dividend yield, and institutional holdings as the four endogenous variables.

1. Debt Equation

Including institutional ownership as an endogenous variable into the system of equations does not change the relation between debt and insider holdings from that found by model 2. No change is found in the relations with dividend and institutional ownership - both significant, but positive and negative, respectively.

2. Dividend Equation

With the inclusion of institutional ownership as an endogenous variable, no significant changes occur in the dividend equation over the results found with model 2. Profits are significant and positively related to payout, as is debt. Insider holdings and institutional holdings are both insignificant.

3. Insider Equation

Given the premise that institutional ownership is endogenous to the system of ownership and corporate policy choices, debt and dividend yield are both insignificant. This result implies, that if institutional owners have an impact in determining corporate policy, then debt as well as dividend payout policy play no role in determining the level of ownership that insiders choose to hold. This agrees with the

findings of JSZ, who found no significance for debt or dividend payout in their insider equation. Model 3 also lends stronger support to the notion of profitability of the firms they manage driving the decision of insiders to increase their share of ownership in the firm⁴⁰.

4. Institutional Equation

This equation offers strong support to the negative relation between debt and institutional holdings. Also, profits is seen to be significantly positive, implying institutional owners do seek profitability. However, dividends are not valued by such owners - the result indicates that institutional investors do not seek current cashflow⁴¹. Insider holdings is seen to be positive and highly significant.

4.6.3.1 Choosing the Best Model

Given the increased level of institutional ownership today, it is important to determine whether model 2 or model 3 is the most accurate representation of the true nature of the relation between such ownership and corporate policy choices. Thus, a statistical evaluation of both these models is undertaken to identify the model that best fits the data.

⁴⁰ This may be a function of recent trends towards tying management compensation to stock options based on achieving profitability goals.

⁴¹ Again, this is supported by the panel data analysis, which found institutional ownership decreased in the firms that had significantly increased dividend payout.

If model 2 is a better fit, then institutional ownership is exogenous, that is, such owners determine their level of ownership based on finding firms that pursue their desired policies. However, if model 3 is a better fit, then institutional ownership is endogenous to the system, that is, such ownership is determined simultaneously with the formulation of corporate policy choices.

Additionally, whether institutional ownership is endogenous or exogenous to the relation between corporate ownership and corporate policy is also important in understanding the true effect of insider holdings.

4.6.3.2 Model Selection Results

The two models including institutional ownership, model 2 and model 3 are evaluated to verify which is a better fit of the observed data on the relation between such ownership and the choice of corporate policy.

As model 2 is a three-equation simultaneous system, and model 3 is a four-equation simultaneous system, the system-weighted R^2 is not a sufficient test of which model is superior. Clearly, the model 3 system has a far greater system-weighted R^2 - a result that could arise solely due to adding a fourth structural equation to model 2.

The models are evaluated using Bozdogan's ICOMP criteria, which has been specially developed to evaluate multivariate linear and non-linear models for goodness of fit. This measure

is based on three attributes of each individual model, namely: (1) The lack of fit of the model to the observed data (that is, the percentage not explained by the model), (2) How parsimonious the model is, and (3) The complexity of the model.

$$\text{ICOMP} = - N \cdot \log(1-R^2) + 2 \cdot C_1(\text{Cov}(\theta^{\sim}))$$

To calculate ICOMP, the measure uses $\log(1-R^2)$, weighted by the sample size, N , to get the lack of fit. The second term, $2 \cdot C_1(\text{Cov}(\theta^{\sim}))$, compensates for the model's complexity and the level of parsimony. So, ICOMP is intended to reveal how much of the observable data is left unexplained by the model, after adjusting for the complexity of the proposed model. Thus, the lower the ICOMP measure, the better the model - that is, the model with a lower ICOMP explains more of the data.

Table 10 presents the results of the ICOMP analysis. Model 2, the one in which institutional ownership is treated as an exogenous variable, is a superior fit to the data over model 3. The ICOMP measure is far lower for the 3 equation model, as compared to the ICOMP value of the 4 equation model. For this sample, it is evident that institutional ownership is not a relevant dependent variable in the system of equations modeling the relation between ownership and corporate policy choices. Thus, the result supports the hypothesis that institutional ownership is exogenous to the system.

4.6.3.3 Implications of Model Selection Results

Given that the ICOMP analysis determines model 2 as the best explanation of the observed data, the most accurate picture of the relation between institutional holdings, insider holdings, debt and dividend policies can be deduced from the results of model 2.

Debt

The debt equation reveals two very interesting observations, namely, that insider holdings is not related to the level of debt, and that institutional holdings is significantly negatively related to debt.

The relation found between insider holdings and debt is different from that reported by prior research. Kim and Sorenson (1986) find a positive relation, while Jensen, Solberg and Zorn (1992) find a negative relation. The major difference in the structural equation for debt in the model for this dissertation is the inclusion of institutional holdings as an explanatory variable. As is evident from model 1 results, if institutional holdings is omitted from the model, then a significant, positive relation is found between insider holdings and debt (which agrees with Kim and Sorenson (1982)).

The second interesting finding is that a significantly negative relation exists between debt ratio and institutional

ownership. This clearly indicates that such owners are strongly concerned about the level of debt a firm chooses to hold, with its' proportional increase in the risk of bankruptcy. This finding is also supported by the panel data analysis, which finds institutional ownership increases for firms that are reducing debt in their capital structure.

The sign of debt with dividends is positive, a relation reported by prior research. The relation with profits is negative as per expectations and has also been reported by prior research.

Dividend

The most interesting finding in the structural equation for dividend is the lack of a strong positive relation between institutional holdings and dividend payout. Given conventional wisdom, the market tends to believe that institutional investors are myopic, focused on the short-term, and invest in search of regular earnings payout. Contrary to expectations, for the sample under study in this dissertation, institutional investors dislike current period pay out. Again, this is supported by the panel data analysis, which finds that firms paying regular and increasing dividends still experience extreme decreases in institutional ownership. In fact, such owners seem to increase holdings in firms that, while having lower short-term profitability, are experiencing growth. The findings of the 3SLS regressions would be explained by

institutional owners wanting to invest in growth-oriented firms and equating higher dividend yield as an indication of lack of growth opportunities.

The results show an insignificant relation between insider holdings and dividend yield. This is contrary to prior research, such as Rozeff (1982) and Jensen, Solberg and Zorn (1992). Again, in model 1, which did not include institutional holdings, a significant, negative relation is found - which is what prior research has reported.

Insider Holdings

Institutional ownership is significantly negatively related to insider holdings, as expected. In an agency cost-reducing framework, ownership is a signal of lower NVM behavior. Insider holdings and institutional holdings should serve as substitute signals of firm value, a relation that is supported by the results of model 2.

Profits is significant and positively related to insider holdings, which indicates that in deciding to increase their ownership of the firms they manage, insiders do count current period profitability as a significant input into the decision-making process.

The regression model results do not support the hypotheses H2a and H2b. H2a hypothesized a significant and positive relation between institutional ownership and debt - the results show the opposite, a strong significantly negative

relation⁴². H2b hypothesized a significant and positive relation between dividend yield and institutional ownership - the results do not support this. In fact, the results show no significance in the relation between these two variables.

The model selection results support hypothesis H3 - institutional ownership is found to be exogenous to the system of corporate ownership and corporate policy choices.

4.7.1 Sub-sample Results

Based on prior research the sample is divided into three sub-samples, insider holdings less than five percent, insider holdings between five to twenty-five percent, and insider holdings twenty-five percent or greater. The results from these regressions will test for support of hypotheses H1a and H1b.

Insider Holdings Less Than Five Percent

The only significant difference in the debt equation for this sub-sample of firms over the full sample regression is that insider holdings is positively related to debt. The sign and relation of debt with dividend and institutional ownership are the same as for the entire sample. In the dividend equation, two changes are noticed. Insider holdings is significant and negative now, while debt shows no significance

⁴² The model developed by Noe and Rebello (1996) does predict a negative relation between shareholder-control and debt in the presence of information asymmetry.

with dividend yield. The insider holdings equation supports the findings of the debt and dividend equations - changing from no significant relation in the full sample regression, insider ownership now has a negative relation with dividend and a positive relation with debt.

Insider Holdings Between Five and Twenty-five Percent

The relation between debt and insider holdings for these firms is different from both, the full sample and the previous sub-sample. Now, the relation is negative and significant. The other relations remain the same, positive with dividend and negative with institutional holdings. In the dividend equation, the relation of insider holdings is similar to the full sample regression, which shows no significance. This differs from the significant and negative relation found in firms with low insider holdings. The insider holdings equation supports the above, no significant relation with dividend yield, and a negative relation with debt, though at a slightly lower level of significance.

Insider Holdings Twenty-five Percent or Greater

The debt equation for this sub-sample reveals a significant negative relation with insider holdings, similar to the firms with insider holdings between five and twenty-five percent, and unlike the significant positive relation found in firms with insider holdings less than five percent.

The dividend equation shows a negative but insignificant relation with insider holdings. Again, the equation for insider holdings supports the relation found in the first two structural equations.

4.7.2 Implications of Sub-sample Results

The results obtained by running the regressions with sub-samples of firms based on the level of insider holdings clearly reveals that if the level of insider ownership is not controlled for, then any model examining the relation between ownership and corporate policy is mis-specified. The results support hypotheses H1a and H1b. The non-linear relation between insider holdings and firm value reported by prior research is found to extend to the relation between insider holdings and corporate financial policy, namely, debt and dividend policy. Given prior evidence that corporate policy choices systematically affect stock prices [Healy and Palepu (1989)], this result is as per expectations.

When insider holdings are less than five percent, a strong, positive relation is found with debt. For this level of insider holdings, the result suggests that on average the agency cost of debt is lower than the agency costs of equity and these firms will use debt up until the marginal cost of debt equals the marginal cost of equity. An alternate explanation is reluctance on the part of insiders to dilute their control through equity financing, leading to a greater

reliance on debt.

As insider holdings increase beyond five percent, the relation between debt and insider holdings changes to being negative and significant. This supports the findings of Jensen, Solberg and Zorn (1992). The results indicate that over this range of insider holdings, on average the agency costs of debt outweigh the agency costs of equity. In this range of insider ownership, debt serves as a substitute mechanism for reducing agency costs. This finding supports the notion of management signalling firm value through either insider holdings or level of debt. Also, as insiders portfolio wealth is concentrated in the firms they manage, they are reluctant to take on the risk of increased debt service.

The relation between dividend yield and insider holdings is significant and negative in firms with less than five percent ownership, but the relation weakens with increased ownership. Dividends serve as a substitute mechanism for reducing agency costs [Rozeff (1982), Jensen, Solberg and Zorn (1992)], but insiders seem to rely less on this signal as their ownership level increases.

The relation between institutional holdings and debt and dividend yield is found to be unvarying across all three sub-samples. Firms with high institutional ownership are associated with significantly lower levels of debt. Institutional ownership has no effect on the dividend yield provided by firms. As the relation holds across sub-samples,

the results suggest that for this sample of firms, the effect of institutional ownership does not change with changes in the level of insider ownership. Institutional owners prefer a lower debt ratio, and seem indifferent to current period pay out as measured by dividend yield.

The results of the sub-sample regressions on the relation between insider holdings, debt and dividend yield illuminates the reason why contradictory findings were reported by Kim and Sorenson (1986) and Jensen, Solberg and Zorn (1992). Given the existing pattern of non-linearity in the relations between ownership and corporate policy, the models in the earlier studies were mis-specified.

The next chapter concludes by summarizing the findings of the three stages of analysis conducted in this dissertation.

CHAPTER FIVE

CONCLUSION

5.1 General Summary

This dissertation examines the relation between corporate ownership structure and corporate policy choices. Corporate ownership is defined as insider holdings and institutional holdings. The two corporate policy choices focused on are level of debt in capital structure and the dividend yield earned on common stock price. The analysis proceeds over three stages, namely, (1) Descriptive statistics analysis, (2) Panel data analysis, and (3) Regression analysis.

5.2.1 Descriptive Statistics Analysis

In this part, this dissertation finds that the non-linear relation between insider holdings and firm value reported by prior research also exists in the relation between insider holdings and firm profitability. This non-linearity also extends to corporate policy choices as well. The five percent and twenty-five percent level of insider holdings reported as the appropriate breakpoints by prior research, capture this non-linear effect for this study's sample of firms. Significant difference of means test reveal that firms with insider holdings in the range of five to twenty five percent, on average, are significantly less profitable than firms with

insider ownership below five or above twenty-five percent. Firms with greater than twenty-five percent insider holdings are less profitable, on average, than firms with less than five percent ownership. Firms with the lowest level of insider holdings have the highest debt ratio⁴³, firms with five to twenty-five percent insider holdings have a significantly lower level of debt, which is not significantly different from the level of debt in firms with the highest level of insider ownership. Dividend yield has a monotonically decreasing relation with insider holdings, being the highest in firms with less than five percent, and the lowest in firms with greater than twenty-five percent insider ownership. Higher levels of insider ownership reveal an apparent preference for capital gains over dividend income, or a desire to retain control over free cash flow.

5.2.2 Panel Data Analysis

This dissertation identifies eight firms that underwent extreme changes in ownership to examine in detail using panel data format, to seek whether detailed analysis contributes to understanding the cause and effect of ownership changes on corporate policy changes.

⁴³ This could possibly arise due to this sub-sample being the largest firms in the study - which have the highest level of average total assets and the lowest level of insider ownership. However, the reason behind the relation does not preclude the need to control for this effect in any study on the relation between ownership and corporate policy.

Institutional Ownership Changes

The two firms which had big percentage decreases in institutional ownership were financing growth through higher levels of debt. At the same time, both firms were paying regular, and in some years highly increased, dividends. So, institutional investors, as per these two firms are not swayed merely by consistent dividend payout. In fact, there is a negative relation between payout and institutional ownership changes. At the same time, there is also a negative relation between debt and institutional ownership changes.

For the two firms that experienced big percentage increases in institutional ownership, both firms were experiencing growth, but decreasing their level of debt. Growth was being financed either through profits or equity financing. The firms did increase dividend payout, but both also issued stock dividends. This implies a confirmation of the negative relation between debt and institutional ownership found in the two firms that decreased such ownership. Also, the negative relation between payout and ownership is partially confirmed by these two firms having substituted some capital gains via stock dividends.

Insider Ownership Changes

The two firms that saw a decrease in insider ownership, both report improved performance post-ownership changes. This is contrary to the expectations of agency theory, whereby firm

performance is directly correlated to the level of insider holdings of a firm. This result may be partly explained by the non-linear effect reported by prior research, and confirmed by the descriptive statistics analysis of this dissertation. One firm had insider holdings of 23.49%, the median range of insider holdings with the lowest profitability, on average, which dropped to 3.48% insider ownership, a level at which the greatest firm performance is expected to occur. The second firm saw its insider holdings drop from close to 50% to a little over 1%, a shift that, on average, predicts higher profitability (Table 3). There is no clear cut indication of decrease in insider holdings and debt or dividend payout. One firm increases debt, while the other decreases it. The firm that decreases debt re-initiates dividends after a lapse of several years, while the firm that increases debt leaves its dividend policy unchanged.

The two firms that experienced a great increase in insider holdings both show a reduction in profitability, rather than the reverse. Again, the level of insider ownership may be responsible for this result. One firm goes from being less than 0.5% insider-owned to just over 24% insider-owned; the other firm goes from less than 2% insider-owned, to about 43%, before dropping back to 24.4%. So, both firms increase insider holdings to the level that, on average, reports the lowest level of profitability. The firms both decrease their level of debt. Regarding dividends, one firm increases its

level of payout, while the second firm, while having a policy of no-cash dividends, pays two stock splits over the seven year study period.

5.2.3 Regression Analysis

The regression analysis performs simultaneous equations regression analysis, using three-stage least squares (3SLS). Three models are tested to determine the true nature of the relation between corporate ownership and corporate policy choices. One of the major contributions of this dissertation is to determine whether institutional ownership is exogenous or endogenous to this system of ownership and corporate policy.

Model 2, in which institutional ownership is defined as an exogenous variable, is compared to model 3, in which institutional ownership is defined as endogenous. Bozdogan's (1988, 1990a, 1990b) Informational Complexity Criterion, ICOMP is used to statistically determine the model that best fits the observed data. The model selection process shows that model 2 is a better fit than model 3. Thus, it is determined that for the sample under study in this dissertation, institutional ownership is exogenous to the system of ownership and corporate policy.

Model 2 is the best picture of the nature of the relations between the dependent and explanatory variables, with insider holdings, debt, and dividends as the three

relevant dependent variables.

On dividing the sample of firms into three sub-samples based on level of insider holdings, it is found that insider holdings has a non-linear relation with both debt and dividends. This non-linear relation masks the true relation between insider holdings and corporate policy choices when the level of insider holdings is not controlled. This finding is an explanation of the mixed findings in prior research of the relation between insider holdings and corporate policy, as previous models examining the relation between insider holdings, debt and dividends were mis-specified.

At low levels of insider holdings (less than five percent), dividends serve as a substitute while debt serves as a complement mechanism to reducing agency costs. In this range of insider holdings, the average relative costs of debt are lower than the relative costs of equity, such that insiders will use debt financing up to the point where the two marginal costs become equal. Dividends in this range of insider holdings are used by insiders as a substitute signal of firm value, which explains the negative relation found.

As insider holdings increase beyond five percent, and are in the range of five to twenty-five percent, debt changes to being a substitute agency cost-reducing mechanism for insider holdings, while dividends no longer serve as a significant substitute signal. These results indicate that in this range of insider holdings, on average the agency costs of debt are

higher than the agency costs of equity, and insiders would choose equity financing, again up to the level where the marginal costs of equity equal the marginal costs of debt. Also, in this range of insider holdings the significant relation with dividends no longer exists.

For firms with insider holdings twenty-five percent or greater, the negative relation between debt and insider holdings is stronger than for the previous group of firms. The relation between dividend yield and insider holdings is insignificant, the same as that for firms with insider holdings between five and twenty-five percent.

5.3 Implications of This Dissertation For Future Research

The findings of this dissertation have important implications for future research on examining the relations between corporate ownership and corporate financial policy.

The level of insider holdings of the sample firms being studied must be controlled in any examination of the relation between insider ownership and debt or dividend policies. Failing to do so will lead to potentially "spurious" findings, or contradictory results due to model mis-specification. As a case in point, Kim and Sorenson (1986) and Jensen, Solberg and Zorn (1992) report differing results in their respective analyses of the relation between debt and insider holdings.

The non-linear relation of insider holdings and firm value documented by prior research exists also in the relation

between insider holdings and debt and dividends. Thus, increasing insider holdings does not imply a direct reduction of agency costs as modeled by Jensen and Meckling (1976). The results imply a modification to the convergence-of-interest hypothesis developed by Jensen and Meckling. The initial and ending level of insider holdings determines, on average, whether the increase in insider holdings will lead to a reduction in agency related costs. This result supports the model of managerial entrenchment developed by Shleifer and Vishny (1989). Shleifer and Vishny (1989) suggest there is a certain level of insider holdings where managers have effective control and engage in NVM behavior since the relative costs of such behavior are outweighed by the relative benefits.

The results of this research also support the empirical findings of Morck, Shleifer and Vishny (1988). When insider holdings are less than five percent, the convergence-of-interest hypothesis holds [Jensen and Meckling (1976)]. When insider holdings are between five and twenty-five percent, the managerial-entrenchment hypothesis holds [Shleifer and Vishny (1989)]. When insider holdings are more than twenty-five percent, the pure convergence of interest hypothesis holds [Morck, Shleifer and Vishny (1988)].

To recap, hypotheses H1a and H1b are supported. The non-linear relation between insider holdings and debt and dividends support the "managerial entrenchment" model

developed by Shleifer and Vishny (1989), and enhance the convergence-of-interest model developed by Jensen and Meckling (1976).

Institutional holdings is seen to have a strong, negative relation with debt. This indicates such investors' reluctance to invest in firms which subject themselves to the higher risks of bankruptcy that higher leverage entails. At the same time, no relation is seen to exist between institutional holdings and dividends. This is contrary to conventional wisdom, which generally bemoans the myopic nature of institutional investors. Neither the debt nor dividend relation supports the theory developed by Noe and Rebello (1996) wherein they demonstrate a positive relation between level of institutional holdings and debt, and a similar positive relation between institutional holdings and dividend payout. Noe and Rebello theorize that shareholder-controlled firms should desire higher levels of debt so that management is scrutinized by the capital market. Such firms should prefer higher payout to prevent management from engaging in wasteful expenditures.

To recap, hypotheses H2a and H2b are not supported. Noe and Rebello (1996) mention that possible informational asymmetry could lead to a negative relation between high outsider shareholdings and debt and dividend payout. In this regard, the insignificant relation between institutional holdings and dividends found here still fails to support the

Noe and Rebello (1996) explanation based on informational asymmetry.

Institutional ownership is found to be exogenous to the determination of debt and dividend policy choices for the sample of firms studied by this dissertation. Thus, such ownership is not affected by the simultaneous system determining insider ownership, debt and dividend policy. The model selection process determines that, for this sample of firms, institutional ownership is only relevant as an independent variable (exogenous) in the system modeling the relations between ownership and corporate policy.

To recap, hypothesis 3 is supported, lending support to the theory developed by Shleifer and Vishny (1986). Shleifer and Vishny assume that a large shareholder's equity stake in a firm is "given", or pre-determined. This result fails to support the example developed by Admati, Pfleiderer and Zechner (1994) where an institutional investor's shareholdings are determined endogenously.

5.4 Directions For Future Research

There are many potential research possibilities arising out of this dissertation, extending the body of knowledge regarding the nature of the relations between ownership and corporate policy choices.

One possible direction for future research is to examine the differences in the nature of the relation between

ownership and policy, given the presence of regulatory agents. Gorton and Rosen (1996) develop a model of bank lending by managers who are entrenched and hypothesize an inverted U-shaped relation between insider holdings and risk-taking. The authors test their hypothesis on a sample of 458 Bank Holding Companies (BHCs). The results show that over the range of insider holdings, 10 to 80 percent, managers make fewer relatively safe consumer loans, and also incur higher losses. This is deemed by the authors as the range of "managerial entrenchment" for banks. An interesting extension would analyze the similarities and differences between this dissertation's findings for unregulated firms and a similar study on a sample of financial institutions.

This dissertation assumes, as per prior research, that insider holdings, debt and dividends are endogenous to the system of ownership and corporate policy. Given the lack of a relation found between institutional ownership and dividends, and a similar lack of a significant relation between some levels of insider holdings and dividends - one possibility is that dividends are exogenous to the system of ownership and policy. Using the ICOMP criterion, it would be interesting to test whether dividends should be treated as exogenous, that is, being determined outside the system. Management's reluctance to alter dividend policy would lend support to such an argument.

Given the increased flow of investment into the market,

a major portion of which is handled by institutions, analyzing the role of particular types of institutional owners, and their interactions with the role of insider holdings in determining corporate policy is important. This is an area worthy of future research efforts, especially given the contributions of this dissertation.

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APPENDICES

APPENDIX A

Given below are details on the eight firms chosen for panel data analysis. The ownership changes that occurred are mentioned prior to describing noteworthy firm news and events over the study period from 1988 to 1994.

Two firms that decreased institutional holdings significantly over the study period, 1988 to 1994

- 1) Arco Chemical Company (49.2% decrease, from 16.11% in 1988 to 8.18% in 1994)
- 2) National Sanitary Supply Company (66.4% decrease, from 27.69% in 1988 to 9.31% in 1994)

Arco Chemical Company

Arco Chemical company, based in Newtown Square, Pennsylvania, manufactures and markets intermediate chemicals and specialty products used in a broad range of consumer goods. Also markets industrial chemicals. This company saw its institutional holdings almost halved, from 16.11% in 1988 to 8.18% in 1994. Some significant events over the study period are:

1988:

Reorganizes corporate structure, makes management changes.

Moody's assigns prospective single-A-2 rating to firm's \$450 shelf registration of debt securities.

Dividend increase in fourth quarter (from \$.20 to \$.25).

1989:

Dividend increases 150% in second quarter (from \$.25 TO \$.625).

Announces intention to purchase businesses from Union Carbide.

1990:

Explosion in Texas plant kills 17 workers.

Completes acquisition of worldwide urethane polyether polyols and propylene glycol businesses of Union Carbide Chemicals and Plastics Co. Inc.

1991:

Agrees to pay \$3.5 million OSHA fine to settle explosion at Texas plant.

Archer-Daniels-Midland Co. announces it holds 5.02% of firm's total common shares outstanding.

1992:

Divests 50% ownership in Korean joint venture. Cost \$56 million, estimated savings of \$200 million on contingent liabilities reduced.

New, world-scale propylene oxide (PO)/styrene monomer plant goes on-line in Channelview, TX. Increases company's capacity to 60% of PO and 20% of styrene capacity in North America.

1994:

Agrees to buy and market foam chemical for Rhone-Poulenc S.A.

(Note: Arco Chemical Co. is 83% owned by Atlantic Richfield Co.)

National Sanitary Supply Co

NSS, based in Cincinnati, Ohio, distributes sanitary maintenance and paper supplies to commercial, institutional, and industrial customers. This company saw its institutional holdings go from 27.69% in 1988 to 9.31% in 1994.

1988:

Dividend increase in third quarter (from \$.025 to \$.035).

Acquires Century Papers Inc.

1989:

Dividend increase in third quarter (from \$.035 to \$.04).

1990:

Dividend increase in third quarter (from \$.04 to \$.045).

1991:

Dividend increase in third quarter (from \$.045 to \$.05).

1992:

Certification of incorporation was amended to reduce the number of authorized shares of common stock.

Dividend increase in third quarter (from \$.05 to \$.055).

1993:

Acquires Tidy Tom's Inc., a sanitary maintenance distributor.

Dividend increase in third quarter (from \$.055 to \$.06).

1994:

Century Papers Inc. unit acquires almost all assets of East Texas Chemical Co.

Dividend increase in third quarter (from \$.06 to \$.065).

Two firms that increased institutional holdings significantly over the study period, 1988 to 1994

- 1) Cavalier Homes (1742% increase, from 2.15% in 1988 to 39.61% in 1994)
- 2) Excel Industries (621.6% increase, from 10.08% in 1988 to 72.74% in 1994)

Cavalier Homes

Cavalier Homes Inc., based in Addison, Alabama, designs, produces and sells manufactured homes ("mobile homes"). This company saw its institutional holdings increase from 2.15% of total common shares outstanding in 1988 to 39.61% in 1994, a more than seventeen-fold increase. Some of the company's highlights over this period are:

1989:

Initial dividend declared (\$.02).

1990:

Second quarter net loss.

1991:

Net losses in each of the first three quarters

1992:

Record sales and earnings year, with sales exceeding \$100 million for the first time. Institutional ownership jumped from 12.94% in 1992 to 27.70% in 1993.

5-for-4 stock split in November.

1993:

Acquires Homestead Homes Inc.

Firm signs a new \$13 million loan agreement for CAC; also, an existing \$5 million revolving line of credit saw an interest rate reduction from prime plus 1.5% to prime.

5-for-4 stock split in November.

1994:

Announces intention to open additional production facility.

Sells 1 million common shares to support financing subsidiary, and modernize/expand manufacturing facilities (\$13/share).

Stock listed on NYSE, was on the AMEX since inception in 1986.

Excel Industries Inc.

Excel Industries Inc., based in Elkhart, Indiana, manufactures and sells framed windows to manufacturers of light trucks and vans, buses, cars, RVs, and heavy trucks. Though founded in 1928, it went public only in April 1984. In 1986, acquired Irvin Industries Inc.'s wing ventilator window business. Also in 1986, firm completed a private placement of common equity with Ford in exchange for cash, long-term supply contract, and a Ford subsidiary that manufactured and sold modular window systems. This firm saw its' institutional ownership increase from 10.08% in 1984 to 72.74% in 1994. Some company highlights over this period are:

1988:

Acquires Nyloncraft Inc., manufacturer of thermoplastic products primarily for the automotive industry.

Stock dividend (10%).

1989:

Depressed third- and fourth-quarter earnings, due to auto industry slowdown.

1990:

Acquires window regulator business of Hoover International Inc., a subsidiary of Johnson Controls.

1991:

Quarterly dividend reduced, from \$.10 to \$.06, April.

On 12/31/91, Ford owns 40% of the company's common shares.

1992:

Common share offering in June.

Enters into joint venture with a Brazil firm to produce and supply auto window systems to South American auto makers.

On 12/31/92, Ford owns 30% of the company's common shares.

1993:

Common share offering in March, raised \$30.3 million.

Dividend increase in second quarter (from \$.06 to \$.08).

Sales up by 21% over the preceding year.

On 12/31/93, Ford owns 24% of the company's common shares.

1994:

Ford announces on 1/13/94 that it will dispose of its 24% ownership stake in the company, though Ford officials state that this will not impact the customer-supplier relationship between Ford and the company.

Dividend increase in second quarter (from \$.08 to \$.09).

Two firms that decreased insider holdings significantly over the study period, 1988 to 1994

- 1) Mattel Inc. (85.2% decrease, from 23.49% in 1988 to 3.48% in 1994)
- 2) Rohm and Haas (97.7% decrease, from 49.36% in 1988 to 1.12% in 1994).

Mattel Inc.

Mattel Inc., based in El Segundo, California, designs, develops, and distributes broad variety of toys, primarily "Barbie" dolls, "Hot Wheels" vehicles/accessories, and "See and Say" pre-school toy. This company saw its insider holdings go from 23.49% in 1988 to 3.48% in 1994. Some of the company's highlights over this period are:

1988:

Investment group (including Warburg, Pincus & Co.) raises its shareholdings to 20.4% of total common shares outstanding.

1989:

Coleco agrees to let Mattel distribute its products in Europe (Cabbage Patch Kids).

Judge dismisses Conan Properties Inc.'s trademark infringement lawsuit against Mattel.

Firm posts a fivefold increase in second-quarter net income.

Two vice presidents sell all their stock, at prices close to the high for the year.

Mattel USA Group split into two divisions.

Acquires Corgi Toys Ltd. of England, continuing focus on established toy lines.

1990:

Introduces new Barbie-theme products (clothes, linen, etc.).

Announces first dividend in seven years (\$.03).

Plans to repay \$75 million in senior subordinated extendible notes.

Licensing agreement signed to produce toys/related products based on hit TV series ("The Simpsons").

Market expects Mattel to end 1990 as "the most profitable toy company in the world"; on track to overtake Hasbro Inc as largest toy maker.

Third quarter net income jumps 18% over year earlier figure.

Mattel Inc. added to the recreational products and services industry group of the Dow Jones Inc. as of 12/31/1990.

1991:

Call to redeem \$62.5 million of short-term auction rate preferred shares.

Dividend increased in second quarter, from \$.03 to \$.05.

Early retirement of subordinated sinking fund debentures.

Acquires Aviva Sport Inc., maker of children's sports toys.

Board declares a five-for-four stock split dividend.

Announces long-term plan with Walt Disney Co. to promote Mattel toys in Disney theme parks.

1992:

Joins with Nickelodeon and Viacom to produce activity toys.

Three-for-two stock split, dividend maintained at \$.05.

Board extends a preference share purchase plan.

Fourth quarter earnings lower-than-expected.

1993:

Dividend raised as of second quarter (from \$.05 to \$.06).

Acquires Fisher-Price Inc., infant and pre-school toy maker, in a \$1 billion stock swap.

Fourth quarter loss.

1994:

Licensing agreement with Michael Anthony Jewelers Inc. to create and sell Barbie related precious-metal jewelry.

Prepays \$100 M of 10.69% debt

Buys Kransco, becomes top U.S. toy maker.

Acquires J.S. Spear and Sons (British, Scrabble maker) by bettering Hasbro Co.'s offer.

Higher second quarter income.

Licenses Cabbage Patch Kids, hopes to rejuvenate line.

Announces corporate restructuring, cuts 1,000 jobs (4% of its work force).

Fourth quarter stock split, 5-for-4, boosts payout by keeping its dividend at \$.06 per share.

Rohm & Haas

Rohm & Haas, based in Philadelphia, Pennsylvania, manufactures and sells specialty chemicals, divided into four segments: polymers, resins, and monomers; plastics; performance chemicals; and agricultural chemicals. This company saw its insider holdings go from 49.36% in 1988 to

1.12% in 1994. Some of the company's highlights over this period are:

1988:

Second quarter earnings rises 22%, six months net up 15%.

Dividend increase in third quarter (from \$.23 to \$.28).

1989:

Second quarter earnings drop 8.6%, six months net declines.

Dividend increase in third quarter (from \$.28 to \$.30).

Adds production capacity at Plexiglas manufacturing plant.

1990:

Added capacity in chemical production, to eliminate costly bottlenecks. Anticipates earning upsurge in 1991.

Dividend increase in third quarter (from \$.30 to \$.31).

Fourth quarter profits 72% higher, compared to a year ago.

1991:

Sells patent rights for new insecticide to Royal Dutch/Shell group.

1992:

Agrees to buy 70% of Shipley Co., with newly issued convertible preferred stock and common stock.

Acquires Unocal Corp's polymers business.

Dividend increase in third quarter (from \$.31 to \$.33).

Net loss for the year, due to net charges related to plant downsizing.

1993:

Loss in third quarter (due to charges not related to ongoing operations).

Dividend increase in third quarter (from \$.33 to \$.35).

1994:

Buys pesticide business from Monsanto Co.

EPA approves biocide for marine paint.

First quarter earnings better than analysts' estimates.

Second quarter higher profits - share price increases 4%.

Dividend increase in third quarter (from \$.35 to \$.37).

Fourth quarter earnings 81% higher.

Two firms that increased insider holdings significantly over the study period, 1988 to 1994

- 1) Best Buy Company (1173.5% increase, from 1.89% in 1988 to 24.07% in 1994)
- 2) Phillips Petroleum Company (4494.3% increase, from 0.53% in 1988 to 24.35% in 1994)

Best Buy Company

Best Buy Company, based in Eden Prairie, Minnesota, is a leading, fast-growing discount retailer of name brand consumer electronics, personal computers and other home office products, major appliances, and entertainment software. This company saw its insider holdings increase from 1.89% in 1988 to 24.07% in 1994. Some of the company's highlights over this period are:

1988:

Net income for the year (ended 3/31) is \$2.76 million.

Rumors of being an acquisition target sends stock soaring in August.

After exploring business opportunities, firm decides against either an acquisition or selling itself.

Missouri attorney general sues firm over sales/advertising tactics.

1989:

Net income for the year (ended 3/31) is \$2.06 million.

1990:

January sales rise 15% over a year earlier sales.

Net income for the year (ended 3/31) is \$5.68 million.

May sales rise 25% over a year earlier sales.

Firm sues Onkyo USA Corp. for refusing to supply its products.

Net income for third quarter jumps 47% over year before.

1991:

Net loss for year ended March.

Share price drops 34%, by \$7.25, when firm informs investors that same-store sales in December are off.

1992:

Share bounces up \$3.75, as firm states overall sales for December 1991 were 48% higher than a year ago.

1993:

3-for-2 stock split announced in July, paid in September.

Higher-than-expected third quarter earnings.

1994:

2-for-1 stock split announced in April.

Two shareholders file suit, alleging firm issued misleading reports about future growth prospects.

Phillips Petroleum Company

Phillips Petroleum Company, based in Bartlesville, Oklahoma, is engaged in exploration, production, refining and marketing of petroleum and natural gas. It also produces and distributes chemicals. This firm saw its insider holdings increase from 0.53% in 1988 to 24.35% in 1994. Some of the company highlights over the study period are:

1988:

10% increase in capital spending planned over 1987 level.

S&P raised rating on \$5.6 billion of firm's debt in March.

Adopts benefit plan to increase employee ownership of common stock, from 15% to 20%. Sells 17.4 million newly issued common shares to the new employee benefit plan.

Early redemption of adjustable-rate preferred stock, due 1990.

Dividend increase, from \$.15 to \$.18, payable in

September.

Moody's raised rating on \$4.9 billion of securities in September.

Acquires 50% interest in 750,000 acres in United Arab Emirates.

1989:

Dividend increased by 22%, from \$.18 to \$.22 per share.

Firm defeats two takeover raids.

Redeems \$440 million of senior notes, scraps plan to issue \$400 million of debentures.

Forms joint venture with Hyundai Corp, South Korea and Overseas Petroleum & Investment Corp, China, to explore for oil and natural gas in U.S.

Dividend increased by 14%, from \$.22 to \$.25 per share.

Further reduces debt, redeems notes due in 1992.

Third quarter earnings drops by 60% from year earlier.

Explosions rip through plastics plant in Houston, Texas.

Signs oil and natural gas exploration contract with Somalia.

1990:

Posts record loss of \$255 for fourth quarter 1989, in part due to explosion in Houston facility.

Dividend increased from \$.25 to \$.28 per share.

1991:

Authorizes repurchase of up to \$100 million of common stock.

In partnership with Partek Corp, proposes to build a plastics recycling plant in Tulsa, Oklahoma.

Announces plan to sell assets worth \$500 million by end 1993.

Chairman of firm sells stock holdings worth over \$1 million.

Announces write-down of \$244 million on an oil field in

CA.

1992:

Announces capital spending 16% lower than 1991, January.

Redeems two issues early, \$780 million of senior notes due in 1997 and \$513 million of subordinated notes due in 2000.

Announces plan to reduce world-wide work force by about 5%.

Further 13% cut in capital spending announced, May.

Norwegian Petroleum Directorate threatens to close operations at Ekofisk complex in the North Sea. Firm responds with proposal to enhance safety precautions, cost \$1.6 billion.

Approves marginal increase in 1993 capital spending, December.

1993:

Sells issue, January.

Plan to redeem two issues of debentures, worth \$173 million.

Firm and its partners state plan to rebuild Ekofisk, cost between \$3 to \$4 billion.

1994:

Announces new Chairman and CEO, to replace retiring incumbent.

Internal promotion of current President and COO.

Signs an agreement with nonutility power-generation subsidiary of Central & South West Corp to develop cogeneration plant.

APPENDIX B

Table 1. Sample selection process

Screen Criteria	# of Firms
Firms in unregulated industries with insider holdings data available for each year in the study period, 1988 to 1994	1085
Institutional holdings data available for at least five years in the study period, 1988 to 1994	897
Variable data available on Compustat for at least five years in the study period, 1988 to 1994	573
Industry groups, based on two-digit SIC codes, with at least five firms within each group	516

Note: The final sample used for the study consists of 516 firms in twenty three unregulated industries.

Table 2. Sample descriptive statistics

VARIABLE	MEAN	MEDIAN	Q1	Q3	MIN	MAX
Panel A - Full sample						
PCTHOLD	20.61%	16.16%	6.07%	30.50%	0.16%	81.08%
PCTINST	34.96%	34.47%	17.45%	51.72%	0.00%	78.74%
DEBT	15.73%	13.76%	4.48%	24.25%	0.00%	72.48%
DIVYIELD	1.59%	0.65%	0.00%	2.70%	0.00%	41.01%
TOBIN Q	1.10	0.76	0.44	1.21	-0.39	11.18
PROFIT	12.13%	13.60%	9.16%	17.91%	-95.57%	52.29%
SIZE (\$ MM)	1084.97	117.48	31.01	447.63	2.25	34392.57
RNDEXPSE	6.39%	4.16%	1.38%	8.80%	0.00%	46.09%
FIXEDASST	29.46%	26.49%	16.41%	39.41%	0.86%	87.31%
PCTHOLD	= Shares held by officers and directors/Total shares outstanding					
PCTINST	= Shares held by institutions/Total shares outstanding					
DEBT	= Long term debt/Total assets					
DIVYIELD	= Dividend per share/Price per share					
TOBIN Q	= Replacement value of assets/Book value of assets					
PROFIT	= Operating income/Total assets					
SIZE	= Book value of total assets					
RNDEXPSE	= R&D expenditures/Total assets					
FIXEDASST	= Net fixed assets/Total assets					

Note: The mean, median, first and third quartile, minimum and maximum values of the variables used in the regression analysis are given above. Values are calculated as seven year averages over the study period, 1988 to 1994. The sample is 516 firms, which have insider holdings and institutional holdings for at least five of the seven years in the study period. Tobin's q and R&D expenses are not available for all the firms in the sample.

Table 2 (continued)

VARIABLE	MEAN	MEDIAN	Q1	Q3	MIN	MAX
Panel B - Firms with insider holdings below 5%						
PCTHOLD	2.34%	2.12%	1.08%	3.65%	0.16%	4.98%
PCTINST	55.72%	58.82%	48.84%	66.20%	2.74%	78.74%
DEBT	18.25%	18.28%	11.03%	24.67%	0.00%	40.75%
DIVYIELD	2.62%	2.69%	1.61%	3.49%	0.00%	9.36%
TOBIN Q	1.02	0.81	0.59	1.08	0.13	5.88
PROFIT	15.34%	14.62%	11.80%	17.42%	-0.63%	40.79%
SIZE (\$ MM)	3778.52	1595.31	562.15	4782.06	37.21	34392.57
RNDEXPSE	4.31%	2.86%	1.15%	6.54%	0.00%	21.64%
FIXEDASST	36.00%	33.21%	24.47%	44.59%	8.25%	75.96%

Note: The mean, median, first and third quartile, minimum and maximum values of the variables used in the regression analysis are given above. Values are calculated as seven year averages over the study period, 1988 to 1994. The sample is 109 firms with average insider holdings less than five percent, and which have insider holdings and institutional holdings for at least five of the seven years in the study period. Tobin's q and R&D expenses are not available for all the firms in the sample.

Table 2 (continued)

VARIABLE	MEAN	MEDIAN	Q1	Q3	MIN	MAX
Panel C - Firms with insider holdings between 5%-25%						
PCTHOLD	13.99%	13.97%	8.56%	18.53%	5.06%	24.90%
PCTINST	35.91%	35.94%	20.92%	49.68%	1.13%	75.34%
DEBT	14.43%	10.04%	3.31%	23.48%	0.00%	72.48%
DIVYIELD	1.32%	0.06%	0.00%	2.33%	0.00%	28.55%
TOBIN Q	1.24	0.78	0.46	1.38	-0.14	10.42
PROFIT	10.46%	13.23%	9.10%	17.87%	-95.57%	34.80%
SIZE (\$ MM)	521.93	102.80	36.67	279.74	2.25	12775.80
RNDEXPSE	7.88%	5.45%	2.32%	11.41%	0.00%	46.09%
FIXEDASST	28.08%	24.30%	15.72%	37.02%	2.42%	84.66%

Note: The mean, median, first and third quartile, minimum and maximum values of the variables used in the regression analysis are given above. Values are calculated as seven year averages over the study period, 1988 to 1994. The sample is 235 firms with average insider holdings five percent or greater but less than twenty-five percent, and which have insider holdings and institutional holdings for at least five of the seven years in the study period. Tobin's q and R&D expenses are not available for all the firms in the sample.

Table 2 (continued)

VARIABLE	MEAN	MEDIAN	Q1	Q3	MIN	MAX
Panel D - Firms with insider holdings greater than 25%						
PCTHOLD	41.23%	40.35%	30.50%	48.43%	25.17%	81.08%
PCTINST	20.50%	18.91%	9.80%	30.08%	0.00%	54.91%
DEBT	15.93%	13.33%	2.22%	24.57%	0.00%	71.82%
DIVYIELD	1.31%	0.00%	0.00%	1.48%	0.00%	41.01%
TOBIN Q	0.97	0.57	0.29	1.11	-0.39	11.18
PROFIT	12.39%	12.78%	7.37%	18.21%	-20.49%	52.29%
SIZE (\$ MM)	147.28	40.46	18.26	118.42	2.25	3343.76
RNDEXPSE	5.65%	3.35%	1.06%	8.71%	0.00%	36.86%
FIXEDASST	27.21%	23.34%	13.46%	39.06%	0.86%	87.31%

Note: The mean, median, first and third quartile, minimum and maximum values of the variables used in the regression analysis are given above. Values are calculated as seven year averages over the study period, 1988 to 1994. The sample is 172 firms with average insider holdings twenty-five percent or greater, which have insider holdings and institutional holdings for at least five of the seven years in the study period. Tobin's q and R&D expenses are not available for all the firms in the sample.

Table 3. Significant difference of means tests across sub-samples, based on level of insider holdings

VARIABLE	GROUP I MEAN	GROUP II MEAN	GROUP III MEAN	I vs. II T-stat.	II vs. III T-stat.	I vs. III T-stat.
PCTHOLD	2.34%	13.99%	41.23%	-28.48	-26.91*	-41.03*
PCTINST	55.72%	35.91%	20.50%	10.69*	9.56*	19.78*
DEBT	18.25%	14.43%	15.93%	2.96*	-1.03	1.58
DIVYIELD	2.62%	1.32%	1.31%	5.50*	0.03	4.10*
TOBIN Q	1.02	1.24	0.97	-1.71**	1.87**	0.38
PROFIT	15.34%	10.46%	12.39%	3.92*	-1.45	2.98*
SIZE(\$ MM)	3778.52	521.93	147.28	5.71*	3.47*	6.47*
RNDEXPSE	4.31%	7.88%	5.65%	-4.65*	2.63*	-1.80**
FIXEDASST	36.00%	28.08%	27.21%	4.25*	0.51	4.38*

* = significant at the .01 level or better.

** = significant at the .09 level or better.

Note: Given above are the mean values of the variables used in the regression analysis for sub-samples of the data set, created based on average insider holdings and the results of the significant differences of means tests across the following groups:

Group I - insider holdings below five percent, 109 firms.

Group II - insider holdings five percent or greater, but less than twenty-five percent, 235 firms.

Group III - insider holdings twenty-five percent or greater, 172 firms

Table 5. Firms that saw an increase in institutional holdings

NAME	1988	1989	1990	1991	1992	1993	1994
INSIDER HOLDINGS							
CAVALIER	22.72%	25.90%	26.03%	31.50%	29.85%	19.07%	15.73%
EXCEL	17.14%	12.57%	10.39%	9.50%	67.36%	2.77%	2.58%
INSTITUTIONAL HOLDINGS							
CAVALIER	2.15	6.94	11.07	9.82	12.94	27.70	39.61
EXCEL	10.08	20.77	26.03	30.43	32.81	48.15	72.74
TOTAL ASSETS (\$ MM)							
CAVALIER	15.43	14.93	14.84	14.58	19.97	31.18	63.76
EXCEL	123.40	125.89	155.72	150.65	182.10	229.32	254.63
NET SALES (\$ MM)							
CAVALIER	92.05	78.13	68.90	67.62	106.41	155.83	207.15
EXCEL	259.93	277.11	281.37	352.27	426.87	515.68	607.18
MARKET-TO-BOOK RATIO							
CAVALIER	1.27	1.39	1.03	0.60	0.81	3.56	3.14
EXCEL	1.04	1.85	1.37	1.29	1.01	2.19	1.83
PROFITS (OPERATING INCOME AS A % OF TOTAL ASSETS)							
CAVALIER	22.68%	8.83%	10.78%	9.11%	5.56%	19.31%	20.29%
EXCEL	20.36%	18.93%	20.31%	13.91%	10.97%	13.88%	13.84%
RETURN ON SALES (OPERATING INCOME/NET SALES)							
CAVALIER	3.99%	1.48%	2.06%	1.96%	1.20%	3.62%	4.06%
EXCEL	9.24%	8.99%	9.23%	7.70%	4.69%	5.92%	6.16%
DEBT (AS A % OF TOTAL ASSETS)							
CAVALIER	14.39%	9.00%	6.57%	3.52%	1.09%	0.00%	0.00%
EXCEL	29.34%	38.74%	32.73%	32.58%	31.03%	19.00%	15.30%
DIVIDEND PAYOUT (AS A % OF OPERATING INCOME)							
CAVALIER	0.00%	0.00%	4.85%	11.25%	17.76%	4.10%	3.59%
EXCEL	12.48%	9.98%	10.08%	11.93%	9.43%	7.63%	9.99%
R&D EXPENSES (AS A % OF TOTAL ASSETS)							
CAVALIER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EXCEL	2.13%	1.78%	2.14%	2.31%	3.45%	3.03%	3.45%

Table 6. Firms that saw a decrease in insider holdings

NAME	1988	1989	1990	1991	1992	1993	1994
INSIDER HOLDINGS							
MATTEL	23.49%	25.94%	24.60%	23.96%	20.38%	3.21%	3.48%
R & H	49.36%	0.96%	1.04%	0.94%	1.01%	0.97%	1.12%
INSTITUTIONAL HOLDINGS							
MATTEL	28.14	33.53	57.60	59.67	66.53	74.50	79.46
R & H	58.79	62.74	59.18	61.48	62.66	66.95	68.59
TOTAL ASSETS (\$ MM)							
MATTEL	693.36	830.27	929.77	1060.69	1260.29	2000.08	2459.03
R & H	2242.00	2455.00	2702.00	2897.00	3445.00	3524.00	3861.00
NET SALES (\$ MM)							
MATTEL	989.98	1237.00	1470.63	1621.73	2563.53	2704.45	3205.00
R & H	2535.00	2670.00	2834.00	2773.00	3072.00	3278.00	3534.00
MARKET-TO-BOOK RATIO							
MATTEL	3.13	3.47	4.48	3.01	4.79	4.64	4.59
R & H	2.00	1.90	1.77	1.96	2.27	2.80	3.08
PROFITS (OPERATING INCOME AS A % OF TOTAL ASSETS)							
MATTEL	13.29%	18.92%	24.46%	25.06%	27.85%	25.78%	25.91%
R & H	20.88%	21.41%	17.27%	17.28%	15.26%	16.52%	15.89%
RETURN ON SALES (OPERATING INCOME/NET SALES)							
MATTEL	10.09%	13.25%	16.42%	15.85%	18.21%	17.58%	19.16%
R & H	18.52%	18.94%	15.88%	16.48%	15.94%	18.52%	17.08%
DEBT (AS A % OF TOTAL ASSETS)							
MATTEL	31.84%	35.08%	21.38%	18.08%	17.45%	22.79%	16.67%
R & H	13.20%	12.85%	14.62%	22.13%	24.78%	20.29%	19.58%
DIVIDEND PAYOUT (AS A % OF OPERATING INCOME)							
MATTEL	0.00%	0.00%	0.00%	1.90%	3.32%	5.42%	5.58%
R & H	14.46%	13.96%	18.16%	16.92%	18.10%	14.76%	15.89%
R&D EXPENSES (AS A % OF TOTAL ASSETS)							
MATTEL	4.51%	4.45%	4.64%	4.66%	4.52%	4.73%	3.77%
R & H	7.27%	6.96%	7.12%	6.59%	6.32%	5.79%	5.82%

Table 7. Firms that saw an increase in insider holdings

NAME	1988	1989	1990	1991	1992	1993	1994
INSIDER HOLDINGS							
BEST BUY	1.89%	42.69%	43.06%	43.05%	33.72%	28.56%	24.07%
PHILLIPS	0.53%	0.63%	0.79%	1.08%	1.21%	23.94%	24.35%
INSTITUTIONAL HOLDINGS							
BEST BUY	21.24	23.6	27.96	29.09	42.47	62.45	76.89
PHILLIPS	51.08	35.93	40.96	42.75	41.08	45.53	49.88
TOTAL ASSETS (\$ MM)							
BEST BUY	139.95	156.79	185.53	337.22	439.14	952.49	1507.13
PHILLIPS	11968.00	11256.00	12130.00	11473.00	11468.00	10868.00	11453.00
NET SALES (\$ MM)							
BEST BUY	506.67	512.85	664.82	929.69	1619.98	3006.53	5079.55
PHILLIPS	11304.00	12384.00	13603.00	12604.00	11933.00	12309.00	12211.00
MARKET-TO-BOOK RATIO							
BEST BUY	1.15	0.75	0.82	1.17	2.46	3.12	3.51
PHILLIPS	1.98	2.24	2.89	2.49	2.26	2.42	2.82
PROFITS (OPERATING INCOME AS A % OF TOTAL ASSETS)							
BEST BUY	12.12%	12.28%	10.12%	8.54%	11.55%	10.45%	10.65%
PHILLIPS	15.23%	21.55%	20.49%	18.31%	12.73%	12.96%	12.95%
RETURN ON SALES (OPERATING INCOME/NET SALES)							
BEST BUY	3.35%	3.75%	2.82%	3.10%	3.13%	3.31%	3.16%
PHILLIPS	17.20%	22.82%	18.62%	16.33%	11.59%	12.45%	11.43%
DEBT (AS A % OF TOTAL ASSETS)							
BEST BUY	24.85%	22.39%	19.07%	4.41%	10.96%	22.13%	15.08%
PHILLIPS	44.74%	39.78%	35.00%	31.65%	33.78%	32.42%	29.52%
DIVIDEND PAYOUT (AS A % OF OPERATING INCOME)							
BEST BUY	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PHILLIPS	7.43%	6.09%	9.93%	11.53%	19.92%	19.58%	20.75%
R&D EXPENSES (AS A % OF TOTAL ASSETS)							
BEST BUY	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PHILLIPS	0.78%	0.84%	1.18%	1.05%	1.04%	0.84%	0.86%

Table 8. Sample, by industry groups

Industry	N	PCTHOLD	PCTINST	DEBT	DIVYIELD
Oil & Gas	23	17.43%	33.70%	20.89%	1.40%
Food	15	19.16%	37.62%	18.27%	2.11%
Textile products	13	29.11%	30.25%	19.59%	1.40%
Paper products	17	17.90%	49.12%	29.21%	2.58%
Chemicals	45	18.87%	37.48%	15.26%	2.75%
Oil refining	5	10.97%	48.39%	22.24%	3.86%
Rubber products	15	19.75%	39.01%	24.29%	3.49%
Leather products	5	25.13%	35.59%	8.82%	1.84%
Stone, clay, etc	8	39.99%	23.72%	24.14%	1.26%
Primary metal	8	6.37%	53.73%	18.08%	3.23%
Fabr. metal	14	16.37%	34.06%	21.65%	2.59%
Machinery	84	20.72%	33.63%	13.55%	1.23%
Electronics	74	19.48%	35.15%	13.85%	1.14%
Trans. equip.	18	15.35%	41.87%	16.23%	2.61%
Instruments	55	21.17%	32.49%	13.20%	0.93%
Misc. mfg.	9	33.08%	26.78%	17.62%	0.57%
Wholesale, dur.	19	20.03%	41.21%	18.34%	1.43%
W/sale, non-dur.	10	23.87%	31.29%	16.46%	1.72%
Apparel & access.	9	30.57%	37.60%	7.75%	1.62%
Misc. retail	5	28.41%	19.72%	15.82%	0.13%
Business services	43	25.20%	27.98%	8.65%	1.14%
Health services	9	28.75%	25.58%	21.14%	0.32%
Services, NEC	13	10.97%	39.03%	15.54%	1.10%
	516	20.61%	34.96%	15.73%	1.59%

Table 9. 3SLS regression results for full sample

Panel A: Structural Equation 1 Dependent Variable = Debt Ratio			
Independent Variable	3 Equation System	Augmented 3 Equation System	4 Equation System
Constant	0.0533 0.91	0.0828 1.42	0.0862 1.48
Dividend Yield	1.3028* 6.39	1.2892* 6.38	1.2870* 6.37
Insider Ownership	0.1000* 2.53	-0.0063 -0.15	-0.0507 -1.20
Institutional Ownership		-0.0015* -3.27	-0.0028* -6.10
Tobin's Q	-0.0097* -2.18	-0.0091* -2.05	-0.0080 -1.81
Profitability	-0.2170* -4.16	-0.1728* -3.25	-0.1375* -2.59
R&D	-0.2948* -2.49	-0.2762* -2.35	-0.2496* -2.12
Fixed Assets	0.2231* 4.79	0.2193* 4.74	0.2099* 4.59
Logsize	0.0137* 3.51	0.0202* 4.20	0.0283* 5.89
System weighted R ²	0.3181	0.3628	0.6453

* = significant at the .05 level or better.

Note: 3SLS regression results are presented for 516 firms over the period 1988 to 1994. Three models are presented above. The first model is run as a three equation system, with dividend yield, debt, and insider ownership as the dependent variables, using independent variables from prior research. Next, the same system is augmented by institutional ownership as a new explanatory variable in each of the three equations of the first model. The last model is run as a four equation system, with institutional ownership as the fourth dependent variable.

Debt ratio, dividend yield, insider holdings, and institutional ownership are the dependent variable in the regression equations in Panels A through D, respectively.

Table 9 (continued)

Panel B: Structural Equation 2 Dependent Variable = Dividend Yield			
Independent Variable	3 Equation System	Augmented 3 Equation System	4 Equation System
Constant	0.0043 0.39	0.0025 0.22	0.0018 0.16
Debt Ratio	0.0594* 6.23	0.0601* 6.22	0.0601* 6.22
Insider Ownership	-0.0176* -2.04	-0.0132 -1.41	-0.0112* -4.21
Institutional Ownership		0.0001 0.58	0.0001 0.95
Tobin's Q	0.0003 0.34	0.0003 0.32	0.0003 0.30
Profitability	0.0356* 3.13	0.0339* 2.91	0.0329* 2.82
R&D	0.0030 0.12	0.0026 0.10	0.0019 0.07
Logsize	0.0010 1.19	0.0007 0.69	0.0005 0.51

* = significant at the .05 level or better.

Table 9 (continued)

Panel C: Structural Equation 3 Dependent Variable = Insider Ownership			
Independent Variable	3 Equation System	Augmented 3 Equation System	4 Equation System
Constant	0.4574* 17.16	0.4346* 17.45	0.4123* 16.57
Dividend Yield	-0.4886* -2.04	-0.3134 -1.41	-0.2651 -1.19
Debt Ratio	0.1498* 2.93	0.0098 0.20	-0.0426 -0.89
Institutional Ownership		-0.0041* -8.97	-0.0072* -16.62
Tobin's Q	-0.0096 -1.87	-0.0060 -1.26	-0.0029 -0.62
Profitability	0.0921 1.53	0.1700* 3.00	0.2364* 4.18
R&D	-0.1999 -1.46	-0.1217 -0.96	-0.0478 -0.38
Logsize	-0.0545* -14.82	-0.0193* -3.75	0.0059 1.20

* = significant at the .05 level or better.

Table 9 (continued)

Panel D: Structural Equation 4 Dependent Variable = Institutional Ownership	
Independent Variable	4 Equation System
Constant	22.4695* 7.98
Dividend Yield	19.3216 0.95
Debt Ratio	-26.2355* -6.10
Insider Ownership	-59.9862* -16.62
Tobin's Q	0.2757 0.63
Profitability	23.9984* 4.69
R&D	6.5446 0.56
Logsize	5.2645* 14.32

* = significant at the .05 level or better.

Table 10. Determination of the role of institutional ownership on corporate policy choices

	R^2	ICOMP
3 equation system	0.3628	161.02
4 equation system	0.6453	2366.59

Note: Given above are the results of testing the 3SLS regressions run using models 2 and 3. Model 2 is a simultaneous system of 3 equations, with debt, dividend yield, and insider holdings as the three dependent variables, and institutional ownership included as an explanatory variable in all three structural equations. Model 3 is a simultaneous system of 4 equations, with debt, dividend, insider holdings and institutional ownership as the four dependent variables.

ICOMP is calculated using the system-weighted R^2 of the 3SLS regression and $\text{Cov}(\theta^{\sim})$, the covariance matrix of the parameter estimates, as under:

$$\text{ICOMP}(\text{IFIM}) = -N \log(1-R^2) + 2 \cdot C_1(\text{Cov}(\theta^{\sim}))$$

where

N = Total sample size

$$C_1(\text{Cov}(\theta^{\sim})) = 0.5s \log[(\text{tr Cov}(\theta^{\sim}))/s] - 0.5 \log(\det \text{Cov}(\theta^{\sim}))$$

s = $\dim(\text{Cov}(\theta^{\sim}))$ = $\text{rank}(\text{Cov}(\theta^{\sim}))$

$\det \text{Cov}(\theta^{\sim})$ = determinant $(\text{Cov}(\theta^{\sim}))$

Table 11. 3SLS regression results for firms with low insider holdings

Panel A: Structural Equation 1 Dependent Variable = Debt Ratio	
Independent Variable	Sub-sample 3 Equation System
Constant	0.0039 0.05
Dividend Yield	1.2186* 2.06
Insider Ownership	4.0152* 5.41
Institutional Ownership	-0.0016* -2.26
Tobin's Q	-0.0207 -1.02
Profitability	-0.3258 -1.29
R&D	-0.2205 -0.90
Fixed Assets	0.2515* 3.24
Logsize	0.0208* 2.38
System weighted R ²	0.5665

* = significant at the .05 level or better.

Note: 3SLS regression results are presented for 104 firms over the period 1988 to 1994, which have insider holdings less than five percent. The model presented above is run as a three equation system, with dividend yield, debt, and insider ownership as the dependent variables, using independent variables from prior research. The system is augmented by institutional ownership as a new explanatory variable in each of the three equations of the model.

Debt ratio, dividend yield, and insider holdings are the dependent variables in the regression equations in Panels A through C, respectively.

Table 11 (continued)

Panel B: Structural Equation 2 Dependent Variable = Dividend Yield	
Independent Variable	Sub-sample 3 Equation System
Constant	0.0418* 2.72
Debt Ratio	0.0309 1.59
Insider Ownership	-0.4906* -3.39
Institutional Ownership	-0.0003 -1.89
Tobin's Q	-0.0090* -2.41
Profitability	0.1105* 2.38
R&D	-0.1417* -3.26
Logsize	-0.0008 -0.47

* = significant at the .05 level or better.

Table 11 (continued)

Panel C: Structural Equation 3 Dependent Variable = Insider Ownership	
Independent Variable	Sub-sample 3 Equation System
Constant	0.0520* 4.39
Dividend Yield	-0.2697* -3.39
Debt Ratio	0.0643* 4.74
Institutional Ownership	0.0001 1.09
Tobin's Q	-0.0026 -0.90
Profitability	0.0576 1.64
R&D	0.0087 0.25
Logsize	-0.0063* -6.28

* = significant at the .05 level or better.

Table 12. 3SLS regression results for firms with medium insider holdings

Panel A: Structural Equation 1 Dependent Variable = Debt Ratio	
Independent Variable	Sub-sample 3 Equation System
Constant	0.0805 1.44
Dividend Yield	1.2706* 3.69
Insider Ownership	-0.2938* -1.96
Institutional Ownership	-0.0024* -3.50
Tobin's Q	-0.0057 -0.94
Profitability	-0.1766* -2.43
R&D	-0.2598 -1.64
Fixed Assets	0.0620 0.88
Logsize	0.0360* 4.29
System weighted R ²	0.3494

* = significant at the .05 level or better.

Note: 3SLS regression results are presented for 223 firms over the period 1988 to 1994, which have insider holdings greater than or equal to five percent but less than twenty-five percent. The model presented above is run as a three equation system, with dividend yield, debt, and insider ownership as the dependent variables, using independent variables from prior research. The system is augmented by institutional ownership as a new explanatory variable in each of the three equations of the model.

Debt ratio, dividend yield, and insider holdings are the dependent variables in the regression equations in Panels A through C, respectively.

Table 12 (continued)

Panel B: Structural Equation 2 Dependent Variable = Dividend Yield	
Independent Variable	Sub-sample 3 Equation System
Constant	0.0038 0.28
Debt Ratio	0.0524* 3.68
Insider Ownership	-0.0118 -0.39
Institutional Ownership	0.0002 1.69
Tobin's Q	0.0003 0.23
Profitability	0.0040 0.27
R&D	-0.0298 -0.92
Logsize	-0.0004 -0.27

* = significant at the .05 level or better.

Table 12 (continued)

Panel C: Structural Equation 3 Dependent Variable = Insider Ownership	
Independent Variable	Sub-sample 3 Equation System
Constant	0.2204* 7.96
Dividend Yield	-0.0644 -0.39
Debt Ratio	-0.0646 -1.92
Institutional Ownership	-0.0010* -3.09
Tobin's Q	-0.0003 -0.09
Profitability	0.0234 0.67
R&D	0.0118 0.16
Logsize	-0.0050 -1.23

* = significant at the .05 level or better.

Table 13. 3SLS regression results for firms with high insider holdings

Panel A: Structural Equation 1 Dependent Variable = Debt Ratio	
Independent Variable	Sub-sample 3 Equation System
Constant	0.1809* 2.33
Dividend Yield	1.3756* 4.34
Insider Ownership	-0.3178* -3.19
Institutional Ownership	-0.0038* -3.03
Tobin's Q	-0.0050 -0.58
Profitability	-0.2550* -1.99
R&D	-0.5096 -1.94
Fixed Assets	0.2807* 3.10
Logsize	0.0390 3.08
System weighted R^2	0.3755

* = significant at the .05 level or better.

Note: 3SLS regression results are presented for 104 firms over the period 1988 to 1994, which have insider holdings twenty-five percent or greater. The model presented above is run as a three equation system, with dividend yield, debt, and insider ownership as the dependent variables, using independent variables from prior research. The system is augmented by institutional ownership as a new explanatory variable in each of the three equations of the model.

Debt ratio, dividend yield, and insider holdings are the dependent variables in the regression equations in Panels A through C, respectively.

Table 13 (continued)

Panel B: Structural Equation 2 Dependent Variable = Dividend Yield	
Independent Variable	Sub-sample 3 Equation System
Constant	0.0008 0.03
Debt Ratio	0.0886* 4.18
Insider Ownership	-0.0279 -1.04
Institutional Ownership	0.0004 1.20
Tobin's Q	-0.0009 -0.42
Profitability	0.0976* 2.95
R&D	0.0601 0.87
Logsize	-0.0035 -1.02

* = significant at the .05 level or better.

Table 13 (continued)

Panel C: Structural Equation 3 Dependent Variable = Insider Ownership	
Independent Variable	Sub-Sample 3 Equation System
Constant	0.5365* 8.09
Dividend Yield	-0.2868 -1.03
Debt Ratio	-0.2212* -3.20
Institutional Ownership	-0.0046* -4.53
Tobin's Q	0.0020 0.27
Profitability	-0.0848 -0.78
R&D	-0.3005 -1.35
Logsize	0.0158 1.45

* = significant at the .05 level or better.

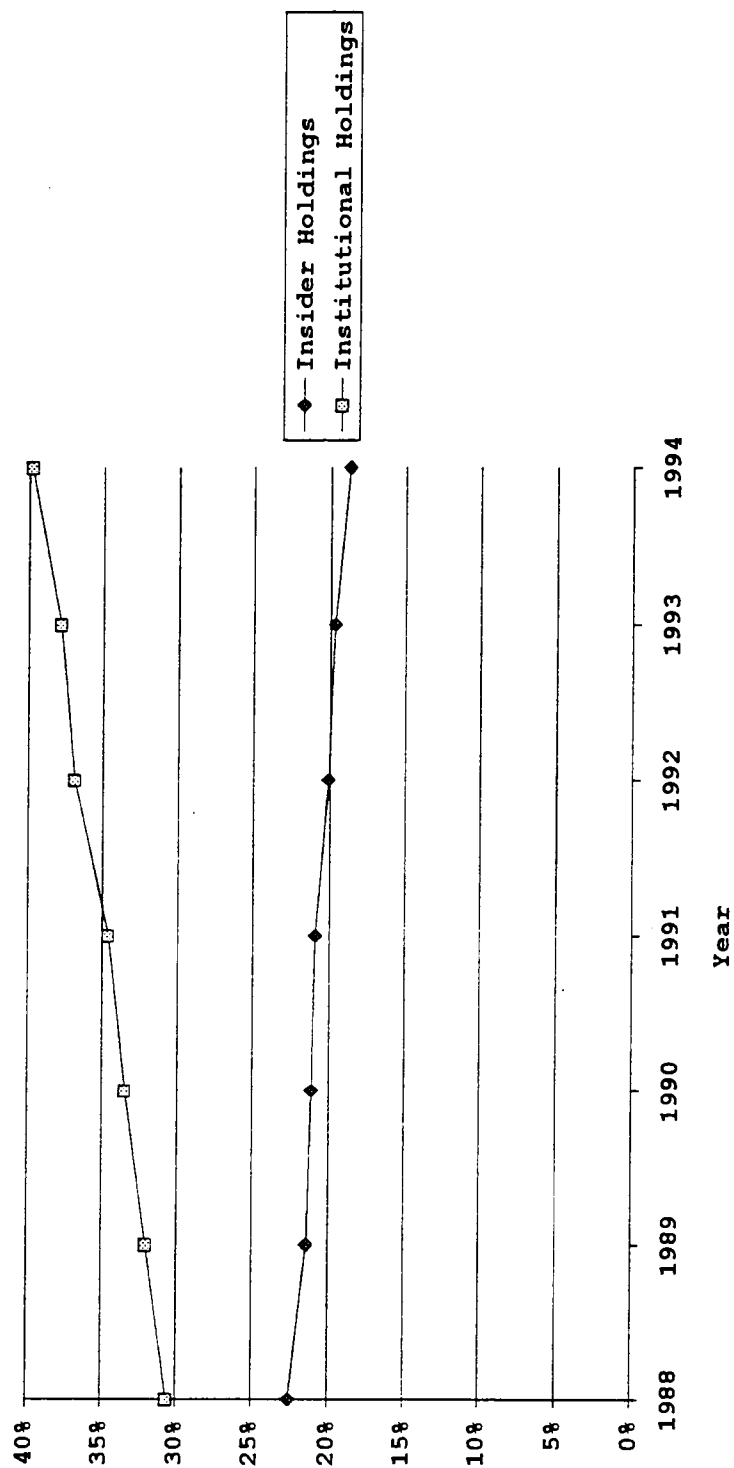


Figure 1
Ownership averages, 1988-1994

VITA

Amitabh Shanker Dutta was born in Jabalpur in the state of Madhya Pradesh, India. He passed the I.C.S.E. examination from Dunne's Institute, Bombay in 1976. In 1978, he passed the H.S.C. examination from Elphinstone College, Bombay with a Science major. He earned a B.Sc. degree with a major in Statistics and a minor in Mathematics from Elphinstone College, Bombay, graduating in May 1981.

From June 1981 to July 1988, he was an entrepreneur, being involved in several greenfield ventures in manufacturing and marketing. In August 1988 he enrolled in the Master in Business Administration program at the Babcock Graduate School of Management, Wake Forest University, Winston-Salem, North Carolina. Graduating with an M.B.A. degree in May 1990, he worked as an analyst and an internal auditor for three years.

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