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Determinants of CEO Pay: A Critical Assessment

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DETERMINANTS OF CEO PAY:

A CRITICAL ASSESSMENT

by

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ABSTRACT

DETERMINANTS OF CEO PAY:
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This research expands the study of determinants of CEO pay. Previous studies have found conflicting results regarding the importance of firm size and firm performance in influencing the amount of CEO compensation. Other studies are incomplete with respect to the measurement of both executive pay and its determinants. Traditional theories of executive compensation such as equity theory, expectancy theory, human capital and labor market theory provide the starting point for determinants of CEO pay However, to more fully understand these determinants, the model includes a test of agency theory showing the relationship between board control and pay It tests the relationship of CEO equity and pay, also based on agency theory, and by measuring firm internationalization tests complexity as a basis for CEO compensation. The study also examines the relationship between CEO pay and firm size as well as the relationship between compensation and firm performance

This study extends theory and empirical conclusions with improvements in measurement, the addition of CEO equity and firm internationalization to the model It also allows for normative predictions based on firm performance, as well as summary of conflicting conclusions through meta-analysis.

-Measurement: Structural equation modeling improves measurement of both dependent and predictor variables. All constructs are measured using multiple indicators One benefit of the multiple indicators is a more robust measurement of the construct of compensation. This study also confirms the reliability of a multiple indicator model of board control

-CEO Equity: Previous research does not measure CEO equity ownership as a continuous variable. CEO wealth reflected by the value of CEO stock ownership is negatively related to compensation.

-Performance: By dividing the sample into high and low performing groups, we can identify effective compensation practices.

-Internationalization: We find that firm internationalization is positively related to CEO pay, however, the results are not significant.

-Meta-analysis: This methodological technique summarizes effect sizes of the relationships between common control variables, size and performance. Consistent with traditional literature reviews, firm size has a greater influence on CEO pay than firm performance However, when long-term incentives are included in the measure of compensation, the differences are reduced.

This study confirms the reliability and accuracy of the board control model as a predictor of CEO pay, especially for high performing organizations. By incorporating CEO factors and testing the effects of internationalization in the model, we account for

additional variation in such compensation. Use of multiple indicators enhances the robustness of the model as well.

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INTRODUCTION

The chief executive officer (CEO) is the driving force behind the modern American corporation, responsible for determining the strategy the corporation sets as well as implementing this strategy. Business practitioners, academics, government agencies, the popular press and general public devote large amounts of attention to the factors which determine the levels and types of CEO pay, especially in trying to determine the effect of compensation on organizational outcomes. Despite this great interest in CEO compensation, there are many questions about determinants of CEO pay which still need to be addressed, including the measurement of these determinants. Other areas which need additional study include the influence of equity ownership, internationalization and the working of size and performance as influences on compensation. The gaps in knowledge are due, in part, to the relative newness of the field of strategy when compared to the traditional economic, sociological and human resources bases used for the study of compensation. By integrating improvements in measurement of the determinants of chief executive officer compensation as well as adding new theoretical considerations to the model, this dissertation will increase understanding of this important issue.

There are theoretical and practical reasons for studying the influences on chief executive officers and how their actions affect organizations From a theoretical standpoint, the chief executive officer has possibly the greatest influence on the performance of the organization based on primary managerial roles including symbolic actions, information processing and decision making (Mintzberg, 1973), although other researchers dispute the efficacy of these roles. Additional roles that CEOs fulfill include solving problems (Smith & White, 1987), allocating resources (Pfeffer & Salancik, 1978), being the chief strategist (Gomez-Mejia, 1994), and maintaining the organizational culture (Schein, 1985). The CEO's actions in filling these roles, in turn, affect the strategic outcomes of the organization.

From a more practical standpoint, recent actions of the Securities and Exchange Commission (SEC) provide evidence of the importance of the roles of the CEO and the potential for influencing the CEOs' actions through the use of incentives. In 1993, the SEC initiated the requirement for boards of directors to establish compensation committees consisting of outside or non-executive directors to set compensation levels of senior executives of companies. The regulations also require that the committee include written explanations of the intent and process of rewarding executives in company proxy statements. The Chase Manhattan Corporation report, for example, stated that the directors of their composition committee are "disinterested" outside directors (1996). These directors are charged with administering a program intended to "attract, retain and motivate top quality and experienced professionals..." (Chase, 1996, p. 12) At the same time, the compensation strategy is designed to use performance-based pay to make sure

that the interests of senior management match those of stockholders. Thus, both governmental entities and public corporations recognize and acknowledge the importance of the executive reward systems in determining the outcomes of the corporation.

The actions of the SEC were precipitated by public and political concern as well as academic studies. The question remains whether the steps taken by the SEC and corporations are able to achieve the desired results. This is the case especially when dealing with chief executive officers whose, response to traditional motivational incentives may be different than lower level employees in organizations. In order to determine the efficacy of executive compensation systems, a greater understanding of the determinants of CEO pay is desirable. This paper explores the process traditionally used to set compensation, but looks beyond the human resources explanations to examine the actual determinants of CEO pay.

The primary means I use to further the study of the determinants of CEO compensation is through refinement of measurements from existing studies. Improving measurement addresses a critical gap in existing literature, that of comprehensiveness. Most studies to date have concentrated on a single issue, starting with the single-indicator models of the early 1960s. For example, Roberts (1959) used a single-indicator model with simple correlational analysis as its test of hypothesis. As the sophistication of statistical methodology improved, similar studies were conducted using multiple regression; however, they still tended to focus on one aspect of compensation and often have a limited sample. Improvements in the measurement of variables will enhance existing studies. Using a multi-indicator model captures more information about both

dependent and predictor variables. To provide a metric for the comprehensive measurement improvements of this multi-indicator model, I have identified several recent studies which examine the determinants of CEO pay. In order to provide a basis for comparison, studies since 1989 were included to increase the probability that incentives are included as a part of the compensation construct. Using R^2 or the coefficient of determination as the measure of predictive power, these studies on average account for 45 percent of the variance in CEO pay. Appendix A is a table which lists the studies, their predictor variables and the amount of variation explained.

The measurement of CEO compensation should include both salary and bonus as the cash portion as well as long-term incentive pay. To capture even more of the value of compensation, I add a valuation of golden parachutes to the compensation component. The relationship between the board of directors and the CEO is tested using a multiple-indicator model of board control. This study also employs multiple indicators of CEO equity holdings, internationalization, firm size and firm financial performance in order to measure the relationship between these constructs and CEO pay.

Another methodology, meta-analysis, enhances understanding of two areas which have received considerable attention by the multiple audiences for CEO pay research: questions of the pay-for-performance relationship and the issue of firm size as a determinant of CEO pay. Practitioners, in particular, seek to match rewards systems to business strategies and publics seek to understand the issues of CEO compensation to reduce rhetoric surrounding the various levels and types of compensation which are currently used. In addition to including both size and performance as control variables.

this study will also summarize the results of previous research on these variables using meta-analytical methodology. This methodology draws together the results of previous empirical studies for statistical compilation to determine summary effect sizes. The majority of the studies available for inclusion in a compilation use simple measurements. For example, the ratio of studies which limit the dependent variable to cash compensation versus studies with complex measures including incentives is three to one. In addition to summarizing the effects of size and performance, the meta-analysis supports the use of additional measurement variables. Conclusions about the effect sizes are reported in the results section, while the details of the meta-analysis form Appendix B.

After defining and testing a model of the determinants of CEO pay, this study goes on to provide a normative assessment of the effectiveness of such pay. Because of the large number of firms, the sample can be divided between high and low performing firms in order to test multiple models. This comparison will highlight the policies of effective performing firms with respect to existing compensation programs.

The remainder of this chapter provides an overview of the theoretical support for studies of CEO compensation, starting with the linkage between compensation and organizational outcomes and the importance of the CEO as decision-maker. It then reviews the structure of compensation programs as well as theories which are used to define determinants of pay including agency theory and firm internationalization. A brief description of the sample and methodology which is used to test the relationship between compensation and its determinants follows.

Linkage Between Compensation and Organizational Outcomes

Explanations of the variance in levels of executive compensation can be directly attributed to the relationship of such compensation and organizational outcomes. No other individual has more influence on the strategic decisions of a firm than the chief executive officer. If the general purpose of a reward system is "to attract, retain, and motivate qualified employees" (Deckop, 1987, p.286), then the same qualifications apply to executive compensation. There are, however, additional qualifications for an executive compensation system, based on the individual nature of both organizations and their leaders. These compensation systems seek to match the individual nature of each situation. They are, of necessity, complex and include both short-term and long-term components.

Compensation policies are generally determined by the board of directors, often acting in concert with a compensation consultant (Crystal, 1991b). In order to get at the desired level of complexity, this system requires study of the activities of the board as well as the CEO and overall firm performance. Boards hire particular CEOs for their skills and abilities, compensating them, in part, in response to the external labor market. Some level of compensation is required to retain the services of the particular individual. Compensation is also used as a symbol in the internal labor market. In this manner, CEOs are rewarded either to provide a target for other individuals in the organization to strive for, or to differentiate between the CEO and lower hierarchical levels. Most compensation packages also include incentives, which are intended to align the actions of the CEO with the desires of firm owners.

Another reason for this study is to continue the discussion of the value of the CEO with respect to the levels of compensation. There are two primary camps on this issue. The first, represented by Crystal (1991b), holds that CEOs in the United States generally are overpaid for the effect they have on organizational outcomes. He posits that CEOs have more knowledge about the value of their services and that they over-represent this value to compensation consultants and committees of the board of directors. According to Crystal, even if executives are rewarded for outstanding performance, their compensation is not reduced for subsequent sub-standard performance (1991a). Murphy (1986), on the other hand, holds that CEOs are "worth every nickel" that they receive. His research shows that the absolute number of executives receiving supra-normal compensation is extremely small. Stock market returns of firms which announce increases in CEO compensation also tend to outperform those of other firms (Murphy, 1986). These two differing viewpoints are at the center of the pay-for-performance question addressed in many academic studies which provide the ultimate test of the link between compensation and organizational outcomes. To further support the rationale behind this relationship, an examination of the theories of strategic choice as they apply to managerial decision makers is in order.

Strategic Choice

Academic study of chief executive officers is based, in large part, on the concept that that the strategic choices made by an organization's decision makers have an effect on the outcomes of that organization (Child, 1972). In general, the CEO is the focal individual in the coalition charged with making decisions, whether from a need for a certain hierarchy

of command, for decision speed or for any other practical management rationale (Bourgeois & Eisenhardt, 1988; Mace, 1971) These decisions often result in allocation of resources, development and implementation of organizational strategies and growth of structures to support the decisions (Bluedorn et al., 1994). CEOs are charged with making the type of decisions necessary as the organization interacts with its environment, especially the external environment (Gerhart & Milkovich, 1990). In addition to direct managerial responsibilities, CEOs also have symbolic importance in setting strategy (Hambrick & Finkelstein, 1987; Hart, 1992). Consistent with strategic choice theory and providing additional support for the study of CEOs is the fact that top executives generally have more latitude with respect to job performance than other employee groups (Deckop, 1987).

Another tenet of strategic choice theory is that the choices made by the dominant coalition affect the outcomes of the organization. There is both theoretical and empirical support that this is the case. Romanelli and Tushman (1988) posit that leadership must respond to changes in the environment in order to align outcomes with organizational objectives. Moving to empirical studies, Zajac (1990) apportioned 20 percent of firm performance to the actions of the CEO. Similarly, another aspect of a CEO's responsibilities, decision speed, is associated with improved performance in high-velocity environments (Bourgeois, & Eisenhardt, 1988). Studying anticipated and unanticipated CEO succession events, Beatty and Zajac (1987) document the influence of individual managers on organizational outcomes as evidenced by variance in stock returns surrounding these events.

Additional study of the effects of strategic choice has developed from Hambrick and Mason's (1984) work on TMT demographics. Their results show that individuals, especially the CEO, through decision-making influence the outcomes of organizations. CEOs in particular make decisions regarding strategic variables such as resource allocation and the interaction with the firm's environment (Buchholtz & Ribbens, 1994). This effect is also influenced by matching executive characteristics with firm strategy (Thomas & Ramaswamy, 1989). Further support for the importance of CEO characteristics is provided by Walsh and Seward (1990), who hold that dismissal and replacement of a CEO is not sufficient to improve performance. Such improvements are dependent, instead, on the skills and abilities of the replaced CEO's successor. In order to ensure that CEO actions contribute to the accomplishment of organizational objectives, boards of directors structure compensation packages to try to influence managers. The next link in the study of the determinants of CEO pay is the review of the structure of compensation packages and their effects on CEO actions.

Structure of Executive Compensation

Executive compensation contracts are designed to balance motivational aspects with executives' risk aversion. Therefore, the main components of executives' pay packages consist of cash compensation in the form of salary and bonus, long-term performance-related incentives and golden parachutes. While there are other benefits related to compensation granted to CEOs, such as insurance, these often are insignificant in comparison to the levels of cash and incentive awards (Seward & Walsh, 1996) and are not included in this study. Compensation contracts generally take two forms, mechanistic

and experiential (Gomez-Mejia & Welbourne, 1988; Gomez-Mejia & Balkin, 1992) These forms, too, match motivation and risk.

The first part of a compensation package, cash rewards, generally consists of two elements, salary and bonus While bonuses are nominally intended to provide a form of performance incentive, they are currently perceived as being tied to the base level of compensation for executives (Gomez-Mejia, 1994; Crystal, 1991a). Base pay is intended to limit the amount of risk an executive is expected to carry, as this is a set level of compensation, especially when combined with an easily achieved bonus (Gomez-Mejia & Balkin, 1992)

Long-term incentive plans most often take the form of stock options, restricted or other stock awards. With stock options, executives are awarded the right to purchase shares in the company at a predetermined price, the strike price (Crystal, 1991a). Restricted shares are grants to the executive without the requirement to purchase the underlying stock (Crystal, 1991a). These shares provide an equity interest for CEOs in their organizations and are intended to ensure the alignment of the CEO's interests and those of stockholders. This alignment is possible as the value of stock options increases only with the appreciation of the overall value of the underlying stock (Jensen & Murphy, 1990a). One implication of this form of incentive is that such options are able to influence the behavior of the CEO to ensure the desired organizational outcomes (Beatty & Zajac, 1994).

Golden parachutes provide the final component of interest in CEO compensation They are an indication of the risk propensities of executives and as such show CEO

preferences (Gomez-Mejia, 1994). Golden parachutes guarantee a pre-determined level of compensation to executives in the event of a change of ownership or control, thereby limiting the loss of compensation if the executive is no longer employed. The explanation that a golden parachute represents a "wealth transfer" to management (Lambert & Larcker, 1985) provides a rationale for the inclusion of golden parachutes as part of CEO compensation.

The next step in the study of determinants of CEO pay is to look at theory bases which support the different uses of this compensation structure, starting with agency theory.

Agency Theory

Agency theory is one of the most frequently cited theories used in studies of executive compensation , and based on the managerialist theory (Berle & Means, 1932) showing that ownership and management of large corporations is separated. This, in turn, allows for potential divergence of the interests of the principals (owners) and agents (managers) (Jensen & Meckling, 1976). Additional assumptions of agency theory are that managers pursue their self-interest, they are subject to bounded rationality, and, that they are more risk adverse than owners (Eisenhardt, 1989).

In order to align the interests of the two groups, organizations incur agency costs. One form of agency costs arises from the difference between decision control and decision monitoring. Managers are responsible for decision control and owners or their representatives, the board of directors, are responsible for decision monitoring (Fama & Jensen, 1983). Agents' lack of financial interest in the organization should lead to higher

agency costs, as increased monitoring is required to ensure that the agent's self-interest does not take precedence over those of the principal (Fama & Jensen, 1983).

Monitoring of the CEO by the board of directors and other interest groups provides a test of agency theory Ownership concentration is most often seen as the proxy for monitoring (Gomez-Mejia, 1994). However, to gain greater understanding of the influence a board can exert on a CEO, especially with respect to compensation, it is necessary to expand the measurement of this construct. Boyd (1994) presented a model of board control which clarifies much of the relationship between a board and CEO compensation. Measures used to define the board control model include: CEO duality, board composition, or the ratio of inside directors to outside directors, the level of directors' stock ownership, representation of owner groups and director pay.

CEO duality exists when the same individual occupies the position of chairman of the board of directors and chief executive officer. When duality occurs, power is concentrated in the hands of one individual. Under the premises of agency theory, that individual is expected to pursue his or her self-interests, especially with respect to levels of compensation. Independent or outside directors, on the other hand, are expected to provide a counterbalance to the strength of the CEO. This is especially true when these individuals own stock in the corporation. They then are motivated to monitor the actions of the CEO to preserve stockholder value. The same logic applies when an individual or group owns a large block of shares and is represented on the board of directors. These individuals are expected to counter the CEO's pursuit of self-interest. One action the CEO can take, however, to minimize the monitoring and control of the board of directors

is to reward the directors themselves through high levels of director pay. These components of the board control model, then, provide insight into the determinants of CEO compensation.

CEO Equity

The study of CEO compensation and CEO equity is a direct extension of agency theory. It is another way to measure the alignment of the interests of managers and owners. McEachern (1975) posits that five percent ownership is sufficient equity to control a modern corporation. Differences in CEO pay between owner-controlled organizations, as defined by the five percent cutoff, and manager-controlled firms have been found by Gomez-Mejia, Tosi and Hinkin (1987). They did not, however, employ a continuous measure of ownership. Including CEO equity as a continuous variable is another improvement in measurement of this model.

Additional explanatory power of the levels of CEO compensation is found in the study of the labor market for executives and rewards they are given for executives for managing complex organizations which is represented by the following topic: internationalization.

Internationalization

Internationalization adds to the complexity of tasks required of a chief executive officer. One theory which relates international activity and CEO compensation is that of external labor market. CEOs who possess the skills and competencies necessary to manage international assets are rare and must be adequately rewarded in order to retain their services. This applies especially to the integrative and informational processing roles

of the CEO in the international arena (Galbraith, 1973; Roth, 1995). Internationalization is also perceived to be riskier than purely domestic operations (Daniels & Bracker, 1989). This combines with complexity to provide a rationale for including the construct of firm internationalization with multiple indicators as predictors of CEO pay.

The next topic, while related to the discussion of agency costs, appears as an outgrowth of managerialist theory, also based on the self-interest of the manager. In it, executives are assumed to pursue firm growth to the potential detriment of other stakeholders under the assumption that firm size is the primary predictor of CEO compensation.

Size

Study of firm size as a determinant of CEO pay stems from the late 1950s. Initial support for the concept that executive compensation is directly related to size (generally operationalized as the revenues of the firm) was provided by Baumol (1958) and Roberts (1959). However, this result was disputed by later group of studies, initially represented by Lewellen and Huntsman (1970), which concluded that executive compensation is primarily related to firm profitability. If size is the primary determinant of CEO compensation, then there is support for agency theory conclusions that managers will make decisions contrary to the interests of the stockholders.

Another reason that organizational size can influence CEO compensation include the fact that larger firms have a greater overall profit potential when compared to smaller firms (Gomez-Mejia & Balkin, 1992). In such a case, the percentage of organizational resources devoted to one individual's rewards are also smaller (Gomez-Mejia & Balkin,

1992) The fact that larger organizations tend to be more complex (Deckop, 1988) may also influence the compensation package if, as posited by the labor market, CEOs are rewarded for managing complexity.

There is also a relationship between firm size and the nature of the compensation mix. Larger organizations tend to have greater amounts of cash compensation as part of the overall incentive package for executives (Gomez-Mejia & Balkin, 1992). This allows, however, for greater use of incentives to reward performance in the same organizations (Murphy, 1985).

Financial Performance

As previously stated, the issue of pay-for-performance is central to the study of CEO compensation. Large firms publicly announce their intention to match rewards with performance (Chase, 1996), and, therefore, most compensation packages contain some form of incentives which are awarded when targets such as accounting returns or stock market performance are met. Agency theory links incentives with managerial performance by aligning the interests of the managers with shareholders (Eisenhardt, 1989). Other support for the use of incentives is found in the managerial labor market, as individuals with more skills expect to receive rewards commensurate with those skills (Gomez-Mejia, 1994). Individuals' wealth as represented by stock market performance is also an important part in determining the incentive effects of performance (Jensen & Murphy, 1990b; Zajac, 1990). Because it has been demonstrated to account for some of the variance in CEO pay, performance variables are included in this study

Conceptual Model

The preceding sections provide the rationale for this study as well as an outline of theoretical support for hypotheses identifying the determinants of CEO pay. This section introduces the conceptual model which will be more fully developed in subsequent chapters. The relationship between the CEO and the board of directors is the primary predictor of CEO pay. The amount of the CEOs' equity in an organization is also related to compensation. Internationalization provides a test of the relationship between organizational complexity and compensation. Previous studies have traced the influence of both size and performance on CEO compensation. These relationships are well documented and most recent studies include size and performance as control variables That practice is continued in this model. The graphical relationships of the conceptual model are presented in Figure 1.1. Indications of covariance among the constructs which predict CEO pay are deleted to facilitate graphical depiction of the conceptual model.

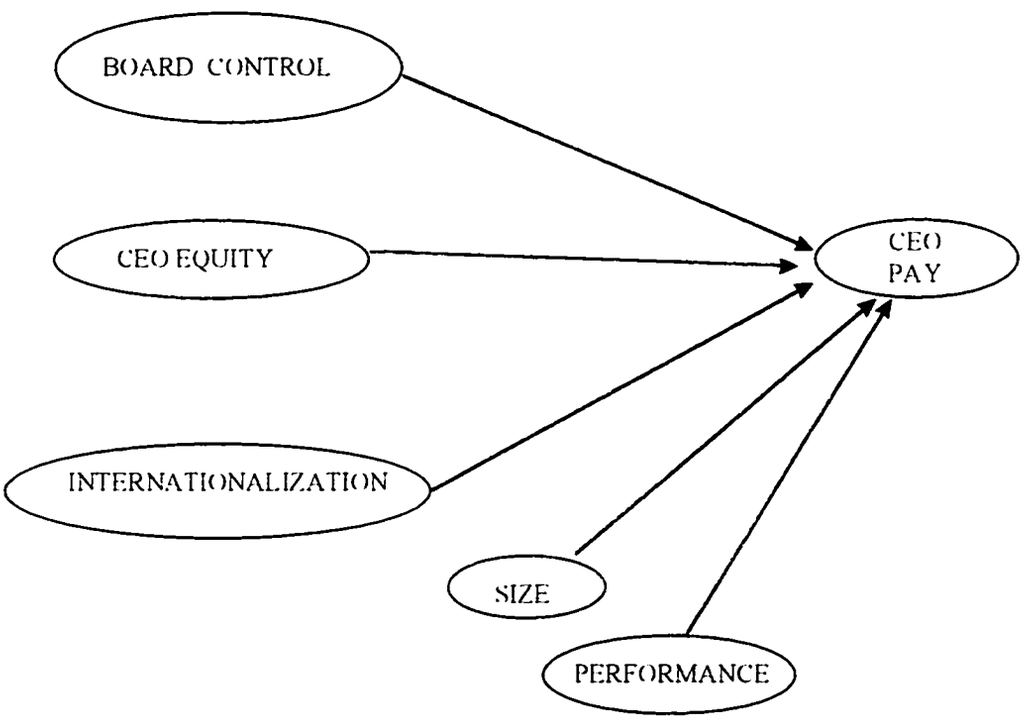
Methods

The sample for this study is designed to capture the breadth of publicly held manufacturing and service firms in the United States. The prospective sample started with all firms listed in the *Fortune 1000*. All privately held members of this list as well as mutual associations and cooperatives and U.S. subsidiaries of foreign firms were excluded primarily due to the unavailability of compensation and board composition information. Data sources include proxy statements, the *Compustat* database, *Moody's International Directory*, and the *Disclosure Worldscope* database, as well as annual reports. The sample includes all major SICs, in order to be representative of large publicly held U.S.

firms. The large sample size (n=601) provides substantial statistical power to map the complex relationships which comprise the determinants of CEO compensation.

Figure 1 1

Conceptual Model



The model of the determinants of CEO compensation is tested using LISREL VII (Joreskög and Sörbom, 1988). Use of the LISREL VII package enables an examination of the model using structural equations which capture both latent constructs and measurement variables. A structural model is especially applicable in the study of CEO

compensation because of its power to capture unobserved covariances between constructs.

CEO compensation is defined as a construct measured by three variables: salary and bonus, LTIP and golden parachutes. Constructs which predict levels of CEO compensation are board control, CEO equity, and internationalization. As is common in executive compensation studies, firm size and prior financial performance are included as control variables.

Summary

The study of the determinants of CEO compensation remains a timely topic. It is of interest to a wide variety of audiences, as evidenced by the coverage by academic, business, government and popular press. The current state of knowledge, while growing, can still be expanded and improved. While an examination of the compensation process is the starting point, because of the special nature of the relationship between a CEO and the board of directors in setting pay and identifying the goals of the corporation, studies of CEO pay must go beyond the traditional human resources explanation. This study extends this knowledge by incorporating multiple measurements of all the constructs of interest, both CEO pay and its determinants. These measures can help identify the effectiveness of measures undertaken to respond to public and academic concern over levels of executive compensation.

One benefit of this study is the use of a large sample size. Agarwal (1981) claimed improvement over previous studies by expanding his sample to 168. The sample of 601

major firms, along with the substantial number of variables collected for each, allows for a more complex analysis of the underlying relationships which define CEO compensation.

This study also provides tests of hypotheses using two major theory bases, agency theory and the theory of the labor market. Both Boyd's board control model (1994) and the inclusion of CEO equity provide for the tests of agency theory. Firm internationalization, on the other hand, is a measure of complexity and tests the need for organizations to attract chief executives by linking their rewards to their capabilities in managing complex organizations. By summarizing the quantitative analyses of previous studies in the form of the meta-analysis, along with the inclusion of size and performance in the model, this study addresses the concerns of the various interest groups who follow executive compensation. Finally, the statistical power of the large sample of representative U.S. firms allows comparison of high and low performing groups. This comparison allows for normative analysis of the determinants of CEO compensation along with the descriptive analysis. By providing comprehensive cumulation of previous data, as well as improving measurement and introducing a new test of complexity, this study advances knowledge of the determinants of CEO pay.

Chapter 2

LITERATURE REVIEW AND HYPOTHESES

Relevant literature presented in the previous chapter shows the importance of CEOs in the decision-making process of organizations, as well as their ability to affect the performance outcomes of such organizations. Different components of compensation plans as well as the structure of the board of directors and the relationship its members have with the CEO also influence the individuals who make decisions. Therefore, traditional theories of motivation are not the only factors which apply to the study of chief executive officers. This chapter provides substantiation for individual hypotheses which were identified in the conceptual model. These hypotheses are developed using theories of compensation and motivation, agency theory, complexity and internationalization. The literature review also includes a summary of the effects of the frequently studied control variables, firm size and performance, on CEO compensation.

Theories of CEO Pay

If CEO actions can affect the outcomes of organizations, what steps can be taken to ensure that these actions indeed influence the outcomes in the direction commensurate with organizational objectives? An initial assumption which addresses this question is that pay policies are variable across organizations and these policies have an effect on organizational outcomes (Gomez-Mejia & Welbourne, 1988, Gerhart & Milkovich, 1990)

The next step in addressing this question is to look at the theories of compensation as applied to CEOs, including equity and expectancy theories, human capital theory and the theory of the labor market. Table 2.1 provides a summary of both the tenets and limitations of each of these theories as they apply to CEO pay.

Table 2.1

THEORIES OF CEO PAY

Theory	Tenets	Limitations
Equity	CEOs want their compensation to match others'	Individual actions, characteristics or situations may not be directly comparable
Expectancy	Individual's actions are rewarded	Exogenous factors may blur effects of CEO actions
Human Capital	Individuals are rewarded for their skills and experience	Firm specific skills may limit generalizability
Labor Market	CEOs are rewarded according to supply and demand	Firms cannot determine the effect of one individual as opposed to another

Equity Theory. The starting point in determining what steps motivate CEOs, or what incentive measures will influence their actions, is equity theory. This theory posits that individuals have an innate drive to see equity between theirs and others' actions and the consequences and benefits of these actions (Adams, 1965). Equity theory applies to both internal and external constituencies and is subject to societal expectations (Gomez-Mejia & Balkin, 1992). The external measures allow CEOs to compare their compensation to that of other CEOs to see if their actions are being rewarded. The external comparison is possible because the amount and mix of CEO pay is a matter of record for publicly held

companies (Finkelstein & Hambrick, 1988). This comparison is necessary as individuals must perceive a level of equity relative to the pay scales of other firms (Gerhart & Milkovich, 1990; Gomez-Mejia & Balkin, 1992; Jacques, 1979). For internal comparisons, CEO pay provides symbolic separation from others in the organization (Gomez-Mejia & Balkin, 1992). CEO pay also can be a signal to other organization members of the behaviors necessary for success in that organization (Gomez-Mejia & Balkin, 1992).

CEO actions frequently considered as responses to equity theory include improvements to human capital, loyalty to a specific firm and willingness to accept risk in decision making (Gomez-Mejia & Balkin, 1992). The consequence of dissatisfaction under this theory is a reduction in individual performance until the rewards match the inputs or a decision to leave the organization (Gerhart & Milkovich, 1990; Gomez-Mejia & Balkin, 1992). Individual differences in both CEOs and the situations of each organization may inhibit direct comparisons under equity theory. Therefore, other theories such as expectancy theory contribute to understanding of CEO pay as well.

Expectancy Theory. After equity theory, the next prominent theoretical link to the motivation of CEOs through compensation is expectancy theory. In its simplest form, managers and other employees expect to receive rewards for their performance (Vroom, 1964). As the manager's position in the hierarchy increases, however, executives expect to see a greater link between their performance and organizational outcomes (Gerhart & Milkovich, 1990). Changes in behavior can be motivated by changes in compensation, with both short-term and long-term incentives influencing particular aspects of executive

performance (Balkin & Gomez-Mejia, 1990). These changes are effected by linking the consequences of outcomes to the rewards received (Lawler, 1971). In short, if employees see a strong relationship between the actions they take with the intention of meeting certain performance outcomes, and the pay they receive for those outcomes, under expectancy theory they will be motivated to initiate such actions. Because of the manifold exogenous factors which influence organizational outcomes, it may be difficult for CEOs to attribute their rewards to specific actions.

Human Capital Theory. Equity and expectancy theory document the motivational aspect of compensation. Another theory of compensation, but one that is more concerned with the levels of executive pay, is human capital theory. Becker (1993) posits that the marginal product of the individual is due primarily to the education and experience that individual brings to the firm. In order to attract individuals with the capabilities of performing the functions of the chief executive officer, firms must pay for their services. The more skills an individual brings, presumably the higher level of compensation that is required to reward those skills (Gomez-Mejia & Balkin, 1992). Human capital is also affected by the level of complexity that is present in a firm. As firm size increases, so does complexity, and the amount of human capital necessary to manage the organization successfully. Complexity refers to the nature of the job itself, and is not concerned with how an individual performs that particular job (Gomez-Mejia, Tosi & Hinkin, 1987). However, the negative outcomes of poor performance also increase with complexity, so more complex firms may be willing to compensate CEOs at higher levels in order to

secure individuals with high levels of human capital who should be more suited to the job requirements (Finkelstein & Hambrick, 1989; Gomez-Mejia & Balkin, 1992).

As some of the requisite experience for human capital is garnered on the job (Gerhart & Milkovich, 1990), certain of these skills will be relatively firm specific (Finkelstein & Hambrick, 1988). This, then, acts in an opposite manner in determining levels of compensation based on job specificity. If there is a high level of firm specificity in the experience that contributes to an executive's human capital, then it may not transfer to other organizations, limiting the amount another firm would be willing to pay for that individual's efforts (Phan & Lee, 1995). Nonetheless, the higher the levels of skills and experience an individual possesses, the greater the expectation of higher levels of compensation for those skills (Gomez-Mejia & Balkin 1992).

Theory of the Labor Market. The final general theory of CEO compensation deals with the economic theory of the labor market. The talent pool of executives capable of managing large organizations is perceived to be limited; therefore, the laws of supply and demand apply to chief executive officers (Finkelstein & Hambrick, 1988). The labor market is also a factor in executive hiring, as management is separate from firm ownership and even the chief executive is generally paid according to a form of labor contract rather than as an entrepreneur (Gomez-Mejia & Balkin, 1992). According to the theory of the labor market, the actions of the CEO are expected to produce more revenue than the potential revenues of other candidates who were not selected for the position. Other elements which help determine the levels of pay include the demographics of the individual (Hambrick & Mason, 1984), along the lines of human capital theory already discussed As

market forces do not completely eliminate the variance in pay across organizations (Gerhart & Milkovich, 1990), there is still validity in the study of differences in levels of CEO pay.

Structure of CEO Pay

This examination of general theories of compensation provides the background for a more detailed look at the different components which make up the composite pay package for CEOs as well as factors which influence the different levels of these components. Pay packages for chief executive officers as well as many other top managers generally consist of a salary, bonus, long-term incentives, golden parachutes and perquisites (Gomez-Mejia & Balkin, 1992). The percentage of each of these components as part of the total pay package varies for individuals, and this distribution is intended to achieve the results of the motivational theory discussed above.

The first component of the pay package, *salary*, is intended to provide a stable source of income to the chief executive, generally independent of measures of corporate performance. It is the most stable component of the compensation mix, and has the least downside risk (Gomez-Mejia & Balkin, 1992). The salary portion has been found to be a higher percentage of total compensation than the incentive portion for larger firms as well as for firms in stable industries (Balkin & Gomez-Mejia, 1990).

Bonuses, like salary, are another form of cash compensation, but they are normally triggered by some form of short-term performance outcome. Accounting measures, dividends or stock returns are used to provide the basis for initiating a bonus (Gomez-Mejia & Balkin, 1992). Bonuses are intended to motivate the CEO to structure decision-

making at the firm in order to meet the targets. A significant drawback to this is the potential for manipulation of performance targets such as accounting returns. These returns could be manipulated in order to trigger bonus payments, and such manipulation could lead to the possible long-term detriment of organizational objectives (Crystal, 1991b).

Another form of compensation intended to motivate CEOs to meet organizational objectives is the *long-term incentive program (LTIP)*. Common LTIPs include stock options, stock purchase plans, restricted stock, stock appreciation rights or performance units (Gomez-Mejia & Balkin, 1992; Westphal & Zajac, 1994). Stock options allow but do not obligate executives to purchase company stock at a set price, generally the stock price on the date when the options are granted (Crystal, 1991a). Performance units, on the other hand, are cash payouts of the underlying value of the stock less the strike price when the rights were granted, while stock appreciation rights are based on the increase in the stock price without granting direct ownership or voting rights to the individual granted the appreciation (Gomez-Mejia & Balkin, 1992; Westphal & Zajac, 1994). Another feature that differentiates LTIPs from bonuses is the duration of the different plans. Bonuses are traditionally awarded annually by the board of directors, while LTIPs run, on average, between three and six years (Westphal & Zajac, 1994). Because of this duration, LTIPs are intended to result in CEO actions consistent with long-reaching objectives of the firm. LTIPs make up the predominant form of compensation for new firms (Balkin & Gomez-Mejia, 1987; Gerhart & Milkovich, 1990), owner-controlled firms (Gomez-Mejia, Tosi & Hinkin, 1987) and growth firms (Gaver & Gaver, 1995). One potential limitation to the

use of such plans to provide long-term motivation is that some of the value of the underlying stock is subject to exogenous factors well beyond the control of the CEO or other managers who take part in the plan (Hoskisson, Hitt, Turk, & Tyler, 1989).

While not intended to directly motivate executives, *golden parachutes* limit the amount of risk they are required to carry in order to isolate their personal interests and motivation from those of the owners, or shareholders of the firm. Lambert and Larcker (1985) define golden parachutes as having the following attributes: they modify compensation contracts, usually of senior executives; they are triggered by a change of corporate control, either through acquisition of a set percentage of voting stock or through a major shift in the board of directors; and the payout to executives terminated not-for-cause after a change of control represents a significant amount of revenues and earnings. Lambert and Larcker hypothesized that golden parachutes are a form of "wealth transfer" from shareholders to executives (1985). Golden parachutes can also be considered a form of contingent compensation (Singh & Harianto, 1989a). The purpose of this form of compensation is to allow CEOs and other managers to take an objective view in the face of a takeover which could result in a change of management (Lambert & Larcker, 1985; Singh & Harianto, 1989a,1989b).

The final component of the compensation mix is *perquisites and benefits*. Typical perquisites include items such as club memberships, health plans or insurance These benefits, while intended to be motivational, are not dependent on meeting any performance outcomes (Gomez-Mejia & Balkin, 1992).

While not necessarily a theoretical consideration of the motivation for compensation packages, nonetheless, the effect of tax policies on composition packages

must be considered. Limitation of both corporate and personal tax liability plays a part in the design of the compensation package, especially as individuals attempt to minimize their overall liability (Abowd, 1990). Prior to the Tax Reform Act of 1986, this was possible by shifting compensation from direct cash payments into equity awards which were either taxed as capital gains, or held, unrealized, in the executive's portfolio (Gomez-Mejia & Balkin, 1992). Tax regulations also place a cap on the amount of golden parachute awards (Buchholtz & Ribbens, 1994).

In summary, CEO pay is intended to reward and motivate the individual holding the position; traditional theories of motivation cannot provide complete justification of the determinants of CEO pay. For example, much of the CEO's pay is symbolic and, therefore, subject to underlying political forces. CEOs may also be driven by needs for prestige and power (Finkelstein & Hambrick, 1988) which could act to cloud measurement of motivation. Additionally, the scope of a chief executive's authority and responsibility may require decisions that are counter to traditional motivation. These decisions, affecting the organization as a whole, are also subject to exogenous factors, which further weakens the link between standard incentives and individual action (Deckop, 1987). Composition is set (or at least sanctioned) by the board of directors, who must consider not only the motivation of the chief executive, but also the hierarchy of the organization, competitive market forces and the factors which the executive cannot control, as well as the justification for pay provided by equity, expectancy, and human capital theory. While it is necessary to take the preceding theories into account, boards also have reason to look at compensation packages as means of aligning executive

interests with those of shareholders. To develop hypotheses, this topic will be addressed in the following segment covering agency theory.

Agency Theory

Agency theory is primarily concerned with determining control of the firm. Its application to organizational theory arises from dispersed ownership of the modern corporation. This separation of ownership and management was first identified by Berle and Means (1932), and their work forms the basis for the subsequent development of agency theory to include the assumptions of agency theory, agency costs, the use of incentives and control mechanisms by the board of directors and the role of CEO equity ownership.

In its most straightforward form, an agency relationship exists when a principal or firm owner hires an agent or manager to manage an organization. The organization is seen as a nexus of contracts (Jensen & Meckling, 1976), and the relationship between the principal and agent is also a contractual one (Eisenhardt, 1989). Because the self-interest of the agent is assumed to be different from that of the principal, conflict arises (Eisenhardt, 1989). In fact, because of these differences, a loss of control is inevitable without the appropriate use of incentives (Mitnick, 1992). Corporations are also structured to minimize the effects of these conflicts (Davis & Thompson, 1994). Another assumption of agency theory is that agents are more risk averse than principals. Managers cannot easily diversify their individual wealth, and, therefore, may make decisions to avoid risk, even if it limits the potential of the firm overall (Morck, Schleifer & Vishney, 1989; Walsh & Seward, 1990).

Agency costs arise from the friction of conflicts in enforcing the contracts Principals incur costs in monitoring the actions of agents to determine compliance with the agreed upon contract (Eisenhardt, 1989). These costs are generated by trying to alleviate information asymmetries (Eisenhardt, 1989) or by providing costly incentives to align the agent's interest with those of the principal's (Jensen & Meckling, 1976).

A structural solution designed to minimize agency costs can be found in the boards of directors. By establishing a separation between decision management and decision control, the board becomes a body charged with oversight of the agent (Fama & Jensen, 1983). In this manner, boards perform internal control functions, differentiated from external control functions provided by takeovers and the change of corporate control (Walsh & Seward, 1990). Jensen (1993) posits that the role of the board is becoming more important in the United States with the reduced effectiveness of the external takeover market. Therefore, study of the ways a board functions to reduces agency costs continues to be necessary. As part of this oversight function, the board is legally charged with setting compensation for the CEO (Baysinger & Hoskisson, 1990; Lorsch & MacIver, 1989). Jensen defines the role of the board further, stating "Most importantly, it (the board) sets the rules of the game for the CEO. The job of the board is to hire, fire, and compensate the CEO...." (Jensen, 1993, p.862).

CEOs, under agency theory, however, will act to maximize their own compensation. If boards act only as "rubber stamps" for CEOs (Mace, 1971), CEOs can maximize their compensation. One way that this is possible is by hiring consultants who include other, highly paid executives in their compensation surveys (Crystal, 1991a).

Board members resist maximization of CEO pay, in part to preserve their own human capital by enhancing their reputation for their decision-making capabilities (Fama & Jensen, 1983).

The construct of board control (Boyd, 1994) examines the underlying relationship between the CEO and the board of directors. It also provides a starting point for further development of knowledge of this relationship. By combining several variables which demonstrate the ability of the CEO to pursue his or her own interests, or indicate the ability and willingness of the board to monitor the decisions of the CEO, the board control construct incorporates tests of agency theory. The individual measures of board control include: CEO duality, the ratio of inside directors, director stock ownership, representation of ownership groups and the level of director compensation. When the roles of chairman of the board and CEO are combined, the power of the CEO over other board members is increased (Hambrick & Finkelstein, 1987; Harrison, Torres & Kukalis, 1988). Independent directors, however, perform decision monitoring functions which are intended to serve the interests of shareholders (Fama & Jensen, 1983). Owning stock also encourages directors to monitor the actions of the CEO (Beatty & Zajac, 1994). Placing representatives of ownership groups on the board does this as well (Holderness & Sheehan, 1988). The final element of board control, director compensation, acts in an opposite manner. High levels of director pay may signal a willingness on the part of the board to accommodate the interests of the CEO (Baysinger & Hoskisson, 1990). Thus, the board control model looks at the respective strengths of the CEO and directors to show the effect on compensation, leading to the following hypothesis:

H1: CEO compensation is inversely related to board control.

CEO Equity

One area of the relationship between the board of directors and CEOs that can be added to a model of the determinants of CEO pay is a continuous measure of CEO ownership of the firm. Study of CEO equity keeps its theoretical foundation in agency theory, but provides additional context to the study of the effects of separation of ownership and control.

While the exact amount of equity ownership required to exercise control over a U.S. corporation may be in dispute, nonetheless, this amount can be quite small. One convention frequently used in academic studies is that five percent is sufficient ownership to effectively exercise such control (Gomez-Mejia, Tosi & Hinkin, 1987; McEachern, 1975). This hurdle is used to compare owner-controlled firms in which an individual not in management has five percent or greater of the equity and manager-controlled when no individual owns this amount.

Gomez-Mejia, Tosi and Hinkin (1987) hold that firm ownership by the CEO results in a linkage between pay and performance, while compensation in manager-controlled organizations is more a function of firm size. Ownership structure may also affect the compensation mix. Zajac and Westphal (1994) found a negative relationship between CEO equity holdings and the use of long-term incentive plans. Individuals with large stockholdings may be willing to accept lower amounts of direct compensation because of incentives from the wealth effect of those holdings (Jensen & Murphy, 1990b). This incentive effect is in addition to the cash and stock grant portion of the compensation

package (Jensen & Murphy, 1990b). Another reason that owner-controlled firms may have lower executive compensation is purely symbolic: chief executive pay sets a standard for the entire organization, and the top pay may be set in order to limit overall pay levels (Deckop, 1988). This results in the following hypothesis:

H2: CEO compensation is inversely related to CEO equity.

Internationalization

While many empirical studies of the determinants of CEO pay have included measures of diversification or strategy, firm internationalization has not received attention as a possible determinant. Internationalization exacerbates the difficulties of meeting the conflicting requirements of different CEO roles. It adds variance to the strategies available, resource allocation decisions, as well as conflict management (Bartlett & Ghoshal, 1987). The internationalization process is subject to additional pressures including defining market boundaries and determining levels of centralization necessary that also add complexity (Doz & Prahalad, 1984). Internationalization may add significant time and language barriers to normal operations which must be addressed at the highest levels of the organization (Terpstra & David, 1991).

Internationalization primarily affects the work of the CEO by adding complexity to the decision making process. In its most straightforward form, international operations require that CEOs make strategy decisions of coordination or configuration (Porter, 1985). Configuration decisions are related to the allocation of resources internationally, and are based on the need for economies of scale or the need for local responsiveness (Porter, 1985). The coordination role is especially important when elements of the firm's

value chain are dispersed internationally (Dunning, 1993). A final consideration which adds complexity to the CEO's tasks in the international environment is the greater rate of organizational change (Collis, 1991).

Increased complexity, in turn, provides additional support for the linkage between internationalization and CEO pay. The first relationship comes from the labor market. As CEOs add to their ability to handle complexity, the demand for their services should increase and their compensation must be increased to retain those services (Agarwal, 1981). Because of this complexity, greater skill and experience are also required in order to satisfactorily accomplish the decision making process. This increases the demand for improved human capital in CEOs, again necessitating additional pay for those increased skills (Gomez-Mejia & Balkin, 1992). Therefore:

H3: CEO compensation is positively related to internationalization.

Control Variables

Firm Size. One of the variables most frequently studied when examining the levels and structure of CEO pay is firm size. There are several common sense reasons why CEO pay covaries with firm size including the reduced impact of CEO pay on overall firm revenues, and the probability of having a greater number of managerial levels in larger firms as well as the increased complexity of operations connected with larger organizations.

Firm size is often mentioned as the primary determinant of CEO compensation by proponents of the managerialist school, who hold that executives are motivated solely by self-aggrandizement and make decisions for the organization designed only to provide the greatest personal monetary return for that individual (Gomez-Mejia, 1994) Early studies

by Baumol (1959), Roberts (1959), and McGuire, Chiu and Elbing (1962), as well as later efforts by Ciscel and Carroll (1980), Gomez-Mejia, Tosi and Hinkin (1987) and Schmidt and Fowler (1990) hold that the strongest force in determining CEO compensation is size. This singular approach is cast in some doubt, even among these studies. For example, in discussing compensation, Roberts (1959) discounts any relationship with firm performance. Yet, his methodology is heavily dependent on selection of the measure of performance, which may have influenced his conclusions.

If firm size is the primary determinant of executive pay, the assumption of compensation as motivation is untenable. Other adverse effects on the organization would be the allocation of resources and acceptance of projects designed to increase size rather than those designed to improve shareholder wealth or those that have a net positive value for the firm (Lambert, Larcker & Weigelt, 1991). To further examine the relationship between firm size and compensation, Lambert, Larcker and Weigelt (1991) measure the change in compensation of varying levels of the managerial pay up to and including CEO pay and compare it to changes in firm size. They found that differences in managerial level accounted for significantly more of the variance in pay than changes in organizational size.

From the preceding paragraphs, there is both theoretical and empirical justification to conclude that firm size is a determinant of CEO pay. Therefore, it is included in the model as a control variable.

Firm Performance. While some researchers identified above attribute variance in compensation solely to firm size, there is also a group who posit a relationship between performance and pay (Abowd, 1990; Agarwal, 1981, Ciscel & Carroll, 1980; Deckop,

1988; Lewellen & Huntsman, 1970). The primary theoretical link between performance and pay is expectancy theory (Vroom, 1964). CEOs expect to be rewarded for their actions which, in turn, improve the overall results of the organization. Additionally, researchers have provided arguments to counter claims that size is the only determinant of CEO pay. According to Deckop, " ...the typical CEO is not given an incentive to maximize sales at the expense of profit...." (1988, p. 224). After controlling for size, Abowd (1990) linked executives' future compensation to firm performance. Using wealth as a measure of performance, Jensen and Murphy (1990b) hold that improvements in CEO wealth are related to similar changes in shareholder wealth. In a similar manner, the role of incentive pay in improving firm performance was documented by Zajac (1990), who found that CEOs are responsive to changes in their wealth. These studies demonstrate that some of the variance in CEO pay is linked to firm performance

Other considerations such as business cycles and tax considerations may influence the relationship between pay and performance. Organizational goals, too, affect the relationship between firm performance and CEO pay. Different stages of the business cycle and the organization's life cycle call for rewards based on different performance measures (Balkin & Gomez-Mejia, 1987). During the founding and growth stages of a firm, accounting performance may not provide incentives to match organizational goals (Balkin & Gomez-Mejia, 1987). Incentives may be contingency-related (Zajac & Westphal, 1995), with one such contingency being tax policy (Abowd, 1990) Both firms and individuals may attempt to influence compensation mixes in order to minimize tax liability (Abowd, 1990).

Another influence on performance pay may be ownership levels. Gomez-Mejia, Tosi & Hinkin (1987) found that when firms have a dominant stockholder, CEO compensation is more closely linked to firm performance than in management-controlled firms. Lower compensation levels in owner-controlled firms may be attributed to wealth effects. Owners may be more willing to accept lower compensation due to the personal wealth available through ownership of substantial portions of the organization (Deckop, 1988). Hambrick & Finkelstein (1995) also support the effects of an ownership hurdle. This relationship may also be moderated by other factors such as tenure which may enhance the CEO's influence (Hill & Phan, 1991).

One concern about the use of incentives linked to performance measures is the possibility that managers manipulate returns in order to meet targets such as accounting measures or stock returns. Both targets are subject to criticism, the former as certain accounting practices which may be under the control of the CEO are used to determine award of incentives. On the other hand, setting targets to stock market returns may make those incentives subject to exogenous factors.

Gomez-Mejia (1994) attributes some of the difficulty in partitioning the variance in CEO compensation to size or profit performance to multi-colinearity between these two variables. Yet there is ample evidence from other researchers that this construct is not identical to size, and does act as a determinant of CEO pay. Therefore, because previous research clearly demonstrates that both size and firm performance account for some of the variance in CEO compensation, both are included in the model as control variables

Chapter 3

METHODS

This chapter addresses the sample, operationalization of variables, model and statistical methods used to test the hypotheses developed in the preceding chapter The model being tested is a comprehensive one, made possible by the availability of a large sample and the selection of structural equation modeling to measure latent constructs and the unobserved relationships between these variables Structural equation modeling also allows for the use of multiple measures of these constructs, which improve the comparison of hypothesized structures with the actual underlying structures (Bagozzi & Phillips, 1982).

Sample

The sample for this study consists of 601 large organizations. The initial pool of firms consisted of the population of the 1987 *Fortune 1000.* The first screen of this list eliminated privately held firms, mutual associations and cooperatives and U.S. subsidiaries of foreign firms due to the nonavailability of compensation data for such firms. One hundred forty five such firms were eliminated using the first screen. A multiple-page list of the remaining firms was constructed in order to obtain proxy statements, starting with those available from SEC microfiche files. Additional proxies from each page of the list were requested from the organizations themselves, or ordered through a SEC contract

were requested from the organizations themselves, or ordered through a SEC contract administered by Disclosure. Through these different sources, 601 proxies were obtained These proxies were subsequently coded to provide information on the CEO compensation and the board of directors, including international directors and international interlocks. Where necessary, *Moody's International Directory* was used to complete this portion of the data collection. Size and performance information came from the *Compustat* database, with additional coding from annual reports and *Compact Disclosure*

The 601 firms in the sample are broadly representative of the Office of Management and Budget's standard industrial classifications (SIC) (1987), with 53 2-digit SICS and 194 4-digit SICs. Table 3.1 shows the two-and-four-digit SICs which occur most frequently in the sample. Industrial classifications are not available for 60 firms in the sample. Of the 194 four-digit SICs, the seven groups which consist of ten or more firms are listed in Table 3.1. 93 SICs are represented by single companies at the four-digit level. Appendix C expands on Table 3.1, showing the breakdown of the sample by both two-and four-digit standard industrial classifications. The distribution of firms by industry indicates that the sample is representative of the U S economy This broad sample ensures generalizability and reduces the impact of potential industry effects.

There is also theoretical support for not truncating the sample according to industry. Rumelt (1991) found that resources specific to particular units are most responsible for performance variability The organizations in the sample, as in other research on executive compensation, tend to be diversified and participate in many

industries, which limits industry influence on profitability (Kerr & Bettis, 1987; Zajac, 1990). Other studies including those by Gerhart and Milkovich (1990) and

Table 3.1

MOST FREQUENT STANDARD INDUSTRIAL CLASSIFICATIONS

SIC	FREQUENCY	PERCENT	DESCRIPTION
60	65	11.9	Depository Institutions
28	39	7.2	Chemical & Allied Products
35	39	7.2	Industrial Machinery & Equipment
6021	38	7.1	National Commercial Banks
2911	19	3.5	Petroleum Refining
4911	14	2.6	Electric Services
6022	14	2.6	State Commercial Banks
6331	13	2.4	Fire, Marine & Casualty Insurance
2834	12	2.2	Pharmaceutical Preparations
2621	10	1.9	Paper Mills

Rajagopalan and Datta (1996) have found little support for industry differences in compensation. Jensen and Murphy (1990b) found that changes in CEO compensation are not sensitive to industry performance. Therefore, based on the breadth of sample and low industry sensitivity, this study does not include measure of industry effects.

To obtain results of model testing by high and low performers, the sample was divided at the median based on subsequent performance of the firms in the sample. This performance figure was return on equity (ROE) for the period 1987-1991. Dividing the sample this way resulted in 255 firms which were classified as high performers and 346

firms classified as low performers. This unequal division is a result of pairwise deletion of some measures from the data set.

Measurement

CEO Compensation: In order to improve measurement of CEO pay, I use a multiple measure of the construct consisting of three parts, cash compensation, long-term incentives and golden parachutes. *Cash compensation* consists of base salary and cash bonuses as reported in 1987 proxy statements. Salary and bonus are combined, in part because of the number of proxy statements that do not differentiate between salary and bonus but only report total cash compensation. This is consistent with other research in the field, which incorporates salary and bonus as one measure (Boyd, 1994; Hambrick & Finkelstein, 1995; Kerr & Kren, 1992; Lewellen & Huntsman, 1970; Seward & Walsh, 1996). There is also theoretical support for this, as bonus thresholds are frequently set to ensure their incorporation as part of a CEOs' basic compensation package (Crystal, 1991a; Gomez-Mejia, 1994). These bonuses become, in effect, part of the CEO's base pay (Gerhart & Milkovich, 1990). To reduce heteroscedasticity, the logarithm of cash compensation is used (Boyd, 1994; Finkelstein & Hambrick, 1989).

The second component of CEO compensation, *LTIP*, is represented by stock options. Options are intended to provide a measure of the incentive portion of compensation designed to motivate a CEO's actions to align with those of primary shareholders (Gomez-Mejia & Balkin, 1992; Kerr & Kren, 1992). For this study, options are valued at 25 percent of the exercise price multiplied by the number of options granted during the annual reporting period (Lambert, Larcker & Weigelt, 1993). This process

provides valuations similar to those set by more complicated methods notably the Black-Scholes model, although such values may slightly understate the Black-Scholes ones (Lambert, Larcker & Weigelt, 1993). The Black-Scholes method has been criticized for the number of assumptions which must be made in order to provide a valuation for options. These assumptions include future interest rates, future stock prices and the opportunity costs of holding the options (Gomez-Mejia, 1994). There are other inconsistencies in the Black-Scholes method, as researchers frequently modify their formulas to meet other research needs (Antle & Smith, 1986).[1]

Inclusion of a dollar value of long-term incentives is an improvement over many studies of CEO compensation. When "outcome-based" rewards are considered, frequently they are set up as dummy variables to show the existence or absence of such a program (Rajagopalan & Finkelstein, 1992; Zajac & Westphal, 1994). As with cash compensation, the valuation of LTIPs is converted to a logarithmic function.

Most measures of golden parachutes are dichotomous, showing either the presence or absence of such contract modifications. These measures, however, do not capture the potential contribution to the value of the compensation package. Therefore, *golden parachutes* are measured by their total dollar value, with a log transformation used to improve the normality of the distribution (Boyd, Loney, Kim & Kinlaw, 1995).

While some research (Finkelstein & Hambrick, 1989; Seward & Walsh, 1996) includes the value of perquisites as part of CEO compensation, the dollar value of the perquisites are insignificant when compared to cash compensation and the value of options

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[1] Black-Scholes values for the sample were computed and correlated highly with the direct valuation of options used in this study.

and so it is not included in this study. Seward and Walsh report that insurance adds approximately $700.00 to the total compensation package of CEOs. In addition, perquisites are not limited to chief executives, but often are included for a much greater range of the top management team (Schellhardt, 1994).

Board Control: Board control over the organization is at the center of agency arguments, as well as legal structuring of the corporation as an entity in the United States Effective boards provide a form of internal control over the organization (Baysinger & Hoskisson, 1990; Walsh & Seward, 1990). This construct is frequently referred to as board monitoring of CEOs (Barkema, 1993; Tosi & Gomez-Mejia, 1989; Zajac & Westphal, 1994). In order to better understand determinants of board control, and to reduce measurement error, multiple indicators are used, after Boyd's (1994) model. This model uses the following five indicators: CEO duality, board composition, board stock ownership, ownership group representation and director compensation. The factor model has been successfully replicated in other published studies (Boyd, 1995; Boyd & Carroll, 1996)

When one individual fills both positions of chairman of the board and chief executive officer in a corporation, it is called CEO duality. *Duality* combines the symbolic power of the chairman's office with the direct managerial responsibilities of the CEO's position. This potentially increases the power of the individual over board members (Hambrick & Finkelstein, 1987; Harrison, Torres & Kukalis, 1988). Other critics of CEO duality claim that it enhances a CEO's ability to dominate the board through selection and retention of directors (Mace, 1971). Chairmen are also able to set agendas and control the

amount of information provided to directors (Aram & Cowen, 1986; Demb & Neubauer, 1992). An independent chairman can provide additional decision monitoring of the CEO's actions (Beatty & Zajac, 1994). Because duality strengthens the CEO, it should be negatively related to board control (Boyd, 1994). To measure this indicator, a dummy variable was used, with '1' coded when the CEO also served as chairman of the board.

The second measure of board control is board composition, or the *ratio of inside directors* on the board. Agency theory posits that directors should be independent of the CEO in order to perform the decision monitoring function (Fama & Jensen, 1983). This implies that outside directors are better capable of monitoring CEO decisions, as inside directors may feel that they are indebted to the CEO for their jobs (Fredrickson, Hambrick & Baumrin, 1988). Outside directors are also more likely to institute actions to remove CEOs from poorly performing corporations (Weisbach, 1988). Outside directors also bring a breadth of experience and interactions which aids in their independence (Kesner, 1988). Inside directors, on the other hand, are often perceived as being dependent on the CEO for career advancement in the organization (Beatty & Zajac, 1994). Therefore, the ratio of inside directors should be negatively related to board control (Boyd, 1994). The measure of this ratio is the number of directors who are members of the firm's management is divided by the total number of directors.

Another factor which influences the power of the board of directors is *board stock ownership*. Many advocates of corporate governance reform recommend that outside directors own significant amounts of stock in the companies of whose boards they are members (Lublin, 1995a; Monks & Minnow, 1995). This, too, is consistent with agency

theory, as increased ownership by directors is seen as encouraging monitoring of CEO actions (Beatty & Zajac, 1994), or otherwise exercising control (Holderness & Sheehan, 1988; Shliefer & Vishny, 1986). Board stock ownership, measured as the percentage of common stock owned by the outside members of the board of directors should be positively related to board control (Boyd, 1994).

Block ownership by other groups is also related to board control. Institutional investors are one such group. Because of the extent of institutional holdings, these investors are often unable to reduce their holdings and have turned instead to more active participation in corporate affairs (Carroll, 1995). One form of activism is to obtain seats on the board of directors (Holderness & Sheehan, 1988). *Representation of ownership groups* is therefore anticipated to be related to board control (Boyd, 1994). Firms are required by the SEC to report individuals or groups who own five percent of an organization's stock. Annual proxy statements indicate when these individuals or agents of institutional investors hold a seat on the board, and the number of such representatives was coded and entered as ownership representation.

The fifth and final variable which makes up the construct of board control is the *level of director compensation.* Fama and Jensen (1983) posit that a primary reason why individuals serve on boards of directors is to enhance their own human capital. Effective directors develop a reputation for decision-making capabilities. This reputation is most viable when monetary payments to the directors are small (Fama & Jensen, 1983). High levels of director pay, on the other hand, can be viewed as an attempt by the CEO to influence , dominate or co-opt the board of directors (Baysinger & Hoskisson, 1990,

Pfeffer & Salancik, 1978). High director compensation is expected to adversely effect board control (Boyd, 1994). Director compensation is variable depending on attendance and committee participation (Boyd, 1990; Kosnik, 1990). For this study, director compensation is measured as the annual retainer and attendance fees.

CEO Equity. Previous studies generally include CEO equity ownership in determining if a firm is owner-controlled, or manager-controlled by establishing a five percent hurdle for an individual owner (Gomez-Mejia, Tosi & Hinkin, 1987; McEachern, 1975; Tosi & Gomez-Mejia, 1994). While this helps establish a class of organizations, it does not capture the effects of stockholdings on individual CEO wealth. Signifying a firm as owner-controlled is also a single measure of the ownership effects. Two measures are used to capture the influence of stockholdings on the individual: the first is the percentage of the firm's shares owned by the CEO The second measure is the dollar value of the CEO's holdings calculated by multiplying the number of shares by the 1986 year- end closing stock price.

Internationalization. Firm internationalization is another construct which benefits from multiple measures (Sullivan, 1995) Of initial concern is the amount of resources devoted to operations outside the domestic arena (Daniels & Bracker, 1989; Sullivan, 1995). This portion of internationalization is captured by determining the percentage of domestic assets to total assets. The value appears as a negative in the model to account for measurement using domestic assets as the metric.

To further capture internationalization, I identify two variables from the board of directors. The first is the number of directors whose nationality and primary occupation

are non-U.S. The presence of these directors signals that a firm's environment is international (Boyd, Carroll & Howard, 1996). Another indication of the breadth of international operations is the number of international interlocks of board members. Interlocks occur when one member of the board of directors also serves as a director of another organization (Pennings, 1980), with international interlocks occurring when the second firm has a different national headquarters origination from the first. International directors and interlocks are positive indicators of firm internationalization.

Firm Size. Firm size is included in the model as a control variable. It, too, is operationalized using multiple measures. Logarithms of firm sales, total assets and shareholder equity are the measures of firm size.

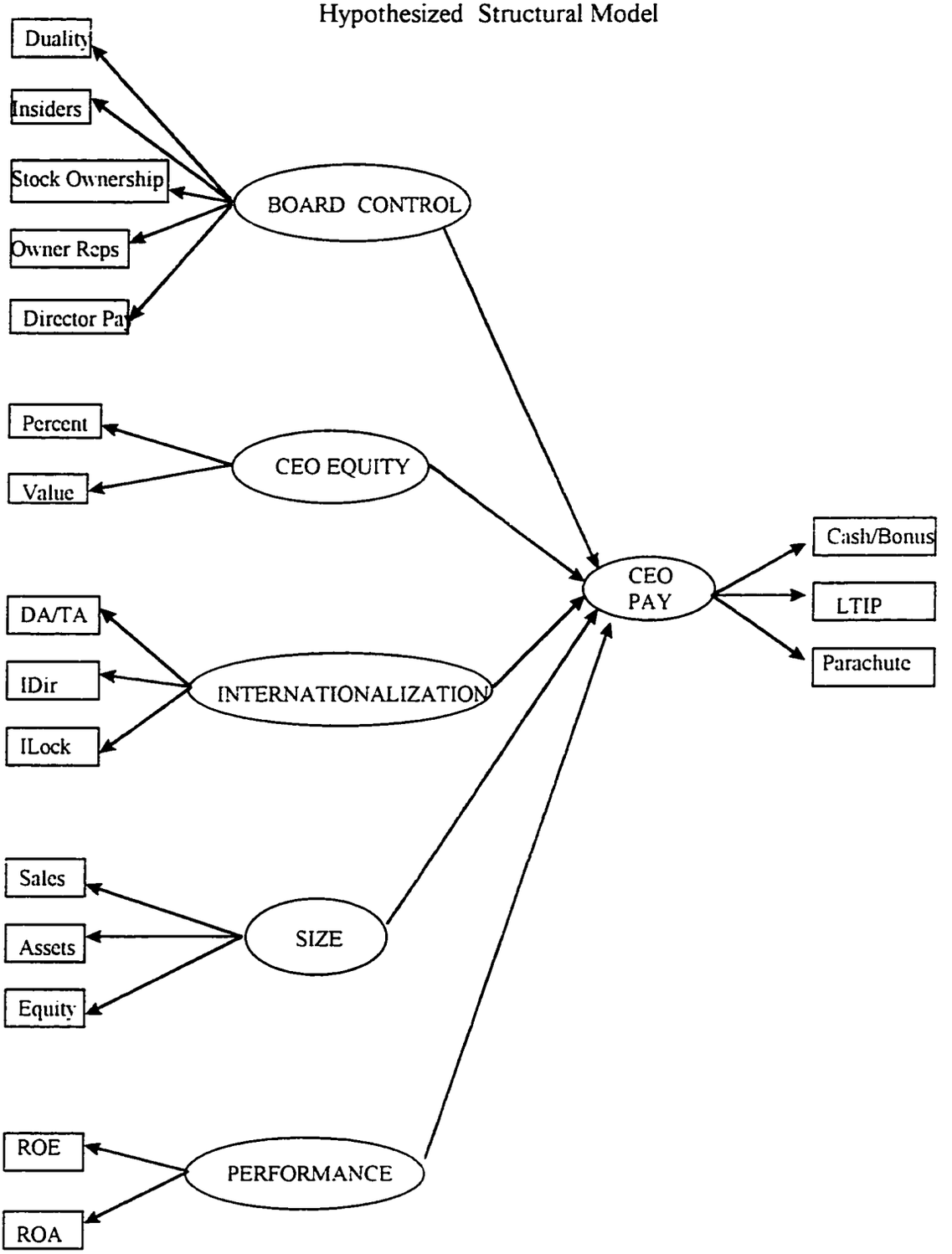
Prior Performance. The use of multiple measures of firm performance is recognized as being desirable (Weiner & Mahoney, 1981). Return on equity is one measure that is commonly included in compensation studies (Hambrick & Finkelstein, 1995). Return on assets is the second measure of performance. Both variables are for the year 1986.

A graphical depiction of the hypothesized model including all constructs and variables is presented in Figure 3.1.

Statistical Methods

Hypothesis Testing. To test the hypotheses of determinants of CEO pay, I use the LISREL VII package (Joreskög and Sörbom, 1988). The LISREL methodology is especially appropriate for this model because of its ability to isolate causal relationships

Figure 3.1
Hypothesized Structural Model



Note: Certain parameters (e.g., thea and phi matrices) have bin ommitted from the diagram for ease of representation

from measurement error (Hoyle, 1995). It also captures latent constructs and unobserved relationships (Saris & Stronkhorst, 1984).

In order to test the robustness of the model, more than one method should be employed (Bollen, 1989). The first test is the significance of the Chi-square (χ^2) statistic χ^2 is a measure of the overall fit of the model, with smaller values of χ^2 being desirable. An insignificant χ^2 is optimum, as this would show that the only differences between the model as specified and the observed data is due to sampling fluctuations (Hayduk, 1987). Because the χ^2 statistic may be sensitive to sample size, it is adjusted for degrees of freedom, and reported as a second measure of fit (Hayduk, 1987). A third test of the model is the goodness-of-fit (GFI) index. This measure is not sensitive of sample size and it is robust against non-normality. A GFI of 0.9 is generally considered as being acceptable. Medsker, Williams and Holahan describe this measure, stating ". . . that the model had reduced the total sum of the squares of the covariances by 90 percent." (1994, p.441) Dividing the GFI by the degrees of freedom provides an adjusted goodness-of-fit index. This measure is an indicator of the parsimony of the model (Medsker, et. al, 1994). A fifth test of the LISREL model is the examination of fitted residuals, or root mean square residual analysis. Combined, these tests provide an indication of satisfactory model specification. The coefficient of variation, while not a measure of the overall fit of the model, is a measure of the variance explained by the model (Medsker, et. al., 1994). In order to test the significance of the hypotheses, I use the t-values generated by LISREL for the gamma coefficients.

Meta-Analysis. To supplement analysis of firm size and firm performance as control variables in the model, I conducted a meta-analysis of empirical studies containing reports of the correlation between size and pay and performance and pay. Meta-analysis is useful in determining underlying relationships (Hunter, Schmidt & Jackson, 1982) and providing a numerical assessment of the strength of such relationships (Guzzo, Jackson, & Katzell, 1987). I use the methodology suggested by Hunter, Schmidt and Jackson (1982) which cumulates the effect sizes of correlations while accounting for variances in sample size. Results of the meta-analysis are reported in Chapter 4 and additional explanation of the process as well as the detailed summary of effect sizes is presented in Appendix B.

Chapter 4

RESULTS

This section describes the sample and reports the results of the statistical analysis of the data described in the preceding section. First, at the structure of the sample is examined using means, standard deviations and the ranges. To better understand the underlying relationships between variables, I present confirmatory factor models, or measurement models which are also used to support variable selection for those variables retained in the final model. This is followed by a discussion of the structural model of the determinants of CEO pay and the results of hypothesis testing.

Descriptives

Table 4.1 presents the descriptive statistics and intercorrelations of all the variables proposed in the hypothesized model. Because certain variables were transformed to improve measurement, descriptives of untransformed data are reported in Table 4.2. CEO cash compensation ranged from $101,100 to $6,355,400 with average annual cash remuneration of $711,000. 84.5 percent of the firms incorporated long-term incentive programs as part of executive compensation. In 1986, however, 27.9 percent of these firms did not award any stock options to their CEOs. Valuing the options at 25 percent of the strike price, the maximum value of long-term incentives was $9,509,657, while the mean award was for $166,310. In the sample of 601 firms, 100 of them have instituted

TABLE 4.1

DESCRIPTIVE STATISTICS

Variable	Mean	Std Deviation	Median	Minimum	Maximum
(1) CASH COMPENSATION (LOG)	13.32	0.54	13.30	11.52	14.98
CASH COMPENSATION (RAW)	711,233	22,146	598,018	101,100	6,355,400
(2) LONG-TERM INCENTIVES (LOG)	7.09	5.88	10.64	0	14.38
LONG-TERM INCENTIVES (RAW)	166,310	459,734	41,861	0	9,509,657
(3) GOLDEN PARACHUTES (LOG)	4.95	6.88	0	0	15.87
GOLDEN PARACHUTES (RAW)	24,194,286	35,477,396	0	0	69,020,100
(4) CEO DUALITY	0.79	0.42	1	0	1
(5) INSIDE DIRECTORS	0.29	0.25	0.25	0	0.91
(6) PERCENT DIRECTOR OWNERSHIP	4.49	11.82	33	0.01	93.3
(7) OWNERSHIP REPRESENTATION	0.99	1.61	0	0	11
(8) DIRECTOR COMPENSATION	22009	10204	21,100	0	50,000
(9) CEO OWNERSHIP	3.39	10.56	0.24	0	91.1
(10) VALUE OF CEO OWNERSHIP	19,865,928	87289654	2,079,321	0	1,414,451,250
(11) % DOMESTIC ASSETS	0.87	0.17	100	21	100
(12) INTERNATIONAL DIRECTORS	0.29	0.84	0	0	8
(13) INTERNATIONAL INTERLOCKS	0.98	2.87	0	0	19
(14) FIRM SALES (LOG)	7.47	1.09	7.35	2.32	10.89
FIRM SALES (RAW)	3,552,640,000	7,129,340,000	1,552,930,000	10,125,000	102,813,000,000
(15) FIRM ASSETS (LOG)	7.63	1.43	7.43	3.04	11.44
FIRM ASSETS (RAW)	6,627,620,000	15,925,680,000	1,690,920,000	20,950,000	196,124,000,000
(16) SHAREHOLDER EQUITY (LOG)	6.47	1.23	6.38	2.78	9.63
SHAREHOLDER EQUITY (RAW)	143,460,000	288,000,000	594,368,800	-245,400,000	34,374,010,000
(17) ROE	0.11	0.33	0.12	-3.46	3.46
(18) ROA	0.04	0.13	0.04	-2.91	0.49

TABLE 4.2
CORRELATION MATRIX OF SAMPLE

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1)	1.00																	
(2)	0.20	1.00																
(3)	0.03	0.09	1.00															
(4)	0.12	-0.01	0.03	1.00														
(5)	-0.01	-0.03	-0.04	-0.17	1.00													
(6)	-0.15	-0.19	-0.11	-0.24	0.05	1.00												
(7)	-0.14	-0.19	-0.15	-0.17	0.13	0.52	1.00											
(8)	0.42	0.21	-0.01	0.04	0.08	-0.19	-0.23	1.00										
(9)	-0.06	-0.08	0.13	-0.10	0.26	-0.00	0.00	-0.11	1.00									
(10)	-0.12	0.10	-0.11	0.08	0.07	-0.03	0.14	-0.08	-0.01	1.00								
(11)	-0.23	-0.22	-0.07	0.06	-0.03	0.14	0.10	-0.20	0.03	0.02	1.00							
(12)	0.04	-0.01	-0.06	-0.10	0.02	0.14	0.26	-0.01	-0.01	-0.03	-0.20	1.00						
(13)	0.12	0.01	-0.08	-0.07	-0.02	0.06	0.10	0.07	-0.02	-0.04	-0.24	0.71	1.00					
(14)	0.50	0.17	-0.10	0.08	-0.05	-0.20	-0.16	0.40	-0.06	0.02	-0.20	0.06	0.15	1.00				
(15)	0.42	0.15	-0.12	0.03	-0.13	-0.24	-0.20	0.32	-0.07	0.03	-0.18	0.06	0.12	0.69	1.00			
(16)	0.43	0.16	-0.12	0.08	-0.11	-0.26	-0.25	0.39	-0.06	0.05	-0.24	0.05	0.13	0.80	0.80	1.00		
(17)	0.13	-0.03	-0.03	-0.05	0.06	0.06	-0.04	-0.02	0.01	-0.00	-0.01	0.02	0.02	-0.00	-0.00	0.05	1.00	
(18)	0.15	0.04	-0.12	-0.04	0.13	0.13	0.03	0.05	0.04	0.02	-0.05	-0.03	-0.00	0.16	-0.04	0.05	-0.17	1.00

contracts including golden parachutes with an average valuation of $24,194,286 and a maximum value of $69,020,100 based on salary amount for the duration of the parachute

Using mean data, the average board in our sample consisted of 29 percent outside directors Two firms consisted exclusively of outside directors and a single firm had only inside directors. Outside directors, on average owned 4.49 percent of the stock in the firms which they served. Outside directors of six organizations owned no stock in those firms, and the maximum ownership by directors was 93.3 percent. Mean compensation of directors in the sample was $15,360 with a range between zero and $50,000. Of the firms in the sample, 466 or 77 5 percent had CEOs who were also board chairmen. Ownership groups had representation on the boards of 237 of the 601 firms, or 39 4 percent of the sample. For these firms, the mose common scenario (70 firms) was to have a single owner representative on the board, although as many as 11 directors with ownership ties were members of one board.

The amount of equity held by CEOs an organization ranged from zero to 91 1 percent, with the mean ownership at 3.39 percent. The value of this ownership also started with zero, but the highest level was $1,414,451,250 while average value for the sample was $19,865,928.

The percentage of firm assets in the sample which were considered domestic in origin was 87 percent International directors were present in 16 4 percent of the sample, although of this number, 70 percent had only one international director. A single firm had eight international directors, the maximum number of international directors observed Of the 171 firms which had international director interlocks, the most frequent number of

interlocks was one, with 67 firms having this number. The maximum number of interlocks was 33, as represented with a single firm.

Measurement Models

The first step in analyzing the sample to identify the underlying relationships which determine CEO pay is to conduct confirmatory factor analyzes (CFA) of the separate constructs. Confirmatory factor analysis, as the name suggests, is used to confirm the underlying covariance structure between observed variables (Kelloway, 1995). Unlike exploratory factor analysis, in which "the researcher does not specify the structure of the relationships among the variables," (Long, 1983:12), confirmatory factor analysis imposes constraints on the underlying structure. This structure can be tested, and the results of the statistical tests are said to confirm the hypothesized structure of the factors (Long, 1983) Support for this structure is found in the fit indicators of the LISREL program. In this study, confirmatory factor analysis is used to ensure that the different constructs developed from theory are consistent within the theoretically specified constraints of the model.

All predictor variables were grouped in a confirmatory factor analysis to ensure that they do not make up a single underlying factor. Using all variables in a single model helps determine the consistency of the different constructs present in the model. Table 4.3 shows the results of the single indicator factor analysis using all variables. As indicated by the low coefficient of determination, the predictor variables do constitute more than one underlying factor

The second confirmatory factor analysis consists of measures of the dependent variable, CEO pay. Because only three measures are used, the goodness-of-fit index is one, and the consistency of the construct is indicated by the coefficient of determination, which in this case is 0.62. Table 4.4 reports the results of this CFA.

Table 4.3

CFA: SINGLE FACTOR: ALL DEPENDENT AND INDEPENDENT VARIABLES[2]

Variable Name	Factor Loading	*t-value*
Cash	.51	12.88
LTIP	.20	4.77
GP	-.11	-2.61
Duality	.09	2.09
Inside Ratio	-.11	-2.48
Pct Director	-.29	-6.89
Owner Group	-.26	-6.23
Director Comp	.44	10.93
% CEO	-.08	-1.83
CEO Value	.03	.64
DA/TA	-.26	-6.23
Intl Director	.06	1.44
Intl Lock	.15	3.57
Sales	.85	25.46
Assets	.84	24.67
Equity	.94	29.62
ROE	.03	.69
ROA	.07	1.55

Confirmatory Factor Models	χ^2	$\chi^2/_{df}$	GFI	GFIa	RMSR	CED
All Variables (DV+IV)	1284.08	9.51	0.82	0.77	0.10	0.40

[2] The significance of LISREL t-values are interpreted using a normal probability table versus a t-table (Hayduk, 1987). The following thresholds can be used to determine the significance levels of parameters $t \geq 2.0$, $p < 0.05$, $t \geq 2.7$, $p < 0.01$, $t \geq 3.5$, $p < 0.001$

Table 4 4

CFA: CEO PAY

Variable Name	Factor Loading	*t-value*
Cash	.26	1.50
LTIP	.78	1.54
GP	.12	1.37

Confirmatory Factor Models	χ^2	$\chi^2/_{df}$	GFI	GFIa	RMSR	CED
Pay	-	-	-	-	-	0 62

Models similar to that reported in Table 4.3, analyses of all predictor variables, as well as all variables selected for the final model both in single factor form and with hypothesized constructs were run. The five-factor model containing all predictor variables, however, did not converge and no results from this model are available The results of the single-factor model for all predictor variables are reported in table 4 5 Table 4.6 reports the CFA of final model variables using a single factor while Table 4 7 reports the five factor analysis for selected predictor variables.

Table 4.5

CFA: ALL PREDICTOR VARIABLE (SINGLE FACTOR)

Variable Name	Factor Loading	*t-value*
Duality	.09	2.03
Inside Ratio	-.11	-2.59
Pct Director	-.28	-6.82
Owner Group	-.25	-6.24
Director Comp	.41	10.44
% CEO	-.07	-1.69
CEO Value	.04	.931
DA/TA	-.25	-6.04
Intl Director	.06	1.37
Intl Lock	.14	3.43
Sales	.84	24.78
Assets	.83	24.39
Equity	.96	30.61
ROE	.03	.70
ROA	.05	1.29

Confirmatory Factor Models	χ^2	χ^2/df	GFI	GFIa	RMSR	CED
All Predictor Variables	1019.69	11.33	0.83	0.77	0.11	0.68

Table 4.6

CFA: FINAL MODEL VARIABLES (SINGLE FACTOR)

Variable Name	Factor Loading	*t-value*
Duality	.46	5.68
Inside Ratio	-.15	-2.75
Pct Director	-.62	-14.20
Owner Group	-.64	-14.96
Director Comp	.13	6.82
CEO Value	-.02	-1.70
DA/TA	-.08	-3.35
Intl Director	-.30	-5.00
Sales	.23	6.10
ROA	-.19	-1.37

Confirmatory Factor Models	χ^2	χ^2/df	GFI	GFIa	RMSR	CED
Final Model Predictors	281.51	8.04	0.91	0.86	0.08	0.55

Table 4.7

CFA. FINAL MODEL VARIABLES (FIVE FACTOR)

Variable Name	Factor Loading	*t-value*
Duality	.25	-
Inside Ratio	- 13	-
Pct Director	- 69	-
Owner Group	- 76	-
Director Comp	39	-
CEO Value	42	-
DA/TA	02	-
Intl Director	02	-
Sales	73	-
ROA	40	-

Note: Theta-delta matrix for this model is indefinite and therefore, *t-values* are not available.

Confirmatory Factor Models	χ^2	χ^2/df	GFI	GFIa	RMSR	CED
Final Model Predictors	183.32	7.33	0.94	0.87	0.09	0.97

These analyses show that individual constructs identified in the literature review do not form a single underlying factor. Confirmatory factor analyses of separate constructs were also performed. Table 4.8 contains the results of the analysis of the construct board control; Table 4.9 reports on the construct internationalization; Table 4.10 reports on size and Table 4.11 reports the results of a confirmatory factor analysis conducted to examine the consistency of size and performance measures.

Table 4.8

CFA: BOARD CONTROL

Variable Name	Factor Loading	*t-value*
Duality	.28	5.94
Inside Ratio	-.13	-2.63
Pct Director	-.72	-12.11
Owner Group	-.72	-12.02
Director Comp	.27	5.65

Confirmatory Factor Models	χ^2	χ^2/df	GFI	GFIa	RMSR	CED
Board Control	31.79	6.36	0.98	0.94	0.05	0.69

Table 4.9

CFA: INTERNATIONALIZATION

Variable Name	Factor Loading	*t-value*
DA/TA	.26	5.91
Intl Director	-.76	-12.11
Intl Lock	-.92	-12.91

Confirmatory Factor Models	χ^2	χ^2/df	GFI	GFIa	RMSR	CED
Internationalization	-	-	-	-	-	0.88

Table 4.10

CFA: SIZE

Variable Name	Factor Loading	*t-value*
Sales	.84	25.50
Assets	.83	24.24
Equity	.96	30.54

Confirmatory Factor Models	χ^2	χ^2/df	GFI	GFIa	RMSR	CED
Size	-	-	-	-	-	0.94

Table 4.11

CFA: SIZE AND PERFORMANCE

Variable Name	Factor Loading	*t-value*
Sales	.84	24.53
Assets	.83	24.23
Equity	.96	30.46
ROE	.03	0.79
ROA	.06	1.35

Confirmatory Factor Models	χ^2	$\chi^2/_{df}$	GFI	GFIa	RMSR	CFD
Size and Performance	64.73	12.94	0.96	0.88	0.06	0.94

When considering all variables of the hypothesized model, the factor analysis indicates that each of the separate constructs are, in fact, defined differently. In the single factor model using all hypothesized variables shown in Table 4.3, the most consistent and greatest loading of any grouping of variables are those for size. Cash compensation loads at 0.51 and director compensation at 0.44. These are the only variables approaching 0.5 other than the previously mentioned variables which measure size. A similar pattern exists when only the predictor variables are considered as reported in Table 4.5. The confirmatory factor analysis (Table 4.6) for variables retained in the final model has similar results.

The confirmatory factor analysis of the board control model (Table 4.8) returns goodness of fit measures as well as a coefficient of determination because it has more than three variables which define the factor. The high coefficients of determination for the constructs of internationalization and size show the consistency of measurement of those constructs.

To address questions over the importance of size and performance with respect to CEO compensation, I also accomplished a confirmatory factor analysis of all variables which contribute to these two constructs. From Table 4.10, the loadings for the size variables were again consistent, the loading for sales was 0.84 , assets 0.83 and equity was 0 96, the minimum with *t*-value above 24. These factor loadings and significance levels were consistent for a three variable factor analysis. When included in the same factor analysis as the size variables as shown in Table 4 11, ROE and ROA loaded at 0 03 and 0.06 respectively, and the *t*-values were not significant at p=0.05. The results of this confirmatory factor analysis provides for support for the existence of size and performance as separate constructs.

Table 4 12 is a compilation of all the summary statistics for the measurement models.

Table 4 12

SUMMARY STATISTICS FOR LISREL MEASUREMENT MODELS

Confirmatory Factor Models	χ^2	χ^2/df	GFI	GFIa	RMSR	CED
All Variables (DV+IV) (Single Factor)	1284.08	9.51	0.82	0.77	0.10	0.40
Pay	-	-	-	-	-	0.62
All Predictor Variables (Single Factor)	1019.69	11.33	0.83	0.77	0.11	0 68
Final Model Predictors (Single Factor)	281.51	8.04	0 91	0.86	0.08	0.55
Final Model Predictors (Five Factor)	183 32	7.33	0.94	0.87	0 09	0 97
Board Control	31.79	6.36	0.98	0.94	0.05	0.69
Internationalization	-	-	-	-	-	0.88
Size	-	-	-	-	-	0 94
Size and Performance	64.73	12.94	0.96	0 88	0 06	0 94

Variable Deletion. Based on the results of confirmatory factor analyses and initial development of the hypothetical model described in chapter three, certain adjustments to this model were made. The first adjustment was dropping golden parachutes from the construct of CEO compensation. In addition to weak correlations with cash compensation and long-term incentives, the direction of the sign of the factor loading for golden parachutes was opposite those of cash compensation and long-term incentives. The factor loading is not significant at the p=0.05 level. Therefore, it is not consistent with the construct of compensation defined by salary, bonus and the value of share options.

Other adjustments and deletion of hypothesized variables were required to achieve appropriate model fit. When both variables intended to measure CEO equity were included in the model, it was mis-specified and, in order to obtain valid effects, single indicators of CEO ownership were used. In keeping with the premises of agency theory, overall levels of CEO wealth reflect the alignment of interests of owner and manager, so the wealth figure, CEO Value, was retained in the model.

The use of three variables to measure the construct of internationalization also resulted in mis-specification of the model. As the number of international directors and international interlocks is highly correlated, to obtain best measurement of the construct only one of these two could be included in the model along with the percentage of domestic assets. U.S. companies are subject to anti-trust requirements which tend to cause diffusion of the network represented by director interlocks (Boyd, Carroll & Howard, 1996; Steuer, 1977). Therefore, the number of international directors is used along with assets to measure internationalization.

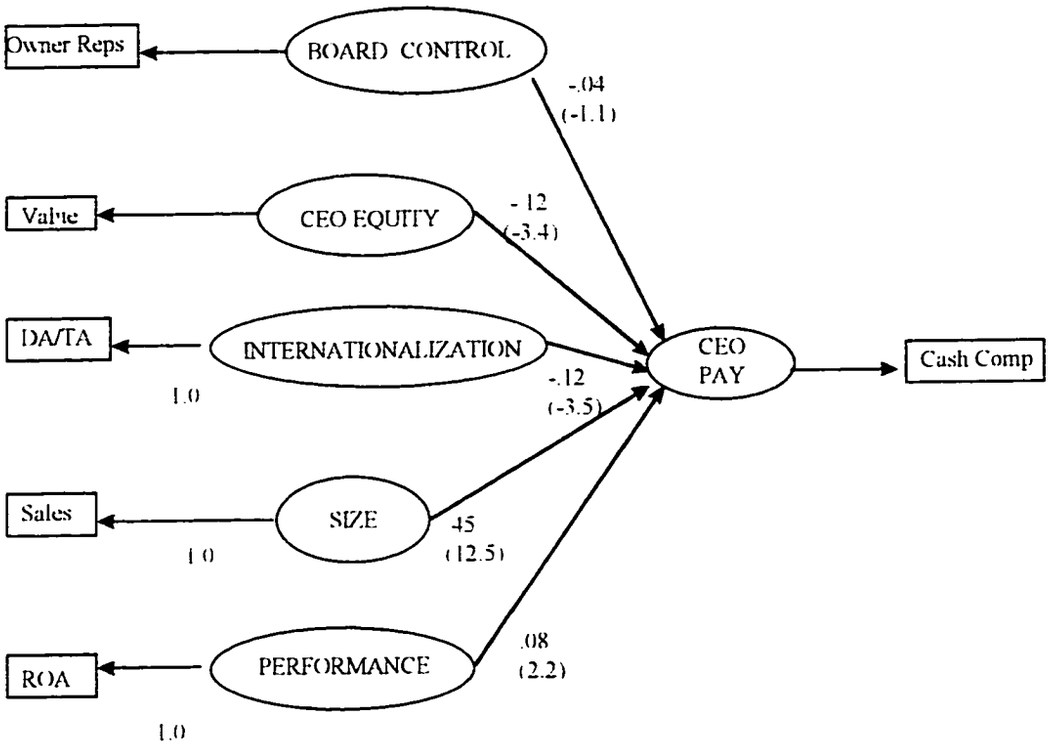
When multiple indicators of size and performance were included in the model, the theta delta matrices were indefinite, indicating correlation of the residual errors. This is an indication that the variables included are highly colinear, and that single indicators would be sufficient to capture the effects of that construct. To minimize potential colinearity problems, different aspects of the two constructs were retained in the model. Return on assets is retained to complement the asset measure of internationalization, while size captures an aspect of size not directly related to assets.

Baseline Model. In order to provide a standard of measurement for the structural model, I selected single indicators selecting the highest lamda x and lamda y loadings from the complete model for each construct to enter into a measurement model. The results of the single indicator model are shown in Figure 4.1. Because a single variable represents each construct, the model assumes there is no measurement error demonstrated by the goodness-of-fit index of 1.0. The coefficient of determination, the analog in structural equation modeling of R^2 in regression models, is 0.28, indicating that the model accounts for slightly over one fourth of the variation in CEO pay

Structural Model

Figure 4.2 shows the final LISREL model tested including the factor loadings and summary statistics for the model. The *t*-values for LISREL estimates of the individual lambda y and lambda x variables as well as gamma coefficients are in parentheses. As recommended by Bollen (1989), I use several tools to test the fit of the model. The first

Figure 4 1
Single Indicator Model



Note: Certain parameters (e.g. phi and theta-delta matrices) are excluded from the diagram

χ^2	χ^2/df	GFI	GFIa	RMSR	CED
0	0	1.0	-	0.00	0.28

measure, the Chi-Square statistic, is sensitive to sample size (Joreskög and Sörbom, 1988); therefore, it is also divided by degrees of freedom (Carmines & McIver, 1981) This structural model has 42 degrees of freedom. χ^2 is 220.63, and the adjusted measure is 5.25, which is an acceptable fit of the data. Other indices of fit show that the model specification provides a good fit with the sample the goodness-of-fit index is 0 94.

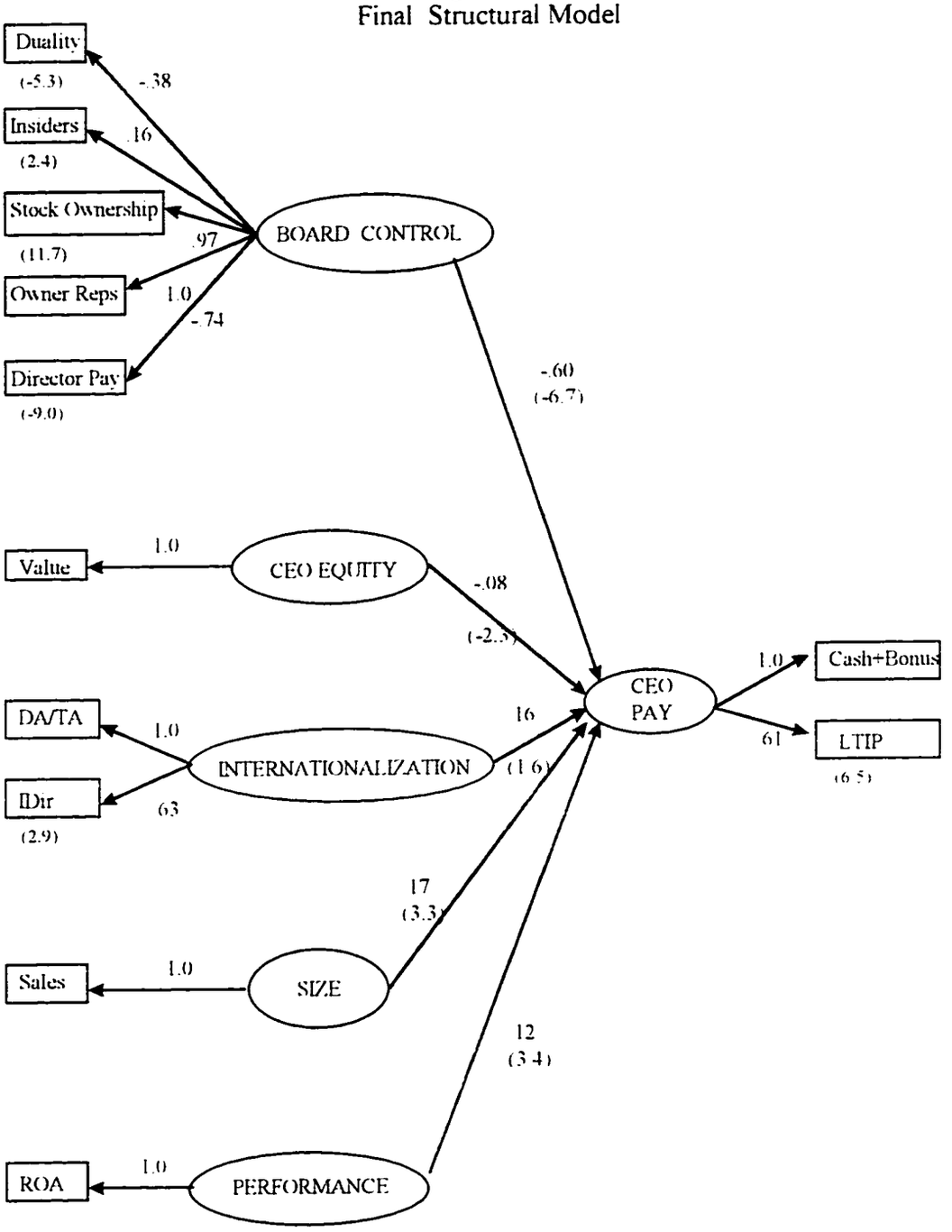
the adjusted goodness-of-fit index is 0 89 and the root mean square residual is 0 09 All these ranges are generally accepted as showing acceptable fit (Hu & Bentler, 1995) For this model, the coefficient of determination, is 0.76. The interpretation of this coefficient is that the predictor constructs, board control, CEO equity, internationalization size and performance account for 76 percent of the variance in CEO compensation as measured by cash and long-term incentives.

Consistent with the confirmatory factor model, the structural model also shows that the two measures of compensation, salary plus bonus and long-term incentives are good indicators of the same construct. Using cash compensation as the referent, its factor loading is set at 1 0 The factor loading of LTIP is 0 61 and significant at $p<.001$ (t=6.5) After examining the characteristics of the structural model, the next action is to look at each test of hypothesis.

Test of Hypotheses

Hypothesis 1 predicted that CEO pay would be negatively related to board control. This hypothesis is supported as shown by the gamma coefficient of -0.60 (t=-6 7, $p<.001$). The t-value of the gamma coefficient is a test of the null hypothesis that the parameter value is actually zero (Hayduk, 1987). As with previous tests of the board control model, CEO duality and director pay are positively related to compensation, while board composition (ratio of inside directors to outside directors), board stock ownership and owner group representation on the board act to limit CEO compensation. As previously reported in tests of the board control model (Boyd ,1994; Boyd & Carroll, 1996), the measured direction of the relationship between the ratio of inside directors and

Figure 4 2
Final Structural Model



Note: Certain parameters (e.g. phi and theta-delta matrices) are excluded from the diagram

χ^2	χ^2/df	GFI	GFIa	RMSR	CED
220.63	5.25	0.94	0.89	0.09	0.76

compensation is not consistent with theoretical predictions.

Hypothesis 2 predicted that CEO compensation is inversely related to the amount of equity held by the CEO. As stated above, the model tested this hypothesis using the value of the CEO's stockholdings as the measure of the interest the CEO has in the firm. The gamma coefficient of -0.08 (t=-2.3; p<.05) supports this hypothesis, although with much less effect on the relationship and with less significance than the construct of board control.

Hypothesis 3 predicted that compesation is positively related to internationalization. The gamma coefficient for this test is 0.16; however, it is does not reach the accepted significance level of p< 05 (t=1.6). Therefore, while the direction and loading of the coefficient is in the hypothesized direction, it provides no statistically significant indications of the relationship

Control Variables

While not formally tested via hypotheses, size and performance are included in the model as control variables. With this sample, their relationship to CEO compensation is consistent with previous tests, with both size and performance contributing to variance in CEO pay. The gamma coefficient for size is 0.17, (t=3.3; p<.001). For performance the gamma coefficient is 0 12 (t=3 4; p<.001).

The factor loadings from this sample provide one test of the strength of the relationship between CEO compensation, size and performance Meta-analysis of previous empirical studies provides another The results of this meta-analysis are reported in Table 4 13 A search of relevant literature identified 17 studies with 32 sample groups

which related cash compensation to firm size The aggregate effect size is 0 33 For the 19 studies with 33 sample groups relating cash compensation to performance, the aggregate effect size is 0.13. Fewer studies tested these relationships using the larger measure of compensation including both cash and long-term incentives as the dependent variable. Five such studies compared firm size and total compensation, with an aggregate effect size of 0.03, while six studies with nine sample groups tested the relationship between compensation including cash and LTIP and performance with an aggregate effect size of 0.05. Full description of the meta-analytical procedure and a detailed breakdown of both individual and cumulative effect sizes are reported in Appendix B

Table 4 13

META-ANALYSIS EFFECT SIZES

	Size	Performance
Cash Compensation	0.33	0.13
Cash + LTIP	0.03	0.05

Analysis of High and Low Performing Subgroups

To better understand the effects of the determinants of CEO pay and to make normative conclusions with respect to firm performance, I divided the sample into high and low performing groups. Average return on equity over the period 1987-1991 was used as the measure of firm performance, and the median performance was used for separation. Results of the model for high performers are shown in Figure 4.3 Table 4 14 shows a side-by-side comparison of the change in gamma coefficients between the full sample and the high performing group. Gamma coefficients are a measure of the influence

of the predictor constructs on the dependent construct (Hayduk, 1987). From the increase in the loading for board control, it is apparent that high performing firms have active boards. At the same time, the influence of both CEO equity and internationalization is

Table 4.14

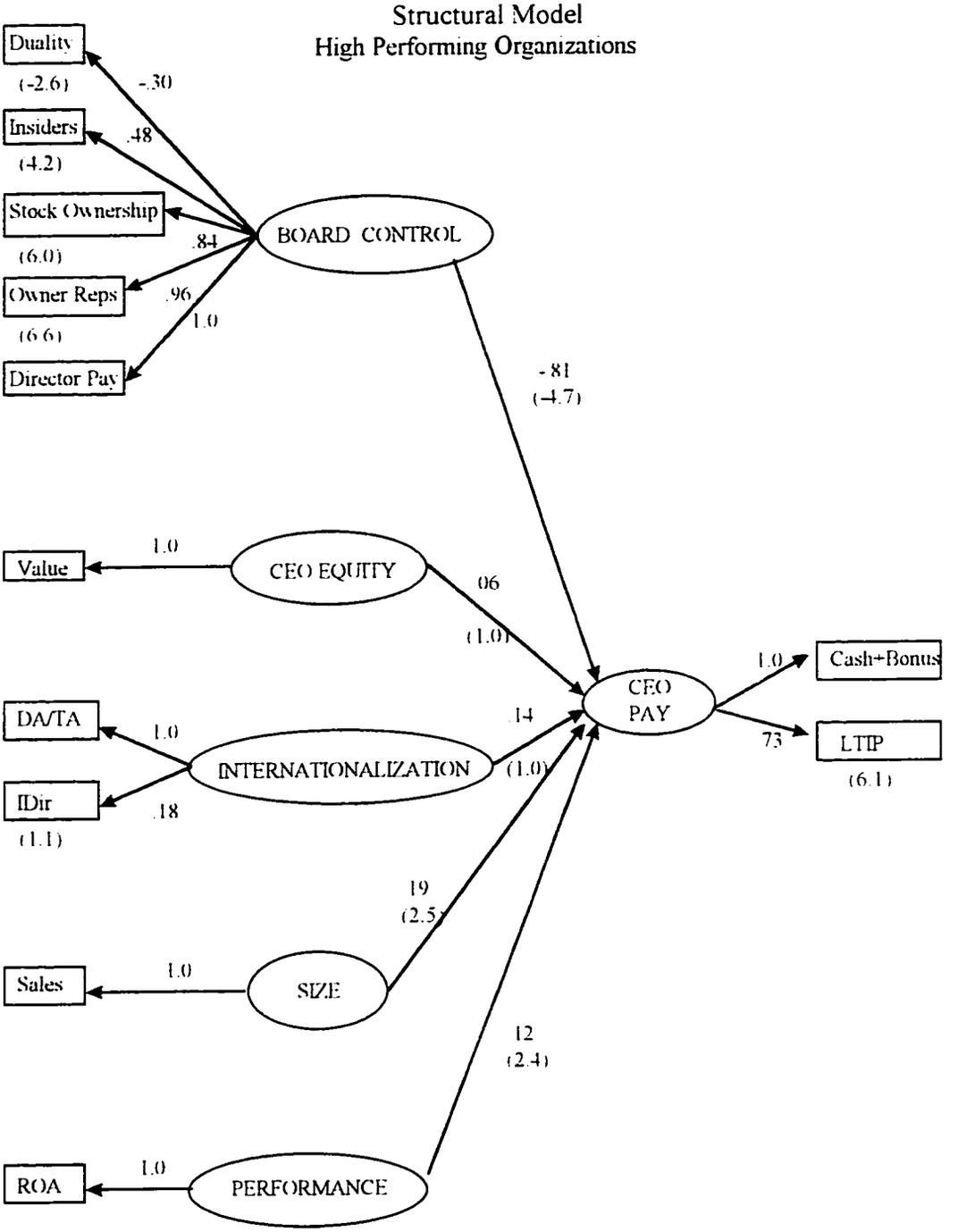
COMPARISON OF GAMMA COEFFICIENTS

	Full Sample		High Performers	
Construct	Gamma Coefficient	P	Gamma Coefficient	P
Board Control	-0.60 (-6.7)	0.001	-0.81 (-4.7)	0.001
CEO Equity	-0.08 (-2.3)	0.05	0.06 (1.0)	-
Internationalization	0.16 (1.6)	0.10	0.14 (1.0)	-
Size	0.17 (3.3)	0.001	0.19 (2.5)	0.02
Performance	0.12 (3.4)	0.001	0.12 (2.4)	0.02

reduced. The effects of size and performance are relatively unaffected, although there is a marginal decrease in the significance level of both variables in the high performing group.

When the lower performing sample was modeled in LISREL, the theta-delta matrix was not positive definite, and therefore, *t*-values could not be computed. When a model with CEO equity and internationalization deleted was run, it did converge to allow an analysis of the effects of board control, size and performance on low performing organizations. The only significant deviation in this model from previous indications was a change in the sign of inside directors, showing that contrary to the whole sample and for high performing organizations, the ratio of inside directors is positively related to CEO compensation.

Figure 4 3
Structural Model
High Performing Organizations



Note: Certain parameters (e.g. phi and theta-delta matrices) are excluded from the

χ^2	χ^2/df	GFI	GFIa	RMSR	CED
120.94	2.88	0.93	0.88	0.09	0.75

Chapter 5

DISCUSSION

The purpose of this study is to expand understanding of the determinants of CEO pay primarily through improved measurement of these constructs. Constructs of CEO equity and internationalization are added to existing board control models in order to better explain the determinants of CEO pay. Structural modeling provides one means for improving the measurement of these variables, while also allowing the inclusion of the additional constructs. The results of this study clearly demonstrate the value of including more complex measures of both dependent and independent variables in modeling CEO pay. The desirability of using multiple measures of CEO compensation is supported both by the primary data and by the results of the meta-analysis.

This study strongly supports the importance of the relationship between the board of directors and the CEO as the primary determinant of CEO pay, especially when board control is measured using a multiple indicator model as suggested by Boyd (1994) It also shows the influence of CEO equity, and reaffirms the effects of size and performance in determining CEO pay. The value of the large sample is evident in providing the ability to make normative conclusions of the effectiveness of various compensation structures. This section will also address the limited support shown for tests of complexity as a

determinant of CEO pay when measured by internationalization. After identifying potential limitations of the study, the discussion section concludes with the evaluation of the model as a whole and identifies areas for expansion and future research based on its results.

Measurement

The final structural model demonstrates measurement improvements over both a baseline single-indicator model and previous research on the determinants of CEO pay. The structural model accounts for 76 percent of the variance in CEO pay as opposed to 28 percent in the baseline model. When compared to other research in the field, this difference, while not as marked, nonetheless is present. Appendix A shows the summary of recent studies of executive compensation, including predictor variables, hypothesized direction of their influence on compensation and the total explained variance as represented by R^2 or the coefficient of determination. Articles starting in 1989 were selected to ensure that incentives as part of compensation would be represented in the comparison. The average variance accounted for in these studies is 45 percent, again less than the results of the structural model from this study

CEO Pay

The first construct to be addressed to document measurement improvements is that of CEO pay itself, starting with variables which constitute compensation. Lewellen and Huntsman (1970) make a cogent argument that cash compensation is a proxy for overall pay levels. Cash compensation as the dependent variable is also used in the majority of studies published since then (see Appendix B). However, changes in the

structure of executive compensation since that study was published including the greater use of stock options as incentives and expanded reporting requirements imposed by the SEC provide impetus for including long-term incentives as part of the overall construct (Crystal, 1991a). Another reason for broadening the scope of the dependent variable is to ensure inclusion of potential incentive effects of long-term pay. As bonuses become more commonplace or are easier to achieve, their value as an incentive is lessened and other structures such as stock options are introduced to achieve the desired motivational aspects (Lambert, Larcker & Weigelt, 1993).

The data in this study supports defining CEO pay using two variables, cash compensation and long-term incentives. The relatively low correlation between these two variables, 0.20, indicates limited multicolinearity between the two measures. However, the factor loading of 0.61 in the final model affirms that the two measures act in combination to provide a more comprehensive accounting of CEO pay. This is consistent with more recent studies in the field which include both variables (Finkelstein & Boyd, 1996; Lambert, Larcker & Weigelt, 1993). While long-term incentives have symbolic impact for their recipients (Zajac & Westphal, 1995), their inclusion from a primarily economic basis is justified by the consistency of the factor loading with cash compensation in this data. The average amount of the options, $166,310, is significantly less than average cash compensation of $711,000. While the maximum award for options approaches $10 million, a fact which supports Crystal's contention that CEOs abuse their positions in order to attract high compensation, the averages appear to support Murphy's conviction that "top executives are worth every nickel they get." In addition, long-term

incentives are another way in which firms can differentiate among themselves in their attempts to attract and reward the most effective leaders (Gerhart & Milkovich, 1990)

Golden parachutes, on the other hand, did not prove to be consistent with other forms of compensation in this model. While the correlations between golden parachutes and cash compensation and LTIP were both positive, the small sizes, (0.03 and 0.09, respectively), show little relationship between the three variables. When tested in the model, golden parachutes had the opposite sign of both cash compensation and LTIP and were not significant at p =0.05. One possible explanation for the difference between the economic rewards and the value of golden parachutes can be found in the symbolic nature of the latter. The existence of a golden parachute may be seen as a result of the social interaction between the CEO and the board of directors and may be in place only when the strength of the CEO is greater than that of the board (Wade, O'Reilly & Chandratat, 1990). It may also be that a golden parachute is intended to function as a "wealth transfer" to the stockholders rather than to the executives who will be rewarded during a change of control they would otherwise resist (Lambert & Larcker, 1985).

Board Control Model

This study provides further support for the use of a multiple indicator model of board control in understanding the relationship between the board of directors and the chief executive officer. It also shows that to understand the determinants of CEO pay, it is necessary to go beyond the motivational aspects of monetary rewards and attempt to measure both the political and symbolic effects of compensation at the top levels of the organization. A single measure or mechanism is not sufficient to capture the complex

nature of this relationship (Rediker & Seth, 1995); therefore, use of a multiple indicator model is desirable.[3] The validity of the board control model with the large sample provides further support of the use of the board as a mechanism for internal control of organizations (Boyd, 1994; Walsh & Seward, 1990) and gives the opportunity to reexamine certain aspects of board composition.

Accepting the role of the board as monitors of managerial performance, researchers such as Dalton and Kesner (1985) and Lorsch and McIver (1989) recommend that outside directors are better able to perform this function than inside directors. Anecdotal evidence of current dissatisfaction with the performance of outside directors in monitoring executive behavior as well as firm performance in such organizations as W R. Grace and Morrison Knudsen illustrates that the presence and independence of outside directors may not be sufficient to achieve desired outcomes (Lublin, 1995b). Instead, skills and experience may be more desirable traits for all directors to possess (McMenamin, 1993). Firms in which outside directors are cognizant of CEO decision-making skills have higher performance than those in which outside directors are less informed (Judge & Dobbins, 1995). These same skills, experience and information about the organization, however, may be more readily available on the part of inside directors, who may meet the firm-specific requirements to evaluate managerial decisions from the CEO. Academic support for the direction of the empirical results is provided first by Mizruchi (1983), who posits that inside directors are being evaluated by outside directors.

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[3] While Rediker and Seth (1995) state that multiple indicators are desirable, they posit that multicolinearity inhibits their use. The confirmatory factor analysis of all variables presented in Chapter 4 counters this argument, showing that board control, CEO equity and internationalization indeed capture different constructs.

especially those interested in internal succession who want to be seen as potential CEOs themselves Inside directors may also adopt a form of mutual monitoring advocated by Fama (1980) and Fama and Jensen (1983). Members of management in competition for the top position seek information on decisions which will give them an advantage in this competition (Rediker & Seth, 1995).

The validity of the board control model is supported by its increased significance for high performing organizations. A possible explanation for this is that rewards other than remuneration accrue to CEOs of successful organizations Among these are the recognition of being in charge of a well-run organization. As directors desire enhanced reputations as decision-makers, so too do CEOs (Fama & Jensen, 1983). There are also potential benefits from the labor market, as other firms may be willing to increase an individual's compensation in order to attract that person (Deckop, 1988). Successful companies are often identified by cooperation between the board and the CEO (Murphy, 1986). One reason for this is that such cooperation may indicate a limit to top management team fragmentation with its subsequent detractions from performance (Hambrick, 1995).

CEO Equity

According to agency theory, CEO ownership of organizations and CEO wealth should be highly related. This was not the case, however, with the present sample, starting with the correlation between these two variables of -0.01. Analyses both of measurement and structural models confirm that these variables do not capture the same values. The two variables also have opposite influences on CEO pay, with wealth being

inversely related, but percentage ownership positively related One reason for this difference may be found in agency theory. If one purpose of the organization is to assume risk away from the individual (Jensen & Murphy, 1990a), then when an individual's overall wealth is closely tied to the outcomes of the firm, this should signal alignment with the objectives of the firm's owners. The same cannot be said for firm performance, as factors other than alignment of owner and manager interests, such as growth, concentration or industry-specific variables, have much greater effects in this area (Capon, et. al., 1990).

Another element of the construct of CEO equity which contributes to the inverse relationship of wealth with CEO compensation is that of symbolism (Finkelstein & Hambrick, 1988). In addition to the intrinsic benefits of owning a large percentage of a firm's stock and the associated financial resources, some CEOs may perceive value by the acknowledgment of their ownership position and not need to receive certain levels of compensation. Such symbolism, however, could lead CEOs to drive the compensation process towards awarding them significant amounts of equity if they do not already control the corporation (Zajac & Westphal, 1995).

Other mechanisms that may act to limit CEO pay include tax effects, the labor market and human capital. CEOs with large shareholdings in an organization may seek to limit their cash compensation in order to minimize tax liability (Abowd, 1990; Lewellen, Loderer & Martin, 1987; Miller & Scholes, 1982). Tax treatment of capital gains also plays a role in conversion of shareholdings to cash, as executives may prefer to realize capital gains at a time designed to allow them to manage their personal tax liability

(Deckop, 1988). Tax considerations may be especially applicable for high performing firms. They generate more profit from which to reward their executives, however, such executives may demonstrate their decision-making abilities on a personal level as well as organizational one and to structure their pay package to ensure they retain the highest portion of their pay and not share it with the government.

With respect to the effect of the labor market on compensation, Deckop also holds that organizational founders receive less than other CEOs because they do not enter the labor market. Therefore, they do not take the opportunity to raise the value of their labor via competitive bidding. A similar argument may be made that individuals with firm-specific human capital are not as valuable on the labor market and must attempt to link their interests, shareholdings and wealth with the fortunes of their specific organizations

Moving to the test of percentage ownership as an influence on CEO compensation, because the measure of this construct is continuous rather than dichotomous, the results may not be directly comparable to previous research. Gomez-Mejia, Tosi and Hinkin (1987) found that CEO compensation is less in owner-controlled firms than in manager-controlled firms. For the full sample, the findings of this study also show that CEO ownership is negatively related to compensation. For the high performing sample, however, the strength of the relationship is reduced and it appears to be in the opposite direction. For the low performing sample, primary indications show that ownership again is negatively related to compensation. It is possible that boards of successful firms are not as concerned with potential cost savings by limiting CEO pay. Boards of lower performing firms, on the other hand, may want to make a symbolic gesture of response to

below average performance. It may also be that successful firms, anticipating acknowledgment by the stock market, can compensate their executives through the use of options rather than direct cash compensation.

Internationalization

By hypothesizing that internationalization is positively related to CEO pay, I attempted to incorporate a test of the theories of the labor market and rewards for managing highly complex organizations in the model. The results are consistent with the direction of the posited relationship but are not significant. This may be due in part to the relatively low levels of internationalization found in the firms in this sample The average amount of foreign assets was approximately 13 percent of the firm total. The number of firms with international directors was also small, at 16.4 percent. This indicates that in spite of the common perception that the globalization of business is a driving force, the influence of domestic assets and operations is still dominant in U.S. firms today. As chief executive officers are less able to control exogenous factors present in international operations such as market demand, exchange rates and political influences, they may want their rewards based on domestic actions whose outcomes they perceive they can influence. A final explanation for the limited relationship between internationalization and CEO pay reiterates the importance of board structure. Boards decision processes are dependent on the information they receive (Demb & Neubauer, 1992). With so little international representation on boards, members charged with setting CEO compensation along with their consultants may not have sufficient input to incorporate a CEO's influence on firm internationalization in their deliberations.

Using internationalization as a proxy for complexity may also account for the lack of a significant relationship with CEO pay. In another test of complexity, Finkelstein and Hambrick (1989) were also unable to develop this link, although their measure was based on the number of standard industrial classifications in which a firm conducted business. Complexity in that case was more closely related to firm size. Additional theoretical considerations as well as improvements in the measurement may be necessary to identify a significant relationship between internationalization and CEO pay

Size and Performance

Size. Organization size is an important determinant of CEO pay—not the least for the common sense explanations provided by Deckop (1988): ability of the organization to pay, a reduced percentage of revenues devoted to compensation, complexity, and the number of hierarchical levels. Size can also account for the presence of incentive programs, in part because they are better able to absorb the fixed costs of such programs and achieve scale economies in administering them (Gaver & Gaver, 1995). Our model supports this with the full sample, as size is a significant factor. For the high performing sample, however, the relationship between the board and CEO as demonstrated by the board control construct takes on more significance while the significance level of the relationship with size is slightly reduced. This is not the case for lower performing organizations, where the impact of both board control and performance are reduced. It may be that for these lower performing organizations, CEOs emphasize size as posited by researchers since Baumol (1958) in the absence of positive results which could be used to justify higher rewards

Performance. Consistent with research starting with Lewellen and Huntsman (1970), this model supports the conclusion that performance must be considered virtually as much as size as a determinant of CEO pay. This is especially true when long-term incentives are included as a measure of total compensation, given their links to performance standards. Strong performers show a significant link, although this link is lessened for weaker performers. This has application for practitioners, as it supports Crystal's (1991a) contention that CEO pay generally is adjusted upward, but that there is limited downside risk for the compensated individuals.

Two final conclusions on size and performance can be drawn from the ancillary analyses completed in this study. The first conclusion is drawn from the meta-analysis and shows that the gap between the effect of size and performance narrows significantly when total compensation is considered. Contrary to studies which question the worth of options for executives, this definitely established a link between these two variables. The results of this meta-analysis may be helpful in setting a metric for future research, especially as the effects of changes in SEC requirements with respect to compensation committees are felt in the boardroom and can be measured by researchers. The second conclusion comes from a confirmatory factor analysis of size and performance. While some performance is anticipated to stem from the size of an organization, the results of the confirmatory factor analysis clearly demonstrate that these are two different constructs so that both must be considered in deliberations of CEO pay.

Limitations

While the large sample size allows for many advantages of this study, it also accounts for a limitation. Data acquisition for six hundred firms precludes the use of longitudinal methodology at this time and so the study remains a snapshot. This preludes measuring changes in CEO pay or including mimetic effects in the study. It is highly unlikely that sufficient CEOs of the *Fortune 1000* would respond to questionnaires to provide subjective variables to match the amount of data available for the range of corporations included in this sample. The ability to generalize to large U.S. firms, however, validates the sample selection for this study.

Additional limitations lie in the availability of variables to define certain constructs. For example, the structural model would only accept a single indicator for CEO equity While information on both percentage and value of CEO ownership is available, adding another measure of CEO ownership might improve the ability of structural equation modeling to capture this construct. An example of the type of information on CEO equity which would expand the comprehensiveness of the study is the overall wealth of the individual. Such information would possibly provide insight into the risk-bearing capabilities of CEOs. Again, the breadth of the sample acts against obtaining such information.

A final limitation also lies in the arena of data availability. The difficulty in obtaining data for international governance research has been previously documented (Boyd, Carroll & Howard, 1996). Because of the importance of the relationship between the board of directors and the CEO, the number of international directors is used as a

proxy for internationalization. Because only the most internationalized corporations include such members on their boards, their representation in the sample may not be sufficient to capture the construct of internationalization. As better measures of internationalization come to light, the effects of internationalization on CEO pay may be better developed. All of these limitations, however, provide opportunities for future research which is the next topic to be addressed.

Future Research

Primary areas for future research include the extension of the study of the relationship between the board of directors and the chief executive officer, longitudinal research and expansion of the constructs and variables which determine CEO compensation. As discussed by Ungson and Steers (1988), CEO compensation is a political process. Qualitative investigation of the overall relationship between boards and CEOs would provide additional context for the discussion of rewards and incentives. Specific topics could include both power differentials between the CEO and the board, as well as the effects of coalitions on decision-making at the top. A complementary topic to such research would be to expand the applicability of agency theory hypotheses by examining the risk-bearing propensities of individual chief executive officers. Insights into individual risk characteristics of top management could be used to match the structure of the pay package to ensure the alignment of owner and manger interests. Further study of the role of the board of directors with the strategic direction of the firm could enhance knowledge, too. It is possible that boards reward CEOs for establishing successful policies with respect to the overall strategy of the firm as represented by strategic

archetypes, or other strategic choices such as research and development or diversification policy.

As identified in the limitations section, expanding the sample of firms to cover different years would also be a logical extension of the research. Because of the scope of the project, adding to the sample in a five-year or other multi-year increment should be sufficient to capture possible longitudinal effects without requiring the numerous repetitions of data collection to match the desired sample size. Concurrently, including changes in organizational performance along with the longitudinal analysis would provide a test of the board's perception of the CEO's ability to manage change.

In addition to improvements in measuring the international effects on U.S. corporations, a comparative analysis of international CEO compensation is a logical extension of the current study. Given the difference in governance history and styles between the English-speaking world, Japan and Europe, comparisons to determine the effects of rewards and incentives under these various systems would be valuable. For example, Pennings (1993) holds that some European managers, specifically Dutch ones, have higher levels of self-monitoring than do U.S. managers. Such monitoring would also have implications for the determinants of CEO pay. International comparisons would potentially lead to the capability to make normative suggestions for both developing countries and organizations in the changing economies of Eastern Europe in order to have the most effective link between managers and their organizations.

Conclusions

This study is intended to document the benefits of improved measures of the determinants of CEO pay. It also uses the statistical power of a large sample size to chart practices followed by high-performing organizations. The first of these, measurement, is especially valuable when looking at the pay side of the equation. The predictive power of the study establish the desirability of including long-term incentives as part of the construct of CEO pay The influence of a CEO's equity holding reinforces this conclusion, and provides support for current wide-spread beliefs that both CEOs and directors should align themselves with an organization's interests through increased stockholdings. A final conclusion based on the significance of the board control model to high performing organizations is to reaffirm the theoretical call for increased information to the board of directors issued by Demb and Neubauer (1992). Not only is board control inversely related to CEO pay, the higher gamma coefficient of board control as a determinant of CEO pay for high-performing firms is an indicator of the positive outcomes available to organizations which have independent, active and informed boards.

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Appendix A

REVIEW OF COMPARABLE RESEARCH

Author	N	DV	Predictor	Direction	Control	R^2/CED
Finkelstein & Hambrick '89	48	Cash Compensation	Size. complexity. Board vigilance	+ + -		0.45
Lambert. Larcker & Weigelt '91	303	Cash Compensation	Δ Organization Size	+		0.39
Gaver & Gaver '93	428	Cash Compensation	Growth Set	+	Size	0.67
Lambert. Larcker & Weigelt '93	681	Total Compensation	Size. Power. Performance	+		0.64
Boyd '94	193	Cash Compensation	Board Control	-	Size. Performance	0.63
Miller '95	800	Δ Cash Compensation	Rank within industry	+	Size. Performance	0.59
Gaver & Gaver '95	321	Total Compensation	Growth Set	+	Size. Performance	0.23
Hambrick & Finkelstein '95	188	Total Compensation	External Control. Management Control	- +		0.26 0.14
Henderson & Fredrickson '96	189	Total Compensation	Information Processing	+	Size. Performance	0.49
Average	350					0.45

Appendix B

META-ANALYSIS: SIZE AND PERFORMANCE

Size and performance are the two variables most frequently included in empirical studies of executive compensation—often with conflicting conclusions about the nature of the relationship in question. In spite of this lack of agreement on their effects, size and performance are now generally identified as control variables rather than subject of hypothesis testing. As is common in social science research, there are still some questions as to the appropriate operationalization of these variables, especially firm performance (Capon, Farley & Hoenig, 1990; Venkatraman & Ramanujam, 1986, Weiner & Mahoney, 1981). The purpose of this appendix is not to re-visit the definition of firm size or performance, but to use meta-analysis to summarize previous empirical work on this topic

Meta-Analysis

Meta-analysis is used both to determine underlying relationships between variables (Hunter, Schmidt & Jackson, 1982), as well as to assess the strength of those relationships (Guzzo, Jackson, & Katzell, 1987). Another benefit of this methodology is its ability to integrate conflicting findings and to accommodate the large amounts of data available from previous work (Hunter & Schmidt, 1990). Because of the small sample sizes prevalent in most empirical studies, measurement error from sampling may be present. Meta-analysis is a means

accommodating and correcting for this sampling error (Hunter, Schmidt & Jackson, 1982) It is used as a complement to traditional literature reviews, as the results of published meta-analyses are generally consistent with those of such reviews while extending the information provided to cumulate effect sizes (Guzzo, et. al., 1986).

The relationships between compensation and firm size and firm performance are suitable for study by meta-analysis because of the large number of studies which have been accomplished. Even though some studies may be "lost" because of missing information, limited access to non-published works or incompatible differences in measurement (Guzzo, et. al., 1987), the number of studies which can be included is greater than those that are unavailable. Additionally, Rosenthal and Rubin (1978) have shown that non-availability of studies does not necessarily materially affect the results of meta-analysis. Their calculations show that 65,000 studies with zero effect are necessary to invalidate the effect sizes present in published meta-analyses.

Identification of Relevant Research. The first step in identifying prospective studies for inclusion in a meta-analysis is to examine the references available from a review of CEO compensation, such as Gomez-Mejia's 1994 summary, "Executive compensation: A reassessment and a future research agenda," in ***Research in Personnel and Human Resources Management.*** An index search of strategy journals and use of the electronic database, ABI/Inform, employing different permutations of CEO and executive compensation or pay also updated the list of potential sources. To be included as part of the meta-analysis, the study must have a measure of CEO compensation in any of its various forms and either test a hypotheses defining the relationship of CEO compensation and firm size or firm performance.

or include the latter two as control variables. In all, this search resulted in identification of 64 articles with a likelihood of containing results pertinent to the meta-analysis.

Studies excluded from the meta-analysis include those which do not differentiate between CEO pay and compensation of other top management team members. Incorporating the pay levels of other members of the TMT in calculations may act to dilute the strength of the relationship with CEO compensation because of the symbolic nature of CEO pay (Westphal & Zajac, 1994; Zajac & Westphal, 1995), or because of the hierarchical nature of pay differences (Gomez-Mejia & Balkin, 1992; O'Reilly, Main & Crystal, 1988). Also excluded are studies using experimental methodologies. These studies generally use students as subjects (Conlon & Parks, 1990; Kosnik & Bettenhausen, 1992). While they may illuminate motivational effects of compensation, they cannot provide direct measures of CEO pay, and therefore are not suitable for coding. Twenty-six published studies containing appropriate empirical results were coded. Some studies reported correlations using multiple samples so that the total number of samples included for cumulation is greater than the number of studies.

Cumulation of Effect Sizes. Following the recommendations of Hunter, Schmidt and Jackson (1982), I use correlations of interest from individual studies as the primary means of generating effect sizes. They make this recommendation because correlations can be adjusted for unequal sample sizes and because algebraic formulae for conversion of *t* to r exist[1] and therefore additional studies can be incorporated in the meta-analysis (Hunter, Schmidt & Jackson, 1982). If the correlation is assumed to be constant over the population, "then the best estimate of that correlation is not the simple mean across studies but a weighted average in

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[1] $r = t/\sqrt{(t^2+N-2)}$

which each correlation is weighted by the number of persons in that study " (Hunter, Schmidt & Jackson, 1982:40). Presented algebraically, this cumulation is $r=\Sigma[N_i r_i]/\Sigma N_i$.

Results and Conclusions

The results of the meta-analysis including correlations and cumulated effect sizes are shown following this section. Table B.1 repeats the effect sizes reported in Table 4.4

Table B.1

META-ANALYSIS EFFECT SIZES

	Size	Performance
Cash Compensation	0.33	0.13
Cash + LTIP	0.03	0.05

From these results, it is evident that size has a greater influence on cash compensation than does performance, also that the effects appear to be closer when compensation is measured to include long-term incentives. This supports the linkage between cash compensation and the number of hierarchical levels in an organization, as well as the tendency for larger organizations to use mechanistic pay procedures which emphasize the cash portion of the pay package (Gomez-Mejia & Balkin, 1992). While the effects of size on cash compensation are greater than those of performance, a cumulative effect size of 0.13 is not meaningless. This implies that performance does, indeed, play a role in setting levels of compensation. While the number of studies which report both cash and long-term incentives as joint elements of the construct of compensation is limited, the results of this meta-analysis show that the influence of size and performance are much closer to each other than when looking at cash alone, and the relevance of performance may take on greater significance. Future research may capture the effects of changes in the regulatory

and legislative atmosphere which are intended to increase the strength of the relationship between pay and performance.

Meta-Analysis:
Cash Compensation and Performance

N of samples:	33	aggregate effect size:	0.125
N of obs:	20830	sigma-square r:	0.011461597
		sigma-square e:	0.002232536
		sigma-square p:	0.009229061
		chi-square:	237.8625213

Study	N	Sample	Comp	Peformance	Raw	R-bar
Roberts '59	77			ROS	r	0.2
Lewellen &	50	Fortune 100	Salary+Bonus	Book Profit	t	0.321
Huntsman '70	50					0.275
	50					0.337
	50					0.402
	50					0.427
	50					0.49
	50					0.411
	50					0.491
	50					
Ciscel '74	210		Cash	Net Income	r	0.364
	210					0.305

Meta-Analysis:
Cash Compensation and Performance (continued)

Ciscel & Carroll '80	209 212 219 218 221 219	Large Industrials	Salary+Bonus	Net Income (adjusted for sales)	F	0.238 0.188 0.242 0.167 0.274 0.227
Agarwal '81	168	Insurance Cos	Salary+Bonus	Profit	r	0.72
Coughlin & Schmidt '85	482		Chg Cash	Abnormal Returns	t	0.228
Gomez-Mejia, e	71		Salary	Composite	r	0.21
Kerr & Bettis '87	103 103		Chg Salary Chg Bonus	Abnormal Returns	F	0.074 0.094
Deckop '88	335		Salary+Bonus	Net Income	t	0.245
O'Reilly, et al '88	105	9 Industries	Salary+Bonus		r	0.33
Finkelstein & Hambrick '89	110		Cash	ROE	r	0.22
Hill & Phan '91	104		Chg Cash	Abnormal Returns	t	0.458

Meta-Analysis:
Cash Compensation and Performance (continued)

Rajagapalan Prescott '92	5001		Salary+Bonus	ROS	r	0.18
Gilson & Vetsuypens '93	77		Chg Cash	Net Income	t	0.115
Mangel & Smith '93	100		Log Cash	ROE	r	0.26
Sloan '93	6132		Chg Cash	Chg ROA	t	0.067
Boyd '94	193		Log Cash	ROE	r	0.196
Miller '95	5312	Forbes 500	Chg Cash	ROE	r	0.03
Henderson & Fredrickson '96	189		Cash	ROA	r	0.07

Meta-Analysis:
Cash Compensation and Size

N of samples: 32 aggregate effect size: 0.334

N of obs: 15205 sigma-square r: 0.083284439

sigma-square e: 0.00238716

sigma-square p: 0.080897278

chi-square: 1259.926986

Study	N	Sample	Comp	Size	Raw r	t	R-bar
Roberts '59	77			Sales			0.361
Lewellen & Huntsman '70	50	Fortune 100	Salary+Bonus	Sales			0.171
	50						0.116
	50						0.043
	50						0.029
	50						0.139
	50						0.058
	50						0.126
	50						0.282

Meta-Analysis:
Cash Compensation and Size (continued)

Ciscel '74	210		Cash	Sales	r	0.4
	210					0.328
	210			Assets		0.411
	210					0.374
	210					0.376
	210			Employees		0.358
Ciscel & Carroll '80	209	Large Industri	Salary+Bonus	Sales	F	0.332
	212					0.146
	219					0.386
	218					0.318
	221					0.303
	219					0.306
Agarwal '81	168	Insurance Co.	Salary+Bonus	Sales	r	0.78
Coughlin & Schmidt '85	482		Chg Cash	Sales Growth	t	0.012
Gomez-Mejia, et al '87	71		Salary	Composite	r	0.36
Deckop '88	335		Salary+Bonus	Sales	t	0.12
O'Reilly, et al '88	105	9 Industries	Salary+Bonus	Sales	r	0.42

Meta-Analysis:
Cash Compensation and Size (continued)

Finkelstein & Hambrick '89	110		Cash	Log Assets	r	0.57
Hill & Phan '91	104		Chg Cash		t	0.76
Rajagapalan & Prescott '92	5001		Salary+Bonus	Log Assets	r	0.68
Mangel & Smith '93	100		Log Cash	Log Sales	r	0.47
Boyd '94	193		Log Cash	Log Sales	r	0.618
Miller '95	5312	Forbes 500	Chg Cash	Sales	r	0.03
Henderson & Fredrickson '96	189		Cash	Log Sales	r	0.22

Meta-Analysis:
Total Compensation and Performance

N of samples:	7	aggregate effect size:	0.052
N of obs:	13085	sigma-square r:	0.004831421
		sigma-square e:	0.001368125
		sigma-square p:	0.003463296
		chi-square:	58.76456911

Study	N	Sample	Comp	Performance	Raw	R-bar
McGuire, et al '62	45		Total Comp	Profits	r	0.536
Jensen & Murphy '90	877		Total Comp	Shareholder Wealth	t	0.173
Kerr & Kren '92	372		Cash+LTI	ROA	r	0.16
	372			Market Return		0.06
Lambert, et al '93	303		Cash+LTI	ROA	t	0.337
	303			Market Return		0.148
Finkelstein & Hambrick '95	5312	Forbes 500	Chg Total	Net Profit	r	0.02
	5312			ROE		0.03
Henderson & Fredrickson '96	189	4 Groups	Total Comp	ROA	r	0.07

Meta-Analysis:
Total Compensation and Size

N of samples:	4	aggregate effect size:	0.031
N of obs:	6221	sigma-square r:	0.033378377
		sigma-square e:	0.002246069
		sigma-square p:	0.031132309
		chi-square:	206.1448584

Study	N	Sample	Comp	Size	Raw	R-bar
McGuire, et al '62	45		Total Comp	Log Sales	r	0.589
Kerr & Kren '92	372		Cash+LTI	Log Sales	r	-0.09
Lambert, et al '93	303		Cash+LTI	Employees	t	0.805
Finkelstein & Hambrick '95	5312	Forbes 500	Chg Total	Sales	r	0.03
Henderson & Fredrickson '96	189	4 Groups	Total Comp	Log Sales	r	0.22

Appendix C

SAMPLE DISTRIBUTION BY STANDARD INDUSTRIAL CLASSIFICATION

SIC	FREQUENCY	PERCENT	DESCRIPTION
12	***2***	***0.4***	***Coal Mining***
1220	1	0.2	Coal Mining
1221	1	0.2	Coal Mining
13	***3***	***0.6***	***Oil & Gas Extraction***
1331	3	0.6	Crude Petroleum
14	***3***	***0.6***	***Nonmetalic Minerals***
1400	3	0.6	Minerals
15	***3***	***0.6***	***Building Contractors***
1530	2	0.4	Operative Builders
1540	1	0.2	Nonresidential Building
16	***3***	***0.6***	***Heavy Construction***
1600	3	0.6	Heavy Construction
17	***2***	***0.4***	***Special Trade Contractors***
1731	2	0.4	Electrical Work
20	***27***	***5.0***	***Food Products***
2000	3	0.6	Food Products
2011	3	0.6	Meat Packing
2013	2	0.4	Sausages
2015	1	0.2	Poultry Processing
2016	1	0.2	
2020	2	0.4	Dairy Products
2030	3	0.6	Preserved Fruits & Vegetables
2033	1	0.2	Canned Fruits & Vegetables
2040	3	0.6	Grain Mill Products
2050	1	0.2	Bakery Products
2060	2	0.4	Sugar
2070	1	0.2	Fats & Oils
2080	3	0.6	Beverages
2090	1	0.2	Misc. Food
21	***3***	***0.6***	***Tobacco Products***
2100	1	0.2	Tobacco Products
2111	2	0.4	Cigarettes
22	***6***	***1.1***	***Textile Mill Products***
2200	1	0.2	Textile Mill Products
2211	4	0.7	Broadwoven Fabrics

Appendix C
(continued)

SIC	FREQUENCY	PERCENT	DESCRIPTION
2273	1	0.2	Carpets & Rugs
23	***7***	***1.3***	***Apparel***
2300	1	0.2	Apparel
2320	3	0.6	Men's Furnishings
2330	2	0.4	Women's Outerwear
2390	1	0.2	Misc. Textile Products
24	***1***	***0.2***	***Lumber & Wood Products***
2421	1	0.2	Sawmills
25	***7***	***1.3***	***Furniture & Fixtures***
2510	4	0.7	Household Furniture
2511	1	0.2	Wood Furniture
2520	1	0.2	Office Furniture
2522	1	0.2	Office Furniture, Non-wood
26	***22***	***4.0***	***Paper & Allied Products***
2600	3	0.6	Paper & Allied Products
2621	10	1.9	Paper Mills
2631	2	0.4	Paperboard Mills
2650	1	0.2	Paperboard Containers
2661	1	0.2	Pulp Mills
2670	5	0.9	Misc. Converted Paper Products
27	***13***	***2.4***	***Printing & Publishing***
2711	6	1.1	Newspapers
2721	2	0.4	Periodicals
2731	2	0.4	Book Publishing
2750	1	0.2	Commercial Printing
2761	1	0.2	Manifold Business Forms
2771	1	0.2	Greeting Cards
28	***39***	***7.2***	***Chemicals & Allied Products***
2800	5	0.9	Chemicals & Allied Products
2810	3	0.6	Industrial Inorganic Chemicals
2820	1	0.2	Plastics
2821	3	0.6	Plastics & Resins
2834	12	2.2	Pharmaceutical Preparations
2840	2	0.4	Soap, Cleaners, Toilet Goods
2842	1	0.2	Polishes
2844	3	0.6	Toilet Preparations
2851	1	0.2	Paints & Allied Products
2860	3	0.6	Industrial Organic Chemicals
2869	1	0.2	Industrial Organic Chemicals

Appendix C
(continued)

SIC	FREQUENCY	PERCENT	DESCRIPTION
2870	1	0.2	Agricultural Chemicals
2890	2	0.4	Misc. Chemical Products
2899	1	0.2	Chemical Preparations
29	***19***	***3.5***	***Petroleum & Coal Products***
2911	19	3.5	Petroleum Refining
30	***8***	***1.5***	***Rubber & Plastic Products***
3011	3	0.6	Tires & Inner Tubes
3060	1	0.2	Fabricated Rubber Products
3079	1	0.2	
3089	3	0.6	Plastics Products
32	***11***	***2.0***	***Stone, Clay & Glass Products***
3220	2	0.4	Glass & Glassware
3221	2	0.4	Glass Containers
3241	2	0.4	Cement, Hydraulic
3270	2	0.4	Concrete, Gypsum, & Plaster
3290	3	0.6	Misc. Nonmetallic Minerals
33	***14***	***2.6***	***Primary Metal Industries***
3310	1	0.2	Blast Furnace, Basic Steel
3312	6	1.1	Blast Furnaces & Steel Mills
3320	1	0.2	Iron & Steel Foundries
3330	2	0.4	Nonferrous Metals
3334	4	0.7	Primary Aluminum
34	***15***	***2.8***	***Fabricated Metal Products***
3411	3	0.6	Secondary Nonferrous Metals
3420	4	0.7	Cutlery, Tools & Hardware
3430	1	0.2	Plumbing & Heating
3442	1	0.2	Metal Doors, Sash & Trim
3443	1	0.2	Fabricated Plate Work
3452	2	0.4	Bolts, Nuts, Rivets & Washers
3490	3	0.6	Misc. Fabricated Metal Products
35	***39***	***7.2***	***Industrial Machinery & Equipment***
3510	1	0.2	Engines & Turbines
3519	1	0.2	Internal Combustion Engines
3523	3	0.6	Farm Machinery & Equipment
3531	1	0.2	Construction Machinery
3537	2	0.4	Industrial Trucks & Tractors
3540	1	0.2	Metalworking Machinery
3541	1	0.2	Machine Tools, Metal Cutting
3550	1	0.2	Special Industry Machinery

Appendix C
(continued)

SIC	FREQUENCY	PERCENT	DESCRIPTION
3555	1	0.2	Printing Trades Machinery
3559	1	0.2	Special Industry Machinery
3560	2	0.4	General Industrial Machinery
3569	2	0.4	General Industrial Machinery
3570	6	1.1	Computer & Office Equipment
3571	7	1.3	Electronic Computers
3572	1	0.2	Computer Storage Devices
3573	1	0.2	
3575	1	0.2	Computer Terminals
3578	1	0.2	Calculating & Accounting Equipment
3579	2	0.4	Office Machines
3585	3	0.6	Refrigeration & Heating Equipment
36	***20***	***3.7***	***Electronic Equipment***
3600	1	0.2	Electronic Equipment
3630	3	0.6	Household Appliances
3634	1	0.2	Electric Housewares & Fans
3640	4	0.7	Electric Lighting & Wiring
3663	2	0.4	Radio & TV Equipment
3670	1	0.2	Electronic Components
3674	5	0.9	Semiconductors
3678	1	0.2	Electronic Connectors
3690	1	0.2	Misc. Electrical Equipment
3695	1	0.2	Magnetic & Optical Recording Media
37	***26***	***4.8***	***Transportation Equipment***
3711	5	0.9	Motor Vehicles
3714	7	1.3	Motor Vehicle Parts
3716	1	0.2	Motor Homes
3720	1	0.2	Aircraft & Parts
3721	5	0.9	Aircraft
3724	2	0.4	Aircraft Engines
3760	4	0.7	Guided Missiles, Space Vehicles
3790	1	0.2	Misc. Transportation Equipment
38	***16***	***2.9***	***Instruments***
3812	5	0.9	Search & Navigation Equipment
3822	1	0.2	Environmental Controls
3823	1	0.2	Process Control Instruments
3825	2	0.4	Electricity Measurement
3826	2	0.4	Analytical Instruments
3841	1	0.2	Surgical & Medical Instruments

Appendix C
(Continued)

SIC	FREQUENCY	PERCENT	DESCRIPTION
3851	1	0.2	Opthalmic Goods
3861	3	0.6	Photographic Equipment
39	***5***	***1.0***	***Misc Manufacturing Industries***
3911	1	0.2	Jewelry, Precious Metal
3942	1	0.2	Dolls & Stuffed Toys
3944	2	0.4	Games, Toys, Children's Vehicles
3990	1	0.2	Miscellaneous Manufactures
40	***6***	***1.1***	***Railroad Transportation***
4011	6	1.1	Railroads, Line-haul
42	***6***	***1.1***	***Trucking & Warehousing***
4210	1	0.2	Trucking & Courier Service
4213	4	0.7	Trucking
4220	1	0.2	Public Warehousing
44	***1***	***0.2***	***Water Transportation***
4400	1	0.2	Water Transportation
45	***10***	***1.9***	***Air Transportation***
4512	8	1.5	Air Transportation, Scheduled
4513	2	0.4	Air Courier Services
47	***1***	***0.2***	***Transportation Services***
4700	1	0.2	Transportation Services
48	***9***	***1.7***	***Communications***
4813	9	1.7	Telephone Communications
49	***24***	***4.4***	***Electric, Gas & Sanitary***
4911	14	2.6	Electric Services
4922	1	0.2	Natural Gas Transmission
4923	2	0.4	Gas Transmission & Distribution
4931	6	1.1	Electric & Other Services
4953	1	0.2	Refuse Systems
50	***6***	***1.1***	***Durable Goods***
5000	1	0.2	Wholesale Trade-Durable Goods
5013	1	0.2	Motor Vehicle Supplies
5051	2	0.4	Metals Service Centers
5065	1	0.2	Electronic Parts & Equipment
5072	1	0.2	Hardware
51	***13***	***2.4***	***Nondurable Goods***
5110	1	0.2	Paper & Paper Products
5122	5	0.9	Drugs, Proprietaries, & Sundries
5140	3	0.6	Groceries & Related Products
5141	3	0.6	Groceries, General Line

Appendix C
(continued)

SIC	FREQUENCY	PERCENT	DESCRIPTION
5172	1	0.2	Petroleum Products
52	***1***	***0.2***	***Building Materials***
5211	1	0.2	Lumber & Building Materials
53	***16***	***2.9***	***General Merchandise Stores***
5311	8	1.5	Department Stores
5331	6	1.1	Variety Stores
5399	2	0.4	Misc. General Merchandise Stores
54	***13***	***2.4***	***Food Stores***
5411	5	0.9	Grocery Stores
5412	1	0.2	Convenience Stores
56	***3***	***0.6***	***Apparel & Accessories***
5600	1	0.2	Apparel & Accessory Stores
5651	1	0.2	Family Clothing Stores
5661	1	0.2	Shoe Stores
58	***2***	***0.4***	***Eating & Drinking Places***
5812	2	0.4	Eating Places
59	***1***	***0.2***	***Miscellaneous Retail***
5912	1	0.2	Drug Stores
60	***65***	***11.9***	***Depository Institutions***
6021	38	7.1	National Commercial Banks
6022	14	2.6	State Commercial Banks
6025	1	0.2	
6033	1	0.2	
6035	8	1.5	Federal Savings Institutions
6036	3	0.6	Savings Institutions
61	***7***	***1/3***	***Nondepository Institutions***
6122	2	0.4	Nondepository Institutions
6141	1	0.2	Personal Credit Institutions
6199	4	0.7	Finance-Services
62	***7***	***1.3***	***Security & Commodity Brokers***
6211	7	1.3	Securities Brokers & Dealers
63	***15***	***2.8***	***Insurance Carriers***
6324	1	0.2	Hospital & Medical Service Plans
6331	13	2.4	Fire, Marine & Casualty Insurance
6351	1	0.2	Surety Insurance
64	***2***	***0.4***	***Insurance Agents***
6411	2	0.4	Insurance Agents
67	***1***	***0.2***	***Holding & Investment Offices***
6799	1	0.2	Investors

Appendix C
(continued)

SIC	FREQUENCY	PERCENT	DESCRIPTION
70	***1***	***0.2***	***Hotels/Lodging Places***
7011	1	0.2	Hotels & Motels
73	***7***	***1.3***	***Business Services***
7311	1	0.2	Advertising Agencies
7363	2	0.4	Help Supply Services
7373	1	0.2	Computer System Design
7381	2	0.4	Detective & Armored Car
7384	1	0.2	Photofinishing Laboratories
75	***1***	***0.2***	***Auto Repair***
7510	1	0.2	Automotive Rentals

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