LEBANESE AMERICAN UNIVERSITY

THE EFFECT OF CEO OWNERSHIP AND CEO ENTRENCHMENT ON FIRM VALUE

By

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A thesis
Submitted in partial fulfillment of the requirements
for the degree of Master of Business Administration

School of Business
June 2011

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Lebanese American University

LEBANESE AMERICAN UNIVERRSITY

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Program: Master of Business Administration

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ACKNOWLEDGEMENTS

I would like to express my sincere appreciation to Dr. Abedallah Al-Dah, Dr. Anwar Boumosleh, and Mr. Mustafa Al-Dah for the extensive time, continuous support, leadership, and assistance that they provided me throughout the duration of completing this thesis.

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ABSTRACT

We investigate the relation between firm value, CEO equity ownership and managerial entrenchment. Our results concerning the coefficients and their respective signs are consistent with the existing literature. However, there is no evidence of a specific non-monotonic relation between Tobin's Q and percentage of CEO equity ownership.

This paper also examines the marginal impact of investment spending on capital and research on firm value under different governance schemes. Though the sign and significance of management entrenchment has the predicted negative impact on firm value, the marginal impacts of capital expenditure, research and development spending on firm value increase for firms with highly entrenched managers (low shareholder rights), as compared to firms with low management entrenchment (high shareholder rights). That said, such an increase in marginal effect, of capital and research, most likely to be the result of under spending on such value enhancing activities. This result suggests that the selection of investment opportunities, firm's cash holding, and efficiency of internal capital markets could be a major source of friction between management and shareholders.

Keywords: Firm Value, CEO Ownership, Entrenchment, Research and Development, Capital Expenditures

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CHAPTER ONE

INTRODUCTION

Due to the separation between management and ownership, the profit or value maximizing model may be too simplistic, and certainly unrealistic. Managers have their own objectives that might or might not converge with owners' objectives. The need to align managers' and shareholders' objectives triggered an enormous research that investigates the relationship between the firm's governance structure and value. Gompers et al. (2003) argue that "firms with stronger shareholders rights had higher firm value, higher profits, higher sales growth, lower capital expenditures, and made fewer corporate acquisitions". McConneland and Servaes (1990) suggest that there is a relationship between firm value and management equity ownership. Specifically, they highlight a curvilinear relationship between top executives' ownership and shareholders' wealth. The question of whether or not managerial entrenchment and equity ownership affect shareholders' wealth remain of interest to academicians, practitioners, and policy makers alike. The protection of shareholders is a prerequisite for the development and growth of capital markets. There is ample literature on how inefficient internal capital markets are in conglomerate and diversified firms. Firm value maximization certainly requires proper investment spending and efficient allocation of company's scarce resources.

There is no consensus, however, on how investment decisions, concerning spending on capital expenditures and R&D, are influenced by managerial entrenchment. The first argument suggests that highly entrenched managers are more likely to have better long-

term investment decisions, while less entrenched managers will focus on short-term cash generating projects that are of little value to a firm's growth. Therefore, better value enhancing activities –Investments and R&D expenses– are positively related to managerial entrenchment. The second argument states that less entrenched, threatened managers are more likely to align their objectives with those of shareholders. Lins and Kalcheva (1994) findings suggest that conglomerate firms with low shareholder rights tend to have more cash holdings. Harford (1999) argues that the availability of cash holdings encourage decisions of value-decreasing investments such as unnecessary acquisitions. It is therefore one of our objectives in this paper to empirically support either of the above two arguments. That is, how entrenchment affects the value of a firm, directly or indirectly through management of cash holdings and investment choices.

We find no evidence on the non-monotonic relation between CEO ownership and shareholders' wealth, as proxied by Tobin's q. In particular, we document a positive monotonic relation between firm value and CEO ownership with no evidence on the turning points suggested by Griffith (1999). Moreover, consistent with previous findings, we highlight and inverse relation between managerial entrenchment and firm value. Furthermore, we suggest that highly entrenched managers tend to spend less on value enhancing activities such as capital expenditure and R&D.

Therefore, we contribute to the intellectual debate on the relation between CEO ownership and firm value. Our conclusion supports the attempt to align management and owners' objectives by using equity based compensation contracts. Also, this paper

examines the effect of entrenchment on investment spending and, consequently, on shareholders' wealth. We argue that entrenched managers are in better positions to pursue their own personal goals. In such firms characterized with low shareholders rights, management goals might deviate from shareholder's objectives. One source of friction that can reflect the divergence of interest between shareholders and managers is certainly related to investment decisions. There is ample literature that supports the direct relation between firm value and capital expenditure. The same is also true concerning the relation between firm value and spending on R&D. We suggest that entrenched managers spend more on value deteriorating activities and spend less on value enhancing activities such as capital expenditures and R&D.

CHAPTER TWO

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The division between ownership and management and its effect on firm value has always been an area of significant interest and debate among scholars. A significant volume of research has been conducted in these areas (Chung and Pruitt (1996), Griffith (1999), Kim and Lu (2010) and Kesten (2010). However, the effect of CEO entrenchment on the relation between investment choices and firm value has received limited attention from scholars. We review the existing literature pertaining to firm value with the three dimensions that are the subject of this paper: CEO percentage ownership, managerial entrenchment, and the interaction of entrenchment and investment spending on value enhancing activities such as capital expenditures and R&D.

2.1 CEO Ownership and Firm Value

Research findings on the effect of CEO ownership percentage on firm value are mixed. McConelland and Servaes (1990) conclude that a non-linear relationship between top executive percentage ownership and firm value does exist. Moreover, Griffith (1999) highlights a non-monotonic relationship between firm value and CEO ownership. Griffith (1999) suggests that firm value increases for CEO percentage ownership between 0-15%, declines between 15-50%, and then increases again after the 50% ownership level. Tong (2007), on the other hand, concludes that there is an optimal level of CEO ownership, and any deviations in both directions tend to reduce firm value. With respect to the existence of

casualty, both Chung and Pruitt (1996) and Kwan et al (2000) confirm the existence of casualty in both directions. We herein elaborate on the previous findings in this area that serve as the foundation of our research in an attempt to identify the relationship between CEO percentage ownership and firm value.

The relationship between firm value and equity ownership structure has been investigated by McConnelland and Servaes (1990). A large sample of cross-sectional data covered 1173 firms in 1976, and 1093 firms in 1986 was utilized by the authors. All firms included in the sample were listed on either the American stock exchange (AMEX) or the New York Stock Exchange (NYSE). The study concludes that a non-linear relationship exists between Tobin's Q, which is used as a proxy for firm value, and the percentage of shares owned by corporate insiders. This relationship is found to be positive and significant so long as the insider's ownership is less than 50 percent. This relationship between insiders or management ownership turns to a slightly negative relationship when ownership exceeds the 50 percent benchmark.

Griffith (1999) investigates the relation between corporate value and the structure of equity ownership further by examining the hypothesis that the amount of CEO ownership (not management or insider ownership) has a domination effect on the value of the firm. While Griffith findings fell short of establishing a significant relationship between firm value and insiders' ownership, the research reports a significant relationship between Tobin's Q and CEO percentage ownership. This relation is non-monotonic. Shareholders' wealth seem to increase for CEO shareholding between 0 and 15 percent Tobin's Q then

declines as CEO ownership is between 15 and 50 percent. Finally, firm value tends to increase for CEO ownership beyond 50 percent. Griffith argues that the increase in Tobin's Q at low level of CEO ownership is consistent with the convergence-of-interest hypothesis, and the later decline in Tobin's Q supports the entrenchment hypothesis. Griffith also studies the effect of board composition on shareholders wealth. As the percentage of insiders on the board of directors increases, Tobin's Q tends to rise and reaches a peak when the percentage participation of insiders on the board of directors exceeds the 50 percent mark.

Chung and Pruitt (1996), and Kwan et al. (2000) among others examined the impact of CEO and executives' ownership, and executive compensation on shareholders wealth. Both studies confirm the existence of causality in both directions between corporate value and CEO ownership, where positive or direct relationship is detected; Chung and Pruitt (1996) state that firm value, executive ownership and executive compensation are jointly determined. Therefore, by designing compensation packages that promote CEOs greater level of ownership, firms strive to align management and shareholders' objectives.

The dispute between the two main groups of researchers regarding the exogenity/endogenity of executive or management ownership has been addressed by Core and Larcker (2002). The authors claim that previous research work reach two different conclusions because of the different assumptions made concerning the adjustment cost of managerial contracts and equity incentives. Instead, Core and Larcker (2002) relax some of the strong assumptions and maintain a middle approach. In particular, firms design optimal

executive equity incentives when they contract, but the transaction costs prevent the continuous revision and re-contracting. The assumption of "target ownership plan" ahead of contracting is consistent with previous research that claims no relation between management ownership and corporate performance. Presence of barriers to re-contracting represented by high transaction cost, is consistent with the documented literature on the strong relation between ownership and firm performance. The authors investigate the relation between top executives equity structure and firm value for a sample of firms that adopt "ownership incentive plans". The authors argue that such firms exhibit low equity ownership and low stock performance, prior to implementation of ownership incentive plans that require managers to own minimum amount of stock. The authors also highlight a positive change in management ownership and better stock performance after plan adoption.

Tong (2007) examines the findings of Core and Larcker (2002). He argues that although Core and Larcker (2002) propose a new transaction cost theory on managerial incentives and corporate value, there is some concern about their empirical findings, as they only perform tests on one side of the deviation from the optimal percentage of ownership, namely, the below-optimal deviation. Alternatively, Tong (2007) studies the relation between the deviations on both sides of optimal CEO percentage ownership and firm value. Tong's findings suggest that both above-optimal and below-optimal deviations tend to reduce firm value. Moreover, the change in CEO ownership in the direction of its optimal level is associated with a better abnormal return, and the change in CEO ownership is associated with a lower return when CEO ownership moves away from the optimal level.

In an attempt to help resolve the controversy on the impact of managerial share ownership on firm valuation, Kim and Lu (2010) introduce an additional variable to the subject which is external governance (EG). They investigate how the relation between ownership and valuation depends on the strength of external pressure for good governance. The authors proxy for EG using product market competition or institutional ownership concentration. They find a highly significant hump shaped relation between Tobin's Q and CEO ownership for firms under low external governance (EG), while no relation is found for firms under high EG. The authors also study the relation between CEO ownership to R&D activities, a possible route through which CEO ownership may influence Tobin's Q, by affecting discretionary efforts and risk choices. They find similar relations: A hump shaped relation between R&D expenditures and CEO ownership under weak EG, and no relation under strong EG.

By reviewing the above schools of thought, it is evident that while a relationship has been documented between CEO ownership percentage and firm value, there is no consensus on the form of this relationship. This lack of consensus creates the foundation of our first research question, as we shall attempt to explore further the relationship between the CEO ownership percentage and firm value that will enable us to contribute to this intellectual debate.

2.2 Management Entrenchment, Cash Holdings and Firm Value

Management entrenchment has received its fair amount of research from scholars. Most research in this area used Bebchuk, Cohen, and Ferrell's the G-index or E-index as measures for the level of corporate governance and managerial entrenchment, and Tobin's Q as a proxy for firm value. In this area, there is unanimous consent amongst researchers including Gompers et al. (2003), Bebchuk et al. (2005), and Kesten (2010), that there seems to be a negative relationship between E-index and firm value, however, the reasons for this association have not received the same consensus. Other than firm value, we look into scholars' work on the effect of entrenchment on the capital structure, capital expenditures, and cash holdings which may be the reason behind the negative correlation between firm value and managerial entrenchment increases. Research by Lee and Yeo (2007), Ofek and Yermack (1997), and Berger et al. all concluded that entrenched managers opt for a capital structure with less leverage. Our research in this area is primarily geared towards understanding the effect of entrenchment on capital expenditures and cash holdings, in order to determine the possible routes through which entrenchment affects firm value.

In their influential study, Gompers et al. (2003) address the relationships between management entrenchment and corporate performance, and show that firms with stronger shareholder rights (i.e., with less entrenched management) had higher firm value and higher stock returns. Based on IRRC annual data featuring a sample of around 1500 firms, during the 1990's, the authors constructed an index for corporate governance (G-index). Gompers et al. based this index on 24 distinct corporate-governance provisions. The G-Index is

presented as a proxy of balance of power between shareholders and management. Firms in the highest index level are placed in the "Dictatorship Portfolio" and are referred to as having the "highest management power" or the "weakest shareholder rights"; firms in the lowest index level are placed in the "Democracy Portfolio" and are described as having the "lowest management power" or the "strongest shareholder rights". The research findings suggest a strong correlation between governance and stock returns for the entire period (i.e. 1990's). In other words, an investment strategy to sell shares of firms with high G-Index or "Dictatorship firms" and buy shares of firms with low G-Index "Democracy firms" realized an abnormal return of around 8.5 percent per year. With respect to the possible connection between Governance index and valuation, results at the beginning of the 90's show that there already exists a significant correlation between governance and valuation whereby every one-point increase in G was related with a 2.2 percentage points decrease in Tobin's Q. This managerial impact has witnessed a significant increase at the end of the decade (late 90's), where a one-point increase in G was related to 11.4 percentage points decrease in Tobin's Q.

Bebchuk et al. (2005) refined the methodology used by Gompers et al. (2003) by creating an entrenchment index (E-Index), based on six provisions underlying the G-Index. The authors observed that rises in the E-Index level are monotonically related to the significant reductions in firm valuation that are measured by Tobin's Q, as well as large, negative abnormal returns during the 1990-2003 period; and the other eighteen IRRC provisions, not in the E-Index, are uncorrelated with either reduced firm valuation or negative abnormal returns. The authors define the "entrenchment" as the protection from

removal or the consequences of removal of the incumbents. The authors argue that entrenchment does not necessarily have an adverse effect on firm value, and the existence of the negative correlation between entrenching provisions and firm valuation does not establish that the entrenching provisions, or that the IRRC provisions in general, cause lower firm valuation.

Kesten (2010) tests the findings of Gompers et al. (2003) and Bebchuk et al. (2005) using data from the recent economic crisis of 2007–2008, and finds that the significant statistical association between negative stock returns and high entrenchment, that prevailed previously had completely ceased to exist through the latest financial crisis, even among the least and most entrenched companies. Kesten argues that there is consistency between his findings and the theory that states there are significant costs, not only benefits, that result from subjecting managers to an unfettered market for corporate control and that the net impact of managerial entrenchment depends on several exogenous factors that vary greatly with the macroeconomic climate.

The impact of managerial entrenchment on investment choices between value-enhancing or value-deteriorating projects, will also be investigated. Management of cash holdings is at the heart of the agency cost problem. Dispersing the cash reserves too fast on acquisitions or in pursuit of private benefits will adversely affect shareholders wealth. Academic research on cash holding by firms with different shareholder rights is mixed at best.

There are two conflicting views on how investment decisions are influenced by managerial entrenchment. The first argument is derived from the managerial myopia hypothesis, that is, highly entrenched managers are in a better position to make sound long-term investment decisions that are of value enhancing choices. On the other hand, less entrenched managers, who are under continuous threat of losing their jobs, are less likely to take good long-term investment decisions. Instead, less entrenched managers will focus on cash generating projects that are of short-term nature. This argument suggests that low entrenchment will add to the agency cost by investing less in long-term productive activities such as capital and research and development.

The second argument is consistent with the managerial entrenchment hypothesis. According to this hypothesis, the threat that faces managers, who are less entrenched, works as an external control factor that helps align management and shareholder objectives. For example, the manager who is continuously facing a takeover threat is likely to take decisions that are of value-maximizing nature to the firm. In that case, external take-over pressure could serve as an integrated part of corporate governance.

Lee and Yeo (2007) examine the relation between managerial entrenchment and decisions related to capital structure in Asia. Higher CEO entrenchment is found to be correlated with lower level of leverage. This relation is more apparent when the CEO has higher tenure, or when the CEO chairs the board of directors. Ofek and Yermack (1997) reach similar results and state that leverage decreases when CEO is not subject to active monitoring.

There is no consensus on whether high level of leverage is associated with high entrenchment or not. A group of researchers contend that higher leverage lowers managerial control, and entrenched managers would like to see a capital structure with low leverage. Another group of researchers believe that entrenched managers try to avoid takeovers by increasing leverage. Berger et al. (1995) findings suggest that entrenched CEOs opt for a capital structure with lower leverage. The authors also state that leverage is negatively related to CEO tenure and board size. The inverse relation between CEO tenure and leverage indicates that the less protected the managers are, the more likely to take more debt to avoid hostile takeover. This result is also consistent with the results reported by Garvey and Hanka (1999).

Next, we need to look at research on the effect of cash holdings on firm value. Harford (1999), and Lins and Kalcheva (2004) both conclude that large cash holdings are inversely related to firm value but for different reasons, while Mikkelson and Partch (2003) find that maintaining cash balances need not lead to lower firm value. Harford (1999) contends that the availability of large cash holding could lead to more acquisitions and other value-decreasing investments while Lins and Kalcheva (2004) find that conglomerate international firms with low corporate governance (low shareholder rights) i.e. higher management entrenchment tend to have more cash holdings. The problem is aggravated more in countries with low shareholders protection. Higher cash holding was found by Lins and Kalcheva to be inversely related to firm value. This increased cash holding potentially fuels take-over threats.

Chaknborty and Sheikh (2010) find that changes and amendments to lower takeover threats tend to increase managerial compensation and reduce long-term investment spending on capital expenditure as well as spending on research and development. This reduced spending is potentially one of the causes of a lower firm value.

To summarize, the second part of our research will shed more light on the relation between capital expenditure and spending on research and development, for firms with different managerial entrenchment, on firm value.

2.3 Research Questions and Hypotheses

This research attempts to analyze the relation between CEO and/or top executives percentage ownership and firm value. In particular, we reexamine the previous findings concerning the turning cut-off points stated by McConnlland and Servaes (1990) and Griffith (1990).We argue that, in contrast to previous findings, a positive and monotonic relation exists between CEO ownership and firm value. Therefore, we suggest that the turning points reported in previous research need not last and repeat overtime.

The paper alternate hypothesis can, therefore, be stated as:

- **Hypothesis A**: There is a positive and monotonic relation between firm value and CEO percentage ownership.

The second research question addresses the issue of cash holding management by firms with different shareholder rights. In particular, we investigate how managerial entrenchment may affect firm value through two possible routes: Capital Expenditures and Spending on Research and Development. The paper alternate hypotheses can be formally stated as:

- **Hypothesis A:** The marginal impact of capital expenditure on firm value increases with the level of CEO entrenchment.
- **Hypothesis A:** The marginal impact of research and development spending on firm value increases with the level of CEO entrenchment.

We argue that the higher marginal impact of capital expenditures and/or R&D spending present evidence on deficient spending by entrenched managers on such productive activities. That is, it is the scarcity of such expenditures that leads to the higher marginal impacts.

CHAPTER THREE

DATA AND METHODOLOGY

3.1 Content and Source of Data

Three databases were used to compile a set of data that will be used for the analysis:

- Compustat,
- ExecuComp,
- RiskMetrics Database

The Data that covered the period of 1996-2009 consists of 24,479 observations. However, depending on the variables utilized to answer different research questions, a lower number of observations will be used based on the availability of data on the chosen variables.

Data (hereinafter the "Data") compiled included the major captions (amongst others) as detailed in **Error! Reference source not found.** (Appendix A). The main variables and their calculation methodologies are as follows:

- Tobin's Q - Tobin's Q calculated following Chung & Pruitt (1994) method as a proxy for firm value. It was calculated as:

  (Market Value of Equity + Preferred Stock Liquidating Value + Long-Term Debt + (Current Liabilities – Current Assets)) / Total Assets

- E-index - The CEO entrenchment index calculated following Bebchuk, Cohen, and Ferrell (2009) as a proxy for management vs. shareholder rights. Higher E-index values signify lower shareholder rights and higher management rights and vice versa.

- Research and Development (R&D) Expenditures to Assets Ratio – R&D had to be normalized, and thus we used assets as a denominator to calculate the ratio. The use of such a method does have its limitation in some industries that are not asset-intensive. For example, pharmaceutical companies or other high-tech companies may incur significant research and development costs in comparison to their assets, but still be considered low spenders within their industry. We will try to overcome such a limitation in our analysis by using industry dummies.
- Capital Expenditures to Assets Ratio – was calculated literally through dividing capital expenditures by assets. Similar to the R&D limitation above, there may be some limitations in the use of assets. Arguably, in some cases, the turnover may be a better bas for the ratio.

3.2 Descriptive Statistics

While analyzing data and searching for trends, we performed several cross tabulation of the Data for the Tobin's Q by various parameters. The starting point was to normalize capital expenditures, research and development, EBIT, and leverage. Except for leverage, this was accomplished by using the assets as the common denominator. Then, we attempted to stratify each parameter to two or three stratums. The resulting divisions for each parameter are detailed in Table 2 (Appendix A).

3.2.1 Firm Value and CEO Ownership Percentage

The Tobin's Q average was calculated per CEO Ownership % clusters as detailed in Table 3 (Appendix A). While Griffith (1990) identified a positive relationship between CEO ownership percentage and firm value up to a turning point of 50%, Table 3 (Appendix A) indicates otherwise. The average firm value increased reaching a peak at CEO ownership percentage between 20% and 30% and declined at the 30%. Due to data availability limitation, the number of available cases when CEO ownership percentage is more than 20% are only 208 out of the total 7,157 making further breakdowns not meaningful.

3.2.2 Firm Value and E-Index

For the Tobin's Q average values by e-index, a total of 4,930 cases included e-index values as detailed in Table 5 (Appendix A). Our tables all confirmed the finding of Gompers et al (2003) that entrenchment is inversely related to firm value with the exception of cases with E-index of 6.

When classifying the data by E-index, we see an overall trend of decreasing average firm value from e-index value of 0 through 5. At E-index value of 6, the firm value starts a rebound. More than 50% of the cases have an E-index of either 3 or 4 and more than 85% of the cases fall between E-index of 2-5. Further, the T-statistic of 16.22 shows the averages are significant at the 1% level.

In order to shed some light on the source of the increased firm value at E-index value of 6, we generated Table 6 (Appendix A) calculating the firm value by both CEO ownership percentage and E-index value. Its evident that the rebounding firm value at E-index 6 is observed at the CEO ownership percentage less than 1% and to a lesser extent in the CEO ownership percentage greater than or equal to 1% and less than 5%, while the decreasing trend continues when the CEO ownership percentage is greater than or equal to 5%. This fact contributes to the scholarly debate about the effect of entrenchment on fair value. It may be attributable to cases where outstanding management is awarded significant powers from shareholders, without affecting their assessment of fair value.

To simplify the analysis, we clustered E-index values into two clusters 0-3 and 4-6 and referred to them as Low entrenchment and High entrenchment respectively. We then proceeded in cross tabulation with other parameters.

Table 3: Tobin's Q information by CEO ownership percentage shows that average firm value increases with CEO percentage ownership with the exception represented by the last category where CEO ownership exceeds 30 percent. One, however, needs to realize that the number of firms in the last category is only 96 which constitute only 1.2 percent of that sample of firms. Table 4: E-index information by CEO ownership percentage, on the other hand, shows that managerial entrenchment declines as the percentage of CEO ownership percentage rises. Descriptive analysis shows that a positive association exists between percentage of CEO ownership and Tobin's Q, as a proxy if firm value. This positive association is reversed when CEO ownership percentage exceeds 30 percent.

Apparently, this supports the non-monotonic relation reported in the literature. Moreover, higher percent of CEO ownership might help align management and shareholders' objectives. Specifically, the negative association of managerial entrenchment and CEO percent ownership may suggest that increase in equity holding by CEO or top executives leads to greater shareholder rights, or lower managerial entrenchment.

The first parameter analyzed was Capital Expenditures against E-index. Table 7 (Appendix A) cross tabulates Capital Expenditures with E-Index and Table 8 (Appendix A) cross tabulates R&D/assets ratio with E-index. Firm value, as would normally be expected, maintains a positive correlation with capital expenditures, research and development (R&D), and earnings before interest and taxes. Above average firm value resulted from more than 2% capital expenditure spending, with any spending on R&D, and with earnings before interest and taxes in excess of 10%. It is typical and expected for firms generating higher returns to have a higher firm value, however, causation of increase in firm value as a result of increased capital and research and development spending is more difficult to prove. Firms that have a strong financial position will normally have a higher firm value, and such firms will be in a comfortable position to incur capital and R&D spending, and thus, whether the capital and R&D spending cause an increase in firm value is difficult to prove. But it is certain that increase capital and R&D spending is associated with increased firm value. These were also confirmed in the regression under Table 9. Further, the negative relationship between entrenchment and firm value remains to be seen across all strata for all three mentioned categories.

Averages calculated in Table 7 were all significant at the 1% level except for the capex/assets ratio in excess of 5% that was significant at the 5% level. Averages calculated in Table 8 were all significant at the 1% level except for the R&D/assets ratio of more than 10% that was clearly insignificant.

CHAPTER FOUR

EMPIRICAL FINDINGS

To answer the first research question about the relation of CEO and top executives percentage ownership and firm value, we will use two models:

Model 1: The first model utilizes the following variables:

- Tobin Q: Dependent variable that is used as a proxy of firm value.
- CEO percent ownership: An explanatory variable that measures the percentage equity ownership held by CEO.

We hypothesize a positive relation between CEO percentage ownership and shareholders' wealth. Other things being equal, increase in the equity holding of the CEO is expected to better align the objectives of management and shareholders.

The control variables and their expected (reported) effects on firm value include (selected variables and their descriptive average, standard deviation and number of cases used are detailed in Appendix A Table 12 and Table 13):

- Capital expenditure normalized by firm assets. In general, we anticipate, on average, a positive relation between firm value and spending on capital expenditure.
- Spending on Research & Development normalized by firm assets. Again, investment in Research & Development is expected to have direct relation with firm value.

- Rate of return on assets is also expected to have a positive and significant impact on firm value.
- Firm Leverage is reported to have mixed effects on firm value.
- CEO Tenure provides some job security to CEO. However, the impact of CEO tenure on firm value is not straight forward. Mixed evidence is provided by previous research on the significance and direction of relation between CEO tenure and firm value.
- CEO being a chairperson of the board will increase stability and entrenchment of CEO. Again, the significance and magnitude of the impact of such a dummy variable on firm value is ambiguous.
- CEO age could be a factor with no clear direction to how it might affect firm value.
- Board size is reported to have an inverse relation with firm value.
- E-Index is used as a proxy for managerial entrenchments. Though some studies argued that entrenched managers are in better positions to make successfully strategic investment decisions, the overwhelming evidence reports an inverse relation between managerial entrenchment and firm value.

Columns one and two in Table 9 reports the results of Ordinary Least squares estimate of model one. As expected, capital expenditure, spending on research and development, and return on assets are positively related to firm value and their respective coefficients are statistically significant at the 1% level of significance. We also report no significant impact of CEO tenure, CEO being a chair, and board size on firm value.

On the other hand, leverage, CEO age, and E-Index are all inversely related to firm value and their respective coefficients are statistically significant at less than 5% level of significance. Most importantly, is the positive and significant impact of CEO percent ownership on firm value.

Using time and industry fixed effects, columns three and four of Table 9 confirm the significance and direction of association of all explanatory variables with firm value. That is, controlling for time and industry produced a change in the magnitude of marginal effects of explanatory variables on firm value, with no major change in the direction and significance of such variables.

Model 2: To investigate how a change in the percentage of CEO equity ownership affects firm value, dummy variables of CEO ownership have replaced the original numerical percentage of CEO equity ownership, and the OLS regression has been re-run. The results are summarized in Table 10. Except for the CEO tenure that is now positive and significant, the other control variables still carry the same signs and statistical

significance indicated by the previous regression. However, using the first dummy of CEO ownership (CEO ownership is less than 15 percent) as a reference group, the second (CEO ownership between 15 and 50 percent) and the third dummy variables (CEO ownership above 50 percent) are found statistically insignificant. This suggests that the change or increase in CEO percentage ownership doesn't change the impact on firm value at the reported turning points. Therefore, the results reached don't support the findings of Griffith (1999) or McConnlland and Servaes (1990).

The second research question addresses the relationship between the soundness of the corporate governance structure, proxied by managerial entrenchment, and firm value. Two possible routes for such interaction will be analyzed. A direct route via an entrenchment dummy variable (EDUM) and an indirect route via the impact of entrenchment on capital expenditure and research and development. This indirect relation requires the use of interaction variables: INTERECAPX and INTERERD (definitions detailed in Table 1 (Appendix A). Model 3 Table 11 (Appendix A) utilizes again (OLS) regression, and also controls for industry and time fixed effects, to provide an answer for the second research question.

Using time and industry fixed effects, regression shows the expected positive and significant relation between research and development and capital expenditure as explanatory variables and firm value at 1 and 5 percent respectively. Analysis shows that the coefficient of managerial entrenchment is negatively related to firm value and this

coefficient is statistically significant at the 10 percent level of significance. Among the same set of control variables, only CEO being a chair, CEO tenure, and board size are not statistically significant. That said, the two interaction variables used in this model tell an interesting story. First, the interaction between the entrenchment dummy and capital expenditure (INTERCAPX) has a positive and significant coefficient at the 10 percent level of significance. This suggests that the marginal impact of capital expenditure on firm value is significantly higher for firms that have high managerial entrenchment (low shareholder rights). The increase in marginal impact ought to be interpreted as under-spending by firms where management is highly entrenched on such productive and value promoting activity.

The coefficient of the second interaction variable- interaction between entrenchment dummy and spending on research and development (INTERERD) is also positive and significant at the 1 percent level of significance. The marginal impact of R&D spending on firm value is more than doubled for firms with high managerial entrenchment. This again implies that entrenched management generally spends less on research and development as compared to firms with less entrenched management. Our results seem to signal a friction between shareholders and management in firms with highly entrenched CEOs. Entrenched CEO's spend less on research movement and development which has very positive impact on shareholders wealth.

CHAPTER FIVE

CONCLUSION

In conclusion, our results concerning the coefficients and their respective signs are consistent with the existing literature. However, there is no evidence of a specific non-monotonic relation between Tobin's Q and the percentage of CEO equity ownership as suggested by Griffith (1990), McConelland and Servaes (1990) and others on this issue. At least, the turning points specified by Griffith (1990) were examined and our work provides no support for the existence of such inflection points.

Concerning our second research question, the examination of the marginal impact of investment spending on capital and R&D on firm value under different governance schemes, suggests that the selection of investment opportunities, firm's cash holding, and efficiency of internal capital markets could be a major source of friction between management and shareholders. Though the sign and significance of managerial entrenchment supports the suggested negative impact on firm value, the marginal impacts of capital expenditure, research and development spending on firm value increase for firms with highly entrenched managers (low shareholder rights), as compared to firms with low management entrenchment (high shareholder rights). This increase in marginal impacts is a sign of scarce and limited investment in value enhancing activities: capital expenditure and research development: in firms with high managerial entrenchment**.**

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APPENDIX A

Field	**Description**
Year	Data compiled was for the period from 1996 through 2009
Total Assets	Total assets of the Company as of the end of the year
Capital Expenditure	Capital expenditures during the year
Sales	The sales for the year
R&D Expenditures	Research and development expenditures during the year
Market Value of Equity	The total market value of the
Book Value of Equity	The net book value of equity of the company as of the end of the year
Tobin's Q	Tobin's Q calculated following Chung & Pruitt (1994) method as a proxy for firm value. It was calculated as: (Market Value of Equity + Preferred Stock Liquidating Value + long-term debt + (current liabilities – current assets)) / Total Assets
Leverage	The ratio of long-term debt to total assets as of the end of the year
Operating Margin	The ratio of the operating income before depreciation to sales
Sales/Total Assets	The ratio of sales to total assets. This ratio would aid in making companies of different-sizes comparable
Market to Book Ratio	The ratio of market value of common equity to the book value of common equity as of the end of the year
Return	Refers to the share's yield over the year. It is calculated as: (Dividends + (Price – Lag Price))/ Lag Price
ROA	Is the ratio of EBITDA / Total Assets. EBITDA refers to Earnings Before Interest, Taxes, Depreciation, and Amortization
Total Compensation	The total compensation paid to the Company's CEO during a year
Percent CEO Ownership	The percentage of equity owned by the CEO of the company as of the end of the year

Table 1: Master Data File captions

Field	**Description**
CEO is Chairperson	A field as to whether the CEO of the Company is also the Chairperson of the Board
Percent Total Top Management Ownership	The percentage ownership of the top five executives of the company. It is calculated as: Total Number of Shares owned by top five executives of the firm (including CEO) / Number of Shares Outstanding
Equity-Based Compensation	The total CEO compensation less fixed compensation i.e. it's the total compensation less salaries less bonuses
Fixed Compensation	The CEO's salary plus bonus
E-Index	The CEO entrenchment index calculated following Bebchuk, Cohen, and Ferrell (2009)
Board Size	The total number of directors on the Board
% of External Directors	The percentage of independent directors serving on the Board
EDUM	A binary variable that takes a value of "1"when E-index value exceeds 3, and "0"otherwise.
INTERECAPX	An interaction variable between the entrenchment dummy and capital to asset ratio.
INTERERD	An interaction variable between the entrenchment dummy and the research and development to asset ratio.
CEODUM 1	Is a binary variable that takes a value of "1" when CEO percentage ownership is less than 15 percent and a value of"0" otherwise.
CEODUM 2	Is a binary variable that takes a value of "1" when CEO percentage ownership is between 15 and 50 percent and a value of "0"otherwise.
CEODUM 3	Is a binary variable that takes a value of "1" when CEO percentage ownership is above 50 percent and "0" otherwise.
T-Statistics	The T-statistics was used to show whether the difference between 2 averages is significant. For a series of averages, the T-statistic was calculated for the difference between the first and last average.

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Ratio/Parameter	Stratums
Capital Expenditures/Assets	– Capital expenditures to assets ratio is less than 2% – Capital expenditures to assets ratio is greater than or equal to 2% but less than 5% – Capital expenditures to assets ratio is greater than or equal to 5%
Research and Development/Assets	– Research and development to assets ratio is equal to 0 – Research and development to assets ratio is greater than 0 but less than or equal to 10% – Research and development to assets ratio is greater than 10%
E-Index	– High – E-index values of 4 through 6 were classified as high e-index. – Low – E-index values of 0 through 3 were classified as low e-index
% of independent directors	– Independent directors are less than or equal to a third – Independent directors are more than a third but less than or equal to two thirds – Independent directors are more than two thirds
CEO/Chairperson status	– Yes when the CEO is also the chairperson of the entity – No when the CEO is not the chairperson of the entity
CEO Ownership %	– CEO ownership % is less than 1% – CEO ownership % is greater than or equal to 1% but less than 5% – CEO ownership % is greater than or equal to 5%

Table 2: Parameters used for the tabulation and cross-tabulation

	CEO Ownership Percentage						
	CEO % <1	1≤ CEO % <5	5≤ CEO % <10	10≤ CEO % <20	20≤ CEO % <30	30≤ CEO %	Total
Count of Tobin's Q	3625	2605	469	250	113	95	7157
Average of Tobin's Q	1.14	1.24	1.38	1.48	1.65	1.54	1.22
Min of Tobin's Q	(0.55)	(0.60)	(0.11)	(0.25)	(0.14)	(0.03)	(0.60)
Max of Tobin's Q	23.69	41.70	10.82	8.73	9.15	9.02	41.70
StdDev of Tobin's Q	1.10	1.53	1.27	1.37	1.56	1.35	1.31

Table 3: Tobin's Q information by CEO ownership percentage

	CEO Ownership Percentage						
	CEO % <1	1≤ CEO % <5	5≤ CEO % <10	10≤ CEO % <20	20≤ CEO % <30	30≤ CEO %	Total
Count of E Index	2593	1784	312	153	62	48	4952
Average of E Index	3.34	3.26	2.95	2.88	2.32	2.31	3.25
Min of E Index	-	-	-	-	-	-	-
Max of E Index	6.00	6.00	6.00	6.00	6.00	5.00	6.00
StdDev of E Index	1.35	1.33	1.41	1.47	1.62	1.40	1.37

Table 4: E-index information by CEO ownership percentage

	E-Index								
Tobin's Q	0	1	2	3	4	5	6	Total	T-Value
Count of Tobin's Q	138	376	874	1,391	1,219	736	196	4,930	
Average Tobin's Q	1.83	1.34	1.23	1.19	1.16	0.99	1.08	1.18	16.22
Min of Tobin's Q	(0.27)	(0.13)	(0.17)	(0.19)	(0.20)	(0.12)	0.13	(0.27)	
Max of Tobin's Q	23.69	8.13	8.96	12.85	22.04	5.04	5.59	23.69	
StdDev of Tobin's Q	2.44	1.14	1.06	1.12	1.11	0.78	0.78	1.12	

Table 5: Tobin's Q information by E-Index level

CEO Ownership Percentage	E-Index	0	1	2	3	4	5	6	Total
CEO % <1	Count	58	177	431	718	664	417	112	2,577
	Average	2.42	1.34	1.19	1.15	1.11	1.01	1.17	1.17
1≤ CEO % <5	Count	38	126	329	515	444	252	74	1,778
	Average	1.51	1.32	1.19	1.25	1.22	0.92	0.95	1.18
5%+	Count	42	73	114	158	111	67	10	575
	Average	1.30	1.40	1.48	1.20	1.18	1.15	1.06	1.28
Total Count		138	376	874	1,391	1,219	736	196	4,930
Total Average Tobin's Q		1.83	1.34	1.23	1.19	1.16	0.99	1.08	1.18

Table 6: Cross tabulation of Tobin's Q by CEO ownership percentage and e-index

		E-Index			
Capital Exp/Assets	**Tobin's Q**	**High**	**Low**	**Total**	**T-Value**
Capex/A <2%	Count	816	971	1,787	
	Average	0.84	0.94	0.90	58.32
	Standard Deviation	0.89	0.85	0.87	
2%≤Capex/A<5%	Count	699	902	1,601	
	Average	1.22	1.40	1.32	51.86
	Standard Deviation	0.88	1.46	1.24	
5%≤Capex/A	Count	635	901	1,536	
	Average	1.27	1.45	1.38	2.98
	Standard Deviation	1.14	1.20	1.18	
Total	Count	2,150	2,774	4,924	
	Average	1.09	1.26	1.19	5.42
	Standard Deviation	0.99	1.21	1.12	

Table 7: Cross tabulation of Tobin's Q by the ratio of Capital expenditures to sales and E-index High/Low groups

		E-Index			
R&D/Assets %	**Tobin's Q**	**High**	**Low**	**Total**	**T-Value**
R&D=0	Count	1,261	1,705	2,966	
	Average	0.92	1.08	1.02	5.04
	Standard Deviation	0.74	0.99	0.90	
0<R&D/A≤10%	Count	756	835	1,591	
	Average	1.24	1.40	1.32	3.18
	Standard Deviation	0.88	1.12	1.02	
10%<R&D/A	Count	133	234	367	
	Average	1.89	2.01	1.96	0.49
	Standard Deviation	2.25	2.21	2.22	
Total	Count	2,150	2,774	4,924	
	Average	1.09	1.26	1.19	5.42
	Standard Deviation	0.99	1.21	1.12	

Table 8: Cross tabulation of Tobin's Q by the ratio of R&D to Assets and E-index High/Low groups

Dependent Variable: Tobin's Q

Tobin's Q	Coefficient Estimates	T-Value	Coefficient Estimates	T-Value
CAPX To Assets	3.7929	2.8800	5.8852	3.6800
R&D Exp To Assets	9.2617	10.2300	7.0468	6.5800
ROA	5.3314	9.9700	4.1742	7.7100
leverage	-0.8577	-2.3700	-1.3567	-3.5200
CEO Tenure	0.0012	0.1300	0.0071	0.8100
CEO Ownership Percentage	0.0170	2.2360	0.0140	1.8620
CEO is Chair (Yes/No)	0.1251	1.1200	0.0250	0.2100
CEO AGE	-0.0184	-2.3100	-0.0142	-1.7500
Board Size	-0.0019	-0.0800	-0.0214	-0.8200
E-Index	-0.0730	-3.4730	-0.0580	-2.2170
Industry Dummies	NO		YES	
Year Dummies	NO		YES	

Table 9: OLS regression Model 1

Dependent Variable: Tobin's Q

Tobin's Q	Coefficient Estimates	T-Value	Coefficient Estimates	T-Value
CAPX To Assets	3.6690	5.8430	3.1850	3.7390
R&D Exp To Assets	11.2952	27.7400	9.2322	18.9000
ROA	6.5608	28.8200	5.9957	26.1500
leverage	-0.4061	-2.6500	-0.6251	-3.9300
CEO Tenure	0.0104	3.3700	0.0088	2.8300
CEODUM2	0.0915	0.1700	0.3665	0.7000
CEODUM3	0.2692	0.1900	0.4151	0.3000
CEO is Chair (Yes/No)	0.0739	1.4900	0.1070	2.1200
CEO AGE	-0.0152	-4.6600	-0.0118	-3.6400
Board Size	0.0008	0.0800	-0.0026	-0.2600
E-Index	-0.1433	-7.8200	-0.1075	-5.4300
Industry Dummies	NO		YES	
Year Dummies	NO		YES	

Table 10: OLS regression Model 2

Dependent Variable: Tobin's Q

Tobin's Q	Coefficient Estimates	T-Value	Coefficient Estimates	T-Value
CAPX To Assets	2.7707	1.9360	3.3179	2.0700
R&D Exp To Assets	7.9842	7.1200	5.6759	4.4100
ROA	5.6797	10.5700	4.7466	8.6700
leverage	-1.0153	-2.8200	-1.5153	-3.9600
CEO Tenure	-0.0068	-0.7700	-0.0014	-0.1600
CEO Ownership Percentage	0.0279	2.0400	0.0191	1.7140
CEO is Chair (Yes/No)	0.2179	1.9200	0.1249	1.0600
CEO AGE	-0.0220	-2.7300	-0.0178	-2.1700
Board Size	-0.0049	-0.2000	-0.0371	-1.4200
EDUM	-0.5205	-2.6000	-0.3451	-1.7200
INTERE CAP EXP	5.6360	1.9000	5.0973	1.7100
INTERE R&D	4.6197	2.8300	4.6034	2.9200
Industry Dummies	NO		YES	
Year Dummies	NO		YES	

Table 11: OLS regression Model 3

	Count	Average	Standard Deviation
Capital Expenditures / Assets	7429	4.52%	5.37%
R&D / Assets	7429	2.55%	6.51%
ROA	6891	11.81%	12.43%
Leverage	7145	19.54%	19.21%
Board Size	5138	9	2

Table 12: Number of Cases for Selected Variables, their Average and Standard Deviation

	Yes	No	Total
CEO is Chair	3,297	4,132	7,429

Table 13: CEO Chairperson Parameter