

HORIZONS OF TARGET MANAGERS AND ACQUISITION FINANCING

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A THESIS

Presented to

The Faculty of the Department of Economics and Business

The Colorado College

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Arts

By

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April 2013

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April 2013

Economics

### **Abstract**

Mergers and acquisitions create situations where target CEOs may not act in the best interest of the shareholders. Further, the type of financing used in these acquisitions skew incentives in differing ways and may depend on market conditions. Using quantitative analysis this paper explores the relationship between managerial horizons of target firms and acquisition payment methods. Specifically, it is anticipated that more stock use coincides with shorter managerial decision-making horizons of target firms.

KEYWORDS: (Mergers & Acquisitions, Managerial Horizons, Acquisition Financing)

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## CHAPTER 1

### INTRODUCTION

For good reason, debates for and against the benefits of mergers and acquisitions frequently occur given the massive impact on the corporate landscape. These transactions greatly affect stakeholders of both target and acquirer firms in diverse and significant ways. This is especially true for the upper management. The average gain for a target CEO in a merger transaction is estimated at between \$8 and \$12 million (Hartzell, 2004), a significant amount of money that can skew incentives. Other factors in addition to compensation can complicate matters and drive a CEO to stray from the objectives of the shareholders. This can lead to poor transactions that leave shareholders with sub-optimal outcomes. This paper examines target managerial horizons associated with merger and acquisition activity and illuminates the negative factors that sometimes drive these deals. Specifically, using quantitative analysis and drawing on a theoretical framework of behavioral corporate finance and principal-agent issues, this paper adds transparency to the effect of a target CEO's managerial horizon on merger activity.

The issues associated with mergers and acquisitions motivate a diverse group within the corporate world. Agency issues relating to mergers and acquisitions routinely affect investors, employees, and taxpayers; thus, it is important to explore potential negative effects. This brings the conversation to one aspect - the impact of managerial horizons on corporate finance. Several studies inspect the intricacies of managerial



horizons and M&A activity, yet these topics require further inspection to grasp the underlying ties. The primary hypothesis of this paper investigates whether target firm managers with shorter decision-making horizons have a significantly higher propensity than target CEOs with longer horizons to accept stock offers. We also explore whether horizons become increasingly divergent as stock use increases. Valuation provides the rationale behind this hypothesis, where acquiring managers recognize overvaluation in their own stock and substitute it for cash during an acquisition. Target managers with short horizons should demonstrate a greater willingness to accept these deals for the short run gains associated with cashing out at artificially high market values. To grasp the entirety of this issue the reader must understand the prevalent theories that encompass the problem and the current literature on the associated topics. Therefore, this paper is organized as follows.

The following section introduces the theoretical background that contributes to understanding the relationship between managerial horizons and acquisition financing. These theories include the efficient market hypothesis, valuation, and agency theory. This combination helps illuminate the central issue of this paper by first looking at the financial markets then firm behavior, and finally individual CEO incentives. The paper then introduces the current literature surrounding the theories. The introduction of literature pertaining to both corporate finance and agency theory lays the basis for a discussion of merger activity in relation to agent horizons.

The subsequent section presents the data and methodology employed to test the hypothesis that target managerial horizons vary in relation to the type of financing used for an acquisition. This part delves into the data collection and model creation phase of

the study and is followed by a discussion of the results and analysis that the descriptive statistics and models present. A comparison of the findings to the original hypotheses allow for acceptance or rejection of these predictions. Finally, the paper concludes by summarizing the paper as a whole and offers the limitations of this study coupled with possible avenues for further research.

## CHAPTER II

### THEORETICAL FOUNDATIONS

To examine the relationship between managerial horizons and acquisition financing, one must grasp the theoretical framework behind what is observed in reality. Three major topics in financial theory establish this framework: the efficient market hypothesis, valuation theory, and agency theory. These concepts are closely related and must be considered together when investigating connections between managerial horizons and merger transactions. The efficient market hypothesis addresses the financial markets in which mergers and acquisitions occur. In an extension of this idea, valuation and valuation efficiency are key in determining how market participants view these companies. Finally, agency theory ties these ideas together in a realistic manner by adding a behavioral element. This chapter addresses the background needed to approach the current literature and, ultimately, interpret the results of this study.

#### **Efficient Market Hypothesis**

Market efficiency, a key concept in evaluating merger and acquisition activity, frames the rationale for engaging in such transactions. The efficient market hypothesis states that, due to informational efficiency, an investor cannot earn excess returns on a risk-adjusted basis for an extended period of time. The degree to which the efficient market hypothesis holds true dictates how financial markets work and how market participants choose to engage in them.

Researchers offer three different forms of the efficient market hypothesis. Each form depends on the extent to which information is accessible and to what degree fundamental analysis can be beneficial. All three versions of this theory indicate that technical analysis cannot be used to gain an advantage in the financial markets. The weak form states that, although above-average returns cannot be achieved using technical analysis, fundamental analysis may be beneficial in the short run. In other words, while looking at historical trends and prices will not yield higher returns, analyzing the financial statements/information of a company may help to increase returns. The semi-strong form implies that prices rapidly reflect all publicly available information and neither technical analysis nor fundamental analysis is useful. In this form all public information is included in valuation. The strong form extends the semi-strong hypothesis but includes the provision for company insiders. This form states that earning excess returns is impossible even without information transparency - that even management cannot exploit knowledge only they possess (Clayman et al., 2012). Respectively, all three forms assume an increasingly high level of precision in valuation. This idea of accurate valuation has been subject to criticism in the literature. Critics of the efficient market hypothesis cite theoretical and empirical evidence in the field of behavioral corporate finance as an alternative. These theories hinge on assumptions of various inefficiencies that dictate how financial markets operate.

An inefficient market presents opportunities for individuals to realize excess returns in ways others may not. In the context of the efficient market hypothesis, the concept of information asymmetry explains such phenomena. This is especially apparent when considering the implications of the different forms, mentioned above. Such

problems in efficiency begin to arise when managers have relevant information to which others do not have access. This creates a scenario where a manager may be able to exploit opportunities in a strategic manner, sometimes at the cost of others. In relation to mergers, inefficient markets create the conditions in which managers can take advantage of misvaluations at the expense of another firm's shareholders. The most interesting facet relating to merger activity occurs when the target firm's management knows that the deal is less than optimal. This concept of agency theory is investigated in upcoming sections.

### **Valuation**

Merger and acquisition activity greatly depends on valuation. For both the bidder and target, arriving at the appropriate price is key to any transaction - this process begins with valuation. For the acquirer, this means paying the lowest acceptable premium or trading the least amount of stock, whereas the target seeks to maximize the premium or stock paid to its shareholders. Most mergers include a premium paid to the target due to the fact that current shareholders will need to be enticed to sell their shares, and a control premium must be considered.

Views on market efficiency dictate how valuation theory is addressed and are important when considering the underlying justifications for merger activity. Given that the efficient market hypothesis holds true, valuation provides an accurate measure of worth in the marketplace. This implies that financial markets project a firm's fundamental value. However, these views assume the strong form of the efficient market hypothesis. Many reject this notion and believe financial markets contain firm-specific or market-wide misvaluations. The concept of imperfect valuation has important repercussions for all parties involved in a merger transaction.

Valuation methodology quantifies the worth of a firm. In the context of mergers and acquisitions, a company's standalone value carries less importance than the value-added in a combined company. Acquiring firms use a number of valuation methods, both relative and intrinsic, to discern the price to pay for a target firm. Problems of asymmetrical information plague these valuation methods and leave room for error. Synergies typically explain the rationale for potential premiums paid for companies but can be very hard to quantify. Examples abound of mergers that have failed to achieve the synergies promised or expected - another indication of the imperfections of M&A theory. Careful valuation helps to minimize inefficient merger activity but may be easier said than done.

Valuation provides a framework in which managers can execute acquisition decisions. These decisions based on valuation theory ultimately are carried out by management, which brings a behavioral aspect into the equation. Management has the important role of assessing a transaction based upon valuation and proceeding with a plan of action that will be in the best interest of the shareholders, the subject referred to as agency theory.

### **Agency Theory**

Theoretically, owners compensate managers/CEOs to maximize shareholder wealth. This principal-agent relationship works seamlessly in theory, but, in reality a number of issues may arise to disrupt a steward's decision-making process. Principal-agent relationships on both sides of a transaction dictate how a deal is structured. Optimally, the incentives of each party should be aligned properly. Agency theory

diagnoses potential problems and prescribes solutions to mitigate any misalignment of incentives.

Agency costs specific to this study deal with agency costs of equity, where the shareholders bear the cost of aligning any diverging interests of the manager. Costs include keeping transparency around managerial actions (annual reports, board meetings) as well as restricting movement of the manager outside the firm (non-compete agreements). To keep the shareholders optimally represented, a balance must be struck between these agency costs and the performance of management.

Severe problems stemming from agency costs begin to arise when dealing with managers of differing horizons. Managerial horizons involve the decision-making timeframe associated with a CEO. If the horizons of the shareholder and CEO are not matched, major problems start to develop. This brings up the issue of the short run and the long run. While shareholders generally look for long-term value creation, managers can have conflicting incentives. These incentives can be due to age, compensation structure, hubris, and other factors that can dictate how a manager views risk, capital allocation, and other corporate decisions. Age can enter the decision-making process when an older manager looking to exit a firm in a short period of time may exploit avenues to boost the short-term stock price so that it peaks at the time of the manager's departure. This might mean discontinuing long-term, value-creating projects in favor of short term projects that may yield higher current profits. These decisions many times come at the expense of the long-run goals of the shareholders. Compensation must also be a major consideration when assessing risk. A manager who receives a large portion of his/her total compensation in stock will be more concerned about the equity value of a

firm and be more aligned with shareholders during an acquisition. Much of this depends on how a manager's vested stock options are structured. For the purpose of this study, differing horizons may explain how a manager engages in merger and acquisition activity.

The efficient market hypothesis, valuation theory, and agency theory allow scholars to think critically about real world problems that deal with behavioral corporate finance issues. Though the theories are important, the empirical applications of these theories truly drive the way of thinking on these subjects. Applying the theories of this section to the real world observations is the next step to understanding the topic of managerial horizons and acquisition financing. The next section outlines the relevant literature on these topics.



## CHAPTER III

### REVIEW OF LITERATURE

While much of the literature concerning mergers and acquisitions takes the view of the efficient market hypothesis, an emerging theory of behavioral corporate finance has begun to percolate into scholarly journals. This paper, while recognizing the neoclassical view rooted in economic shifts and industry reorganization, looks to extend the theoretical backing of these presumptions. By introducing the behavioral theory of mergers and applying concepts from agency conflicts, this section seeks to explain the current literature on this subject.

Many motivators account for merger activity including synergies, market power, and economies of scale. In addition to these traditional reasons for merger activity Jensen (1986) posits that mergers and acquisitions efficiently transfer wealth to target shareholders. By looking at the oil industry's reorganization in the late 1970s, he describes how managers are incentivized to have more resources under their control and lack motivation to pay cash to shareholders. Instead, managers would rather retain free cash flows and invest in low-return projects. An intra-industry merger is a solution that disperses cash to shareholders and increases managerial power. Jensen shows that this industry consolidation efficiently reallocates free cash flow to shareholders and in such a manner that keeps managers content.

While many other scholars highlight managerial incentives as a factor in merger

activity, not all agree that they are a response to economic inefficiencies. Roll's hubris theory (1986) offers a bleaker view of merger activity rooted in managerial greed. The hubris theory of corporate takeovers relies heavily upon the strong-form efficient market hypothesis and leaves no room for merger-induced efficiency gains. Roll argues that because acquisitions are a zero-sum act, when factoring in transaction costs, the outcome results in a net loss. Further, acquiring firms' managers seek power to the extent that they overpay, damaging shareholder wealth. Roll takes the opposite approach of Jensen by claiming that mergers lack the efficiency benefits they set out to achieve.

The nexus between managerial blunders and merger activity has been studied in depth, especially in relation to CEO compensation. In contrast to the hubris theory presented by Roll, others believe that managers operate rationally but not always in alignment with shareholders. Hartzell (2004) examines how the incentives of CEOs may not connect with those of the shareholders during an acquisition. Target CEOs give up significant utility when acquired (in the form of wages and personal benefits) and look to offset the loss of this utility by maximizing their payout should a transaction occur. Hartzell finds that cash payments given by the acquirer to the CEO help motivate the target manager to execute a deal. However, a cash payment does not incentivize the manager to strike the best deal for the shareholders but, in effect, pays the manager to overlook the best interests of the target shareholders.

Not only do target managers have incentives to behave in a certain way during an acquisition, but bidding managers do as well. In an expansion on Hartzell's conclusions, Grinstein and Hribar (2004) look closely at the relationship between acquiring CEO power and merger outcomes. By observing levels of managerial power over the board of

directors, they conclude that more powerful target CEOs execute lesser deals for shareholders but also receive higher bonuses for completing merger transactions. Grinstein and Hribar find that CEOs are compensated in relation to the level of managerial power they possess instead of being rewarded for their skill and work ethic during a deal. This is a concerning conclusion due to the fact that CEOs may not be compensated in relation to their performance but rather the power that they can exert as a CEO.

While managerial payoffs may contribute to sub-optimal deals for shareholders, managerial horizons have also been blamed. In an empirical investigation Dechow and Sloan (1991) start to connect the concept of managerial horizons with managerial incentives. By examining how older managers allocate capital to research and development, Dechow and Sloan conclude that managers have selfish motives when considering retirement. Their findings indicate that R&D expenditures decrease in the final years of a CEO's tenure. A manager, who will not reap the rewards of constant or increasing R&D budgets, would rather cut these expenditures to decrease expenses and increase short-run profits. Since managerial compensation often is linked to accounting-based measures, this increases such compensation. By investing less in the future of the firm, managers near retirement choose to run the firm for short-run profits instead of long-run value creation.

In addition to R&D expenditure changes, age and tenure have also been cited as proxies for managerial horizon. Gibbons and Murphy (1992) find that managerial incentives relate to managerial career concerns. They find that older CEOs or CEOs with a longer tenure will not be as concerned with their future careers. To this end, incentives

to run the business in a long-run oriented fashion become marginalized. To help mitigate these problems Gibbons and Murphy attempt to prescribe solutions to compensation contracts by breaking up incentives into implicit and explicit categories. While implicit incentives may help productivity when career concerns are high, they may not incentivize managers with shorter horizons.

Managerial decision-making often depends on how market participants drive financial markets and the overall transparency of firm information. The extent to which managers know more than firm outsiders dictates strategic planning on the part of the manager. This topic is generally considered in conjunction with how mergers are clustered, usually referred to as merger waves. The concept of merger waves allows for a discussion of how managers and markets interact based on information advantages.

The neoclassical theory of mergers suggests that economic disturbances trigger merger waves. These theories rely upon rational industry responses to changes in the economic climate, such as developing technology or rapid changes in security prices (Gort, 1969). Gort concludes that these disturbances nullify the historical valuation precedents; thus the information in the market applies less to predictions of future values. This phenomenon creates a scenario where merger activity increases, yielding a merger wave.

Others have built upon Gort's economic disturbance hypothesis. Andrade et al. (2001) agree that economic shifts lead to industrial reorganization but take a closer look at the actual shocks that cause the spikes in activity. Specifically looking at the 1990s merger wave, the authors conclude that the deregulation of certain industries led to the merger wave. This has two important implications: First, it implies that deregulation was

the driving economic shock behind the wave. Secondly, it indicates that merger waves are the result of multiple industry consolidation waves. While this study looks at a single merger wave, it helps frame future literature concerning neoclassical merger wave theory.

While Andrade et al. (2001) find that deregulation is the key to merger waves, Jovanovic and Rousseau (2002) use Q-theory to explain these waves. A firm's Q is the ratio of its market value to replacement cost, where a higher Q indicates that a firm may be overvalued. The Q-theory of investment states that levels of investment rise with a firm's Q. When applied to mergers, Q-theory attempts to explain the rationale behind the redeployment of assets where merger activity increases with valuation. In an extension of the framework set forth by Gort (1969), Jovanovic and Rousseau (2002) conclude that merger waves act as capital reallocation waves where technology drives industries to reorganize. The dispersion of these Q values is key to figuring out who acquires whom. The Q-theory of mergers says that a firm with a higher Q will engage in more acquisitions and that bidders will be more overvalued than their targets (Jovanovic and Rousseau, 2002).

Harford (2005) takes the neoclassical theory a step further and argues that economic shifts are required, but not sufficient, for a merger wave. He makes a case that capital liquidity is a necessary component to facilitate a merger wave and that capital abundance clusters the industry-specific waves (Harford, 2005). This concept builds upon the theories of Gort (1969) and Andrade et al. (2001) where industry shocks include technology, deregulation and security price shifts. The market timing aspect explains why some industry merger waves have not led to aggregate merger waves. This access to

capital creates the conditions for businesses to expand, with M&A activity being one of the options.

Recently, behavioral explanations of merger waves have started to arise; these theories are predicated on misvaluations in the financial markets. The presence of inaccurate valuations challenges the concepts of the efficient market hypothesis and places emphasis on managerial exploitation of market opportunities. This notion of managerial arbitrage stemming from market inefficiencies has several explanations in the literature. The behavioral theory of mergers and acquisitions connects merger theory with potential principal-agent issues.

Rhodes-Kropf and Viswanathan (2005) propose a theory that both market-wide and firm-specific misvaluations lead to merger waves. This theory relies on misinterpretations of synergies on the part of the target firm. In high valuation markets, the target will overestimate the synergies that are implicit in the acquirer's bid, making the bid seem more attractive and targets more inclined to accept a deal. When markets are in high valuation stages, merger waves will occur. This is one example of how informational problems can lead to poor decision-making on the part of the target.

Shleifer and Vishny (2003) take a similar approach to explaining merger activity but do not break misvaluations into separate categories. Their theory is dependent upon relative valuations of the bidder and target and the horizons associated with each party. Rational acquiring managers are able to capitalize on temporary inefficiencies in the valuation of their own stock to buy the hard assets of the target at a discount. The recognition of misvaluation is key to the acquiring manager's decision making on acquisition financing. Since managers are rational, there must be a reason the targets

accept these merger proposals that use overvalued equity. Shleifer and Vishny (2003) hypothesize that managerial horizons play a key part in determining if a stock acquisition is accepted. They posit that target CEOs who agree to overvalued stock acquisitions are either paid to do so, as suggested by Hartzell (2004), or have short decision-making horizons.

Related to Rhodes-Kropf and Viswanathan (2005) as well as Shleifer and Vishny (2003), Dong et al. (2006) also look at the market-driven acquisition theory. By testing both the misvaluation theory as well as the Q-theory for different merger waves, the authors distinguish which hypothesis contributed to recent merger waves of the last century. This blend of both neoclassical and behavioral explanations attempts to decipher the true reasons behind merger activity. Though the study finds support for both the Q-theory and the misvaluation theory, it explains different merger waves to varying degrees.

Sharma and Hsieh (2011) test the hypothesis set out by Shleifer and Vishny and investigate managerial horizons in relation to equity-financed acquisitions. They attempt to show that, when agreeing to these acquisitions, target managers have shorter horizons than their counterparts on the acquiring side. The consequences of these deals fall on the long-run oriented shareholders of the target firm. Though the target may benefit in the short-run by obtaining overvalued equity, the shareholders will lose in the long-run with a return to the fundamentals of the acquirer's equity (Shleifer and Vishny, 2003). These hypotheses are tested by cross referencing CEO data (CEO compensation, age, and research and development habits) with merger data. Contrary to their hypothesis, Sharma

and Hsieh (2011) find that managerial horizons do not significantly affect acquisition financing, and they cannot confirm the hypothesis set forth by Shleifer and Vishny.

Looking at the neoclassical and behavioral hypotheses of corporate finance helps guide the discussion of whether managerial decisions influence the payment structure for an acquisition. The combination of both corporate finance and managerial incentive literature acts as a guide for further exploration on the subject. Using the Sharma and Hsieh (2011) paper as a guide, this study will reexamine their conclusions on how managerial horizons may or may not determine whether an acquisition is paid for through cash or stock transfer. Expanding upon the Sharma study, this paper adds a third category of financing choice to further explain these relationships. The next section addresses the data and methodology used to create a model to test how horizons influence acquisition financing.



## CHAPTER IV

### DATA AND METHODOLOGY

This section describes the data and methodology used to analyze how target managers respond to acquisition financing given their managerial horizons. Given the constraints of the databases used, the information reflects merger activity between 1992 and 2010. Additionally, all of the financial and executive data pertain to the fiscal year prior to an acquisition to ensure that the data reflect pre-merger information.

The dataset for this study is not pre-arranged, nor publicly available. The necessary information requires combining three databases from the Wharton Data Research Services (WRDS) platform: Center for Research in Security Prices (CRSP), CRSP/Compustat Merged, and Compustat's Execucomp. Only observations with entries across all three databases warrant analysis. A nine-digit CUSIP uniquely identifies each firm and allows data to be equated between databases.

The Monthly Stock Files from the CRSP database produced a list of targets and their associated acquirers from 1992 to 2010. This list of targets contains all U.S. public companies that delisted from a given exchange due to a merger. The delisting code also gives information about the payment method used by the acquirer for all of the acquisitions. Previous studies focus on acquisition financing as a binary decision between stock or cash. This study adds a combination of stock and cash as a possible avenue for an acquisition. CRSP did not provide all acquirers associated with a merger

which decreased the number of observations, as detailed below.

Based on the merger and acquisition data from CRSP, we obtained the financial information of both the targets and the acquirers. The financial data provide a way to quantify relative size between targets and acquirers. We include Total Assets, Total Revenue, Net Income, and Market Value to measure firm size. Additionally, the change in Research and Development expenditures offers a proxy for CEO horizons, as in Dechow and Sloan (1991). The Annual Fundamentals section of the CRSP/Compustat Merged database generates this information. Not all of the observations from CRSP include complete financial information, further decreasing the data sample.

Finally, Compustat's Execucomp database delivers CEO information pertaining to the targets and acquirers to proxy for managerial horizons in the form of compensation and age statistics. Since Execucomp contains only information from S&P 1500 companies, the need for this database eliminates many of the observations. Also, because targets generally lack the size of their acquirers, the target sample shrank more so than the acquirers. Overall, the dataset has 1187 observations, 514 belonging to target firms and 673 belonging to acquiring firms. Of these 1187 entries, 486 were financed through cash, 521 through stock, and 180 with a combination of cash and stock.

The variables to determine firm size require no modification from the original database. However, research and development expenditures, age and compensation statistics act as proxies for horizons and are computed manually. Age is the first measure used to proxy for CEO horizon. The decreasing and downwardly concave function developed by Sedatole, Kulp, and Dikolli (2003) acts as the horizon variable related to age. This relationship makes pragmatic sense, as the last few years of a career tend to

skew incentives more than years prior. Tenure is also investigated; a longer tenure indicates a shortening of horizons. These variables help indicate how far off retirement may be, which helps assess how the incentives to run the firm for the long-term diminish over time.

Compensation statistics offer the bulk of the variables used to evaluate the relationship between acquisition financing and CEO horizons. Instead of interpreting these statistics in an absolute fashion, ratios in relation to total compensation are used to equalize the data. Total Compensation includes Salary, Bonus, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black Scholes valuation), Long-Term Incentive Payouts, and All Other Total Compensation. Two categories separate the compensation statistics - equity-based wealth and cash payments - as described below.

The equity-based wealth ratios are assumed to be positively correlated with horizon length due to the fact that equity tends to align CEO incentives with those of long-term oriented shareholders. Of the many ways to quantify equity-based wealth, this study utilizes three measures of such compensation. Stock options granted to a CEO comprise two of these three measures. This variable is broken up by valuation method, where one variable reflects the grant-date fair value according to a firm's filings. Additionally, Standard and Poor's computes the value of these stock option grants using the Black-Scholes methodology. Finally, the estimated value of in-the-money unexercised, unexercisable options is also used. Other measures of equity-based compensation were evaluated, but many firms did not report these statistics, making analysis difficult.

Cash compensation in the form of bonuses and salaries should behave in a contradictory manner from equity-based compensation. While shareholders are compensated through their stock appreciation, cash payments do not incentivize managers to maximize equity returns; thus principal-agent problems tend to arise. It is expected that, as these ratios assume a larger role in a compensation package, a CEO's decision-making horizon will decrease.

Finally, a measure that is not specific to a CEO is used to evaluate managerial horizons. The percentage change in research and development expenditures in the year prior to an acquisition is also employed. A manager with a short horizon will not benefit from long-term projects that research and development support, and therefore a decrease in this expense may signal a short horizon. Although a CEO generally does not have sole discretion over such expenditures, allocation of these funds is very much a part of a manager's job. The following paragraphs introduce the methodology employed.

Having discrete dependent variables makes simple regression analysis using ordinary least squares (OLS) ineffective in constructing a model. This study requires a logistic regression model which can predict the possibility of a certain event occurring. A logit model differs from a simple regression in a few important respects. Unlike an ordinary least squares model that minimizes standard errors, a logit model maximizes the likelihood of a certain scenario using the coefficients of the variables. In this case, a multinomial logistic regression model must be used due to the inclusion of a third discrete dependent variable. The multinomial logit model compares each predicted variable to the base scenario through a combination of binary logistic regressions (Hair, 1995).

Cash, stock, and a combination of cash and stock of an unknown proportion make up the dependent variables in this study with stock being the base scenario; thus the coefficients for the stock logistic equation all equal zero. The coefficients associated with the independent variables in the equations indicate whether a given variable increases or decreases the likelihood of an occurrence. These occurrences correspond to the likelihood of an acquisition being financed through cash, stock, or a combination.

Sharma and Hsieh (2011) uses a binary logit model to test the likelihood of either cash or stock being used in an acquisition, using measures of the target managers' horizons as the independent variables. The same logit model used in the Sharma study cannot be used due to the inclusion of this third dependent variable. This study extends the Sharma model by adding a combination of cash and stock as a possible option of acquisition financing. The following multinomial logistic regression equations attempt to test the same expected relationships as Sharma and Hsieh.

$$\ln \frac{Pr(Y_i = Cash)}{Pr(Y_i = Stock)} = \alpha + \beta_1 \cdot X_1 + \beta_k \cdot X_k \quad (3.1)$$

$$\ln \frac{Pr(Y_i = Combo)}{Pr(Y_i = Stock)} = \alpha + \beta_1 \cdot X_1 + \beta_k \cdot X_k \quad (3.2)$$

Since the same relationships are tested in this study, it is assumed that the variables will behave in a similar manner. The inclusion of "combo" as a dependent variable gives an intermediate predicted outcome on the scale from cash to stock as a means of financing. It is expected that stock use is more prevalent when target horizons decrease. This is manifested in the following ways. These relationships are also presented in Table 1 on the following page.

As stock usage increases, the independent variables corresponding to age are expected to behave in a certain way based on the primary hypothesis that financing is dependent upon horizons. A CEO that is either older or has had a long tenure is expected to have a shorter horizon, which will increase the likelihood of more stock usage in an acquisition.

The cash-based compensation measures are also expected to behave in a manner similar to the age statistics. A larger portion of cash compensation as a percentage of total compensation should decrease horizons, which will also increase the likelihood for more stock to be used. Equity compensation ratios should demonstrate the opposite behavior. Compensation packages with more equity should elongate horizons and decrease the likelihood of more stock usage. Some believe that at a certain point an excessive ratio of equity-based wealth to total compensation may be detrimental to extending managerial horizons. Moeller (2005) finds that a disproportionate ratio of this type of wealth may entice a target manager to cash out through a merger. For simplicity's sake, this study ignores this possibility.

Finally, a negative percentage change in research and development the year before being acquired should translate into shorter horizons for target managers. It is expected that larger negative percentage changes will increase the likelihood of more stock usage. The next section presents the results and analysis from the methodology employed.

TABLE 1

## EXPECTED BEHAVIOR OF VARIABLES TO HORIZON TIMEFRAME

<b>Variable</b>		<b>Correlation</b>
Percentage change in R&D year prior to acquisition	-	Negative
Tenure	-	Negative
Age	-	Negative
Bonus*	-	Negative
Unexercised Options*	-	Positive
Salary*	-	Negative
Options Granted*	-	Positive
Restricted Stock Grants*	-	Positive

\* as percentage of total compensation

CHAPTER V  
RESULTS AND ANALYSIS

**Univariate Results:**

We first analyze CEO decision-making horizons by looking at the variables individually. Descriptive statistics and means tests across firm types help illuminate the relationships between acquisition financing and managerial horizons. This univariate analysis explains the descriptive statistics and the materiality associated with the observed trends. Table 2 on the following page illustrates these descriptive statistics by firm type.

As expected, targets lack the size of their acquirers. All measures of firm size confirm this. While the descriptive statistics on the previous page aggregate the firm sizes, Table 3 depicts target and acquirer size discrepancies by year. On a total asset basis acquirers are 2.4 times larger than the target firms. Within the target category, those acquired with cash are smaller than those acquired with either stock or a combination of cash and stock. Cash acquirers are also bigger than either combo or stock acquirers. Overall, cash acquisitions produce the largest size discrepancies between targets and acquirers. As expected, larger acquirers more often have the liquidity to dispense cash for small acquisitions.

Observing the trends in financing type by year raises additional results. Table 4 and Graph A illustrate these phenomena. The boom of the 1990s seems to overlap with a



TABLE 2

## ACQUISITION DATA FOR SAMPLE FIRMS/CEOS

1992-2010

<u>Summary statistics for sample firms*</u>	All Targets	All Acquirers	Cash Target	Cash Acquirer	Combo Target	Combo Acquirer	Stock Target	Stock Acquirer	All Firms
<b>Assets (\$mn)</b>	<b>5,830.7</b>	<b>13,998.3</b>	<b>2,964.4</b>	<b>19,369.4</b>	<b>6,359.6</b>	<b>9,464.5</b>	<b>8,274.7</b>	<b>10,354.8</b>	<b>10,465.5</b>
Net Income (\$mn)	144.4	545.2	103.8	742.9	259.8	488.4	135.5	377.9	371.7
Revenue (\$mn)	2,701.1	6,544.5	1,569.0	8,079.5	3,831.0	5,507.5	3,298.9	5,425.0	4,880.2
Research and Development Expenditure (\$mn)	119.7	313.3	62.0	404.4	256.7	443.4	131.9	186.6	229.5
Market Value (\$mn)	4,104.6	14,203.9	1,900.4	15,433.8	5,734.7	9,858.2	5,921.1	14,995.4	9,516.3
<u>CEO horizons in mergers and acquisitions**</u>									
<b>Percentage change R&amp;D year prior to acquisition *</b>	<b>-14.3%</b>	<b>31.3%</b>	<b>-14.3%</b>	<b>27.9%</b>	<b>-16.4%</b>	<b>33.2%</b>	<b>-13.3%</b>	<b>34.4%</b>	<b>11.2%</b>
Tenure (years)	6.4	6.7	6.7	6.3	6.1	6.0	6.2	7.2	6.5
Age (years)	55.1	55.0	54.8	55.7	56.2	55.8	54.9	54.0	55.0
Bonus (\$ thousands)	779.7	962.3	632.9	1,199.7	749.4	811.0	888.0	819.7	892.6
<i>Bonus/Total Compensation</i>	<i>21.7%</i>	<i>22.8%</i>	<i>23.8%</i>	<i>24.8%</i>	<i>20.5%</i>	<i>21.7%</i>	<i>20.6%</i>	<i>21.6%</i>	<i>22.4%</i>
Unexercised Unexercisable Stock Options (\$ thousands)	3,581.3	8,479.3	1,677.8	6,110.1	4,979.5	5,987.2	4,891.6	11,407.2	6,509.8
<i>Unexercised/Total Compensation</i>	<i>96.0%</i>	<i>179.1%</i>	<i>66.8%</i>	<i>117.3%</i>	<i>88.3%</i>	<i>108.5%</i>	<i>125.1%</i>	<i>257.1%</i>	<i>145.7%</i>
Salary (\$ thousands)	626.0	681.3	581.2	739.3	715.7	690.8	632.0	624.0	657.3
<i>Salary/Total Compensation</i>	<i>33.1%</i>	<i>26.1%</i>	<i>36.2%</i>	<i>26.7%</i>	<i>33.1%</i>	<i>23.6%</i>	<i>30.2%</i>	<i>26.4%</i>	<i>29.1%</i>
Stock Options Granted using Black Scholes (\$ thousands)	2,062.6	3,320.6	1,049.1	2,080.2	1,947.0	2,574.2	2,767.6	4,413.5	2,794.6
<i>Options Granted Black Scholes/Total Compensation</i>	<i>32.5%</i>	<i>36.5%</i>	<i>25.9%</i>	<i>33.0%</i>	<i>34.6%</i>	<i>35.7%</i>	<i>36.2%</i>	<i>39.3%</i>	<i>34.8%</i>
Total Compensation (\$ thousands)	4,328.8	6,185.6	3,047.7	5,699.7	4,931.3	5,631.9	5,278.5	6,807.1	5,382.9

\*Data obtained from CRSP/Compustat Merged database.

\*\*Data obtained from Execucomp unless otherwise noted.

TABLE 3

## MEAN SIZE DISCREPANCY BY YEAR BETWEEN TARGET AND ACQUIRER

Year	Assets (\$mn)	Net Income (\$mn)	Revenue (\$mn)	Market Value (\$mn)
1993	15,125.0	354.5	2,220.2	NA
1994	4,994.7	158.3	2,474.4	NA
1995	8,297.1	223.5	3,172.6	NA
1996	3,230.8	245.7	3,537.0	NA
1997	(5,648.7)	39.4	(1,282.1)	NA
1998	14,408.8	716.3	7,217.3	12,305.9
1999	3,617.0	(67.7)	1,605.9	4,166.4
2000	421.1	665.9	2,288.0	15,765.8
2001	(1,233.2)	61.7	(914.4)	2,677.3
2002	19,531.4	356.0	2,682.5	8,029.8
2003	38,799.4	456.5	4,392.8	4,429.9
2004	7,151.4	637.1	3,092.4	6,765.9
2005	1,949.1	540.0	3,414.6	9,074.9
2006	23,781.2	478.5	5,341.2	4,771.4
2007	662.2	368.6	7,595.9	7,212.0
2008	19,806.1	1,336.2	10,478.5	17,049.9
2009	15,660.0	1,346.4	14,084.3	27,482.9
2010	6,888.8	545.0	4,551.2	10,001.1

Source: CRSP/Compustat Merged

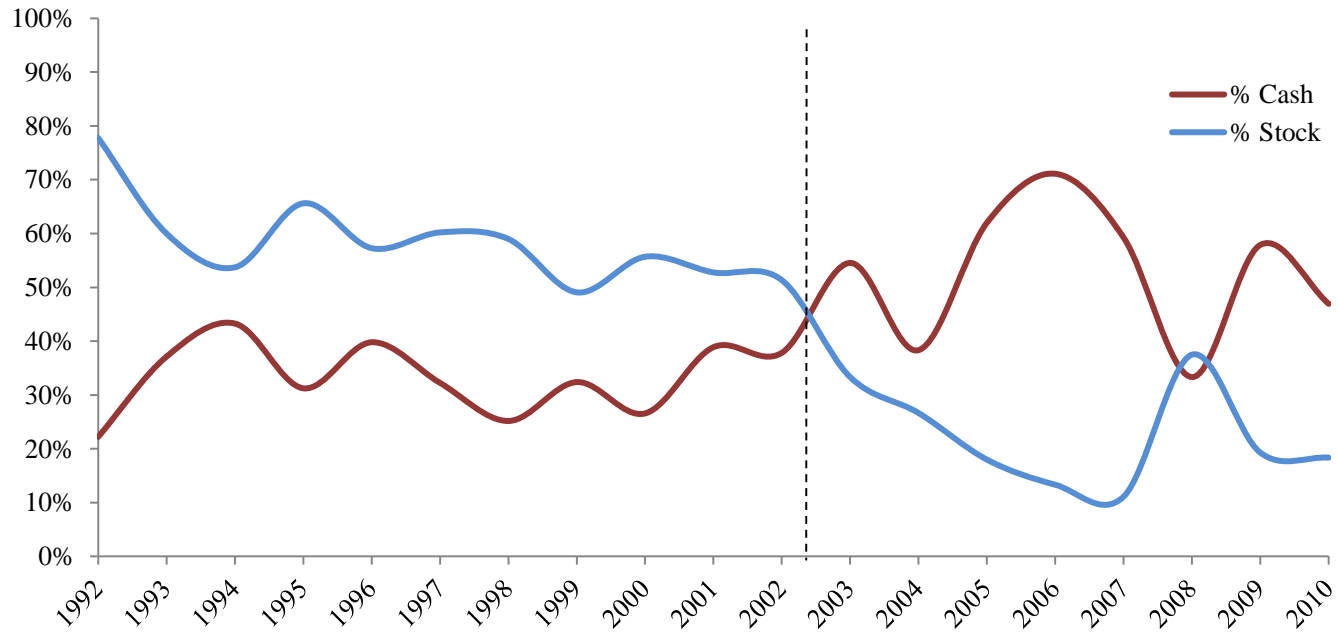
TABLE 4  
ACQUISITION TYPE BY YEAR

	Cash	<i>% Cash</i>	Combo	<i>% Combo</i>	Stock	<i>% Stock</i>	Total
1992	2	22%	0	0%	7	78%	9
1993	13	37%	1	3%	21	60%	35
1994	29	43%	2	3%	36	54%	67
1995	20	31%	2	3%	42	66%	64
1996	41	40%	3	3%	59	57%	103
1997	30	32%	7	8%	56	60%	93
1998	35	25%	22	16%	82	59%	139
1999	35	32%	20	19%	53	49%	108
2000	21	27%	14	18%	44	56%	79
2001	14	39%	3	8%	19	53%	36
2002	14	38%	4	11%	19	51%	37
2003	18	55%	4	12%	11	33%	33
2004	23	38%	21	35%	16	27%	60
2005	31	62%	10	20%	9	18%	50
2006	64	71%	14	16%	12	13%	90
2007	32	59%	16	30%	6	11%	54
2008	8	33%	7	29%	9	38%	24
2009	33	58%	13	23%	11	19%	57
2010	23	47%	17	35%	9	18%	49
<b>Total</b>	<b>486</b>	<b>41%</b>	<b>180</b>	<b>15%</b>	<b>521</b>	<b>44%</b>	<b>1187</b>

Source: Center for Research in Security Prices

# GRAPH A

## CASH VERSUS STOCK MERGER TRANSACTIONS



Source: Center for Research in Security Prices

period where acquirers used predominately stock in acquisitions. This pattern changes between 2002 and 2003, when cash acquisitions overtake stock acquisitions. The timing of this pattern could indicate that a cash hoarding phase in the early 2000s translated into a dispensing period in the following years. We expect that this excess cash on corporate balance sheets acts as an incentive to use cash for acquisitions. A similar pattern is observed after 2008, further supporting this hypothesis.

Means tests on the descriptive statistics highlight interesting trends between target CEOs and their acquiring counterparts. As illustrated in Table 5 two sample t-tests and Wilcoxon rank-sum tests analyze the statistical significance of the descriptive statistics. These tests emphasize the horizon proxies that have statistically significant differences between targets and acquirers across financing options. A two sample t-test allows for comparison of means between two groups with the provision that the variance of both groups is equal. We also employ Wilcoxon rank-sum tests, a nonparametric measure that does not assume a normal distribution of the data. These tests yield the following results.

Target CEOs' salary as a percentage of total compensation differs statistically from acquirers for all financing options, including the "combo" category. This indicates that irrespective of payment method, target and acquirer CEOs have different horizons according to this variable. Regardless of how their companies are acquired, target CEOs have a larger portion of their total compensation in the form of a salary. This supports the hypothesis that targets lack the long-term horizons of their acquiring counterparts on the basis that cash payments indicate shorter horizons. Pre-merger changes in research and development expenditures have similar features, where material differences appear in almost every financing category. Regardless of the choice of financing, target firms

TABLE 5

## SIGNIFICANCE TESTS FOR CEO HORIZON DIFFERENCES

## MERGER AND ACQUISITION MEANS TESTS

	t-tests			Wilcoxon rank-sum test		
	Cash	Combo	Stock	Cash	Combo	Stock
<b>Percentage change R&amp;D year prior to acquisition</b>	<b>0.008<sup>***</sup></b>	<b>0.001<sup>***</sup></b>	<b>0.001<sup>***</sup></b>	<b>0.001<sup>***</sup></b>	<b>0.287</b>	<b>0.037<sup>**</sup></b>
<b>Tenure</b>	<b>0.496</b>	<b>0.954</b>	<b>0.086<sup>*</sup></b>	<b>0.129</b>	<b>0.780</b>	<b>0.035<sup>**</sup></b>
Age	0.167	0.740	0.174	0.065 <sup>*</sup>	0.468	0.070 <sup>*</sup>
Bonus/Total Compensation	0.604	0.724	0.535	0.692	0.839	0.786
Unexercised/Total Compensation	0.011 <sup>**</sup>	0.548	0.224	0.023 <sup>**</sup>	0.447	0.007 <sup>***</sup>
<b>Salary/Total Compensation</b>	<b>0.001<sup>***</sup></b>	<b>0.006<sup>***</sup></b>	<b>0.063<sup>*</sup></b>	<b>0.001<sup>***</sup></b>	<b>0.073<sup>*</sup></b>	<b>0.073<sup>*</sup></b>
<b>Options Granted Black Scholes/Total Compensation</b>	<b>0.069<sup>*</sup></b>	<b>0.848</b>	<b>0.297</b>	<b>0.053<sup>*</sup></b>	<b>0.949</b>	<b>0.286</b>

\*Significance at the 10% level or better

\*\*Significance at the 5% level or better

\*\*\*Significance at the 1% level or better

exhibit an aggregate negative percent change in research and development spending the year before an acquisition. Acquiring firms across all financing choices show an increase in research and development the year prior to an acquisition. Overall, where target firms had a mean decrease of 14.3%, acquirers saw an increase of 31.3%; a net difference of 45.6%. When broken into financing method, these differences are significant at a level of 5% or better, with the exception of the "combo" subset. This also reiterates the hypothesis that targets have relatively shorter horizons.

The descriptive statistics reveal another interesting phenomenon associated with research and development expenditures. Research and development expenditures help facilitate future growth in a firm. In the "cash" and "combo" financing categories, research and development as a percent of revenue is higher for acquirers. However, stock acquirers spend less on research and development as a percent of revenue (3.4%) compared to targets that are acquired through stock (4.0%), a significant difference. This indicates that, when CEOs of an acquiring firm see an overvaluation of their company's own stock, they tend to expand through acquisitions versus expansion using cash. Current literature supports this hypothesis. Phillips and Zhandov (2012) find that large firms have a propensity to let smaller firms innovate and subsequently purchase this innovation through an acquisition. They find that this is especially true with large size discrepancies between acquirers and targets. This also supports the view that stock acquisitions occur more so with large size discrepancies, a conclusion mentioned later in this section.

Though age remains relatively constant across all firm types, the difference in means of CEO tenure changes significantly with financing type. According to t-tests and

Wilcoxon rank-sum test, tenure, another horizon proxy, lacks any meaningful difference in cash acquisitions. However, in stock financed mergers there is a material difference in tenure between acquiring CEOs (7.2 years) and target CEOs (6.2 years). This reveals that differences in managerial horizons between targets and acquirers may diverge more so in stock acquisitions. This direction of difference conflicts with the expected result. Though it is expected that there would be a material difference in stock versus cash, it is unexpected that acquirers would have a longer tenure than targets. Instead of target managers accepting stock after having a longer tenure and less time remaining at the firm, which would indicate shorter horizons, the acquiring CEOs actually have been in the position longer.

Interestingly enough, options granted as a percent of total compensation behave in an opposite manner to that hypothesized. In cash acquisitions target CEOs have 25.9% of their total compensation in stock option grants versus acquiring CEOs with 33.0% in these grants, a significant difference. However, the difference between target and acquiring CEOs lacks significance in stock financed mergers. Unexpectedly, the disparity between stock option grants is only 3.1% lower for targets in these types of transactions. A relatively larger discrepancy in equity-based compensation was expected in stock financed mergers. This unexpected result suggests that although target managers hold less equity, indicating shorter horizons, this difference is only significant in cases with cash purchases. This result is contrary to the hypothesis and suggests that horizons do not diverge more in stock financed mergers.

Differences in bonus as a percentage of total compensation lacks statistical significance in all financing categories, a stark contrast to salary, the other form of cash



compensation evaluated in this study. Since bonuses are largely discretionary and prone to abrupt changes year to year, this is not surprising. Unexercised unexercisable options have mixed statistical differences. The t-tests indicate significant differences in both cash and stock mergers, whereas the Wilcoxon rank tests only cites the difference in cash mergers to be significant.

In conclusion of the univariate analysis, the hypothesis that horizons diverge as more stock is utilized cannot be confirmed. The means tests are fairly consistent between cash and stock where the number of statistically significant variables does not increase with stock use. Though the "combo" financing choice was evaluated alongside both cash and stock, this category suffered from statistical problems, addressed in the following section. These problems dissuade further investigation of the trends associated with the "combo" category.

### **Multivariate Results:**

With acquisition financing as the predicted variable, a multinomial logistic regression model tests the likelihood that managerial horizons of the target firm explain financing method in merger transactions. Stock financing is the base outcome to which both the "cash" and "combo" options are compared using binary logistic regressions. The predictor variables for the target horizons in the final model include percentage change in research and development the year prior to an acquisition, tenure, age, bonus to total compensation, salary to total compensation, unexercised & unexercisable stock options to total compensation, and stock option grants to total compensation. While other statistics were evaluated in different iterations of the model, these final variables are best suited to evaluate the hypothesis. The final model contains 82 observations of strictly target firms

based on the available information from the seven variables, significantly fewer than the 514 entries for target firms. This discrepancy arises due to the fact that an observation needed numerical data in all categories to be analyzed. Removal of several variables ensured a high enough number of observations, such as restricted stock grants.

Multicollinearity also eliminated several variables; this is true of the book value of stock option grants. We decided to use Black Scholes value of these options to capture how the market valuation of such options affects decision-making.

Before diving into the results and analysis from the multinomial logistic regression, we note a key difference between logit and OLS models. This difference lies in the role of variance and the concept of deviance. Unlike an OLS model that tests the overall fit based on an  $R^2$  value, a logit model tests for deviance based on Likelihood Ratios and Wald tests. A pseudo  $R^2$  value can be obtained to assess the predictive power of the model.

Overall, the independent variables in the multinomial logit regression do little to explain the choice of acquisition financing. The fit statistics computed through STATA give a relatively weak pseudo  $R^2$  value of 13.9%.<sup>1</sup> Additionally, the Likelihood Ratio Chi-squared test does not deliver a high enough value to be statistically significant. Even at a significance level of 10%, the p-value associated with the model's likelihood ratio reveals that the null hypothesis cannot be rejected. That is, all the coefficients of the predictor variables equal zero. This indicates that the multinomial logit model created from target CEO decision-making horizons does not explain the choice of acquisition financing.

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<sup>1</sup> Based on McFadden's  $R^2$  calculation.

Contrary to the goal of further illuminating the relationship between managerial horizons and acquisition financing, the "combo" dependent variable triggers various statistical problems. Multinomial logit models assume the independence of irrelevant alternatives (IIA). This IIA assumption of binary independence dictates that odds ratios do not change with the inclusion of an additional predicted variable. A Hausman test for IIA reveals that the model violates this assumption. The introduction of the "combo" dependent variable forces us to reject the null hypothesis that its inclusion is independent of the other alternatives.

Similarly, when testing combined dependent variables, the "combo" variable causes additional problems. According to the Wald test for combining variables, the model cannot distinguish the "combo" variable from either the "stock" or "cash" option. In other words, a more efficient model lacks the "combo" predicted variable.

Though the model as a whole lacks statistical significance, several of the variables appear to offer explanatory power within the model framework. Individual analysis of the independent variables within the multinomial logit framework allows for further explanation of the relationships between the individual horizon proxies and acquisition financing options. The binary logit comparison between "cash" and "stock" found that both the "age" and "stock options granted" variables are statistically significant at a significance level of 5% or better. These variables affect the choice of financing in opposite ways, with the direction of the relationship as expected. A one year increase in age increases the log odds of a stock acquisition by .11. A one unit increase in options granted to total compensation decreases the log odds of a stock acquisition by 4.40. These results were confirmed using the Wald test of individual independent variables.

The binary logit comparing "combo" to "stock" showed no independent variables that were significant. This further confirms that the "combo" variable does not help explain the relationship between managerial horizons and acquisition financing. These problems may arise from the imprecision of the "combo" variable.

The problems with the intermediate "combo" variable push this study to look at a binary logit model similar to that of the Sharma and Hsieh (2011) study. The same variables used in the multinomial logit regression lead to a binary logit model with only "cash" or "stock" as possible financing options.

This model generates a pseudo  $R^2$  value of 17.6%, a better fit statistic than the multinomial logit model. In addition to the statistical significance of "age" and "stock options granted" as with the multinomial regression, salary as a percentage of total compensation becomes significant when the "combo" variable is abandoned. Though encouraging, this binary logit model fails to generate a large enough log likelihood value to reject the null hypothesis that all the variable coefficients equal zero, the same problem as with the multinomial logit regression.

The next goal was to develop a model that had a larger number of observations. To this end, "percentage change in research and development" and "bonus as a percentage of total compensation" were excluded from an additional logit model based on their lack of observations in the dataset. This provision drastically increased the number observations to 215 to give a better representation of target behavior. Age, unexercised unexercisable options, and options granted all held significance at a level of 5% or better. This model also passed the Likelihood Ratio test at a significance level of 1%. However,

this simplicity translated to a low  $R^2$  value of only 5.6% which indicates that the model lacks integral variables.

Overall neither the multinomial regression model with the inclusion of the "combo" dependent variable nor the simplified binary logit model were successful in providing evidence to support the hypothesis. Unfortunately, the "combo" variable detracted from the statistical significance of the model. That said, analysis of the variables on an individual basis explained some of the trends and differences between target CEOs and their acquiring counterparts. Interestingly enough, "options granted" and "age" held significance throughout all iterations of the models. Though this may be true, the models developed in this study do not support the main hypothesis relating financing options and managerial horizons. The next section summarizes this study and offers avenues for further research.

## CHAPTER VI

### CONCLUSION

This study attempts to relate target CEO horizons to payment methods in mergers and acquisitions. With recent decades revealing an abundance of sub-optimal M&A deals, these decision-making horizons could play a role in the negative outcomes. Understanding the ramifications of imperfect decision-making based on these horizons is essential due to the drastic impact these transactions have on stakeholders. We first attempt to establish a theoretical link between target CEO horizons and the degree of stock accepted for an acquisition. The main hypothesis states that shorter horizons translate to higher acceptance of stock by target managers. A related hypothesis looks at how target and acquirer horizons differ based on payment method.

The efficient market hypothesis, valuation theory, and agency theory allow for an effective discussion on this topic. The assumption of inefficient markets creates chances for market-wide and firm-specific misvaluation. Mispricing in the market allows for opportunistic transactions based on information asymmetry. This study focuses on why target CEOs accept deals they know to be suboptimal. The prediction states that horizon timeframe plays a significant role in agent conduct.

Scholars investigate these theories and lay the foundation for investigating the crux of this study's hypothesis. Topics from behavioral corporate finance to CEO compensation bring the discussion closer to managerial actions during mergers and

acquisitions. Notably, Shleifer & Vishny (2003) first hypothesize a correlation between CEO horizons and acquisition financing, though not the focus of their study. Sharma & Hsieh (2011) base their study on the predictions of Shleifer & Vishny by using CEO horizons to predict the choice of acquisition financing. Using a binary logit model, they create a model that attempts to predict the likelihood of cash or stock being used based on horizon data. While their study does not find evidence in support of the hypothesis, their study opens the door for further investigation of this topic.

The inclusion of a "combo" choice for financing in addition to "cash only" and "stock only" attempts to support the hypothesis that Shleifer & Vishny could not confirm. Data gathered from CRSP, CRSP/Compustat Merged, and Execucomp allow us to interpret information similar to previous studies. Data relating to merger, financial, and executive information culminated in a dataset of 1187 observations from 1992 to 2010. This acts as the basis for the models used to predict financing based on horizons.

The third discrete variable forced the use of a multinomial regression model to predict the likelihood of financing choices. However, the "combo" variable did more harm than good in modeling the hypothesized relationship. Since it is a discrete variable, anything other than strictly cash or stock fell into this category. This created statistical problems that rendered the multinomial model inadequate to assess the intended relationships. That said, the development of a simpler binary logit model rectified this problem, though even these simpler models lack statistical significance. As Sheifer & Vishny found, target managerial horizons seem to have little influence on the choice of acquisition financing.

Lack of access to the correct managerial horizon proxies may impact the accuracy of the results. While Execucomp supplies a large number of potential variables, many firms do not report such statistics. This eliminated variables on the basis of obtaining an acceptable number of observations. Additionally, there may be further horizon statistics that this study overlooked. Managerial horizons are inherently intangible, which leads to a degree of inaccuracy when interpreting results.

Though this relationship lacks empirical evidence in the current study, there may be ways to improve upon the results found here. While this study uses discrete dependent variables, a study using continuous predicted variables may fare better. Finding acquisition financing data on a percentage basis may increase the accuracy of the model, where the three categories utilized in this study lacked precision.

The vein of managerial power may be another avenue for further research on this topic. While managerial power has been studied, the direct relationship with managerial horizons and acquisition financing has not been explored. Large acquirers may use more stock, and thus underpay, when acquiring much smaller targets. The relationship between underpayment in relation to size discrepancy may be of significance.

A look into target and acquirer stock returns as a horizon variable may yield interesting results for an additional study. Pre-merger inconsistencies between target and acquirer stock returns could approximate misvaluation in a transaction. Stock is an enticing option to a manager of a relatively overvalued acquirer, where cash may be a better option for a relatively undervalued acquirer. Benchmarking these returns would act as an additional variable indicating a motivation to use either cash or stock.



The mixed results of this study raise additional questions about the inherent ties between managerial actions and mergers and acquisitions. While current studies illuminate certain aspects of this relationship, many additional avenues for further research exist. Future empirical studies should seek to enhance the knowledge of these important relationships.

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