
Beyond Pay for Performance: A Panel Study of the Determinants of CEO Compensation

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INTRODUCTION

The linkage between CEO compensation and firm level variables such as size and performance has been very extensively addressed (Antle & Smith, 1986; Ciscel & Carroll, 1980; Coughlan & Schmidt, 1985; Jensen & Murphy, 1990; Lambert, Larcker, & Weigelt, 1991; Main, 1991; Murphy, 1985; Tosi & Gomez-Mejia, 1994; Veliyath, 1999). Management researchers have also explored individual level variables such as the CEO's age, tenure, functional background, stock ownership and motivation (see Finkelstein & Hambrick, 1988; Fisher & Govindrajana, 1992; Leonard, 1990; O'Reilly, Main, & Crystal, 1988; Rajagopalan & Finkelstein, 1992; Rajagopalan & Prescott, 1990; Veliyath, Ferris, & Ramaswamy, 1994), the firm's strategic profile (Balkin & Gomez-Mejia, 1990; Gomez-Mejia, 1992; Veliyath, et. al., 1994), and the managerial labor market as important variables that influence CEO compensation (Finkelstein & Hambrick, 1988; Fisher & Govindrajana, 1992; Leonard, 1990; Veliyath & Bishop, 1995). The influences of *individual* corporate governance and incentive mechanisms on CEO compensation (Boyd, 1994; Conyon & Peck, 1998; Gomez-Mejia, Tosi, & Hinkin, 1987; Hambrick & Finkelstein, 1995; Kerr & Kren, 1992; O'Reilly, Main and Crystal, 1988; Tosi & Gomez-Mejia, 1994; Westphal & Zajac, 1994) have also been investigated.

However, the level of compensation incentives is likely to be determined by the *overall* mix of governance and incentive variables operating at the firm-level (Agrawal & Knoeber, 1996; Cordeiro, 1993; Rediker & Seth, 1995). This argument dictates a *holistic approach* that considers the impact of all these gover-

nance and incentive variables *simultaneously* on CEO compensation — providing a clearer picture of their true relative impact on CEO compensation levels. The piece-meal approaches adopted in most of the surveyed literature, are prone to an omitted variables problem. Specifically, variables that are included in the model may pick up some of the variance that is really attributable to the variables that are not included in the model, leading to incorrect assumptions about their importance and significance.

Past research on governance and incentive mechanisms' impact on CEO compensation has also been limited in relying on cross-sectional findings. We employ a longitudinal analysis to get more robust parameter estimates. Using a pooled cross-sectional, time-series regression approach, this study investigates the effects of selected corporate governance mechanisms, ownership structure, firm risk, and strategic variables (viz. corporate diversification) on CEO cash compensation (i.e., salary + bonus), and separately, total compensation (i.e., the sum of all the compensation directly received by the CEO) in a panel of 222 U.S. firms over the 1992-'95 period, while controlling for the impacts of CEO tenure, firm size, performance, risk and diversification. We begin by developing our theoretical model, and then describe our methods, present our results, and conclude with a summary of our findings.

THEORY DEVELOPMENT

CEO Compensation

Salary is related to the magnitude of the responsibility, risk, and effort shouldered by the CEO as a func-

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tion of the firm's scale, complexity, and risk of the firm's operations. These ideas are rooted in the 'marginal productivity' argument (Gomez-Mejia, 1994). Agency theorists (e.g., Jensen & Meckling, 1976) would argue that salary by itself does not necessarily promote decision-making that enhances value for shareholders. They maintain that performance-contingent forms of the incentive contract enable a more equitable sharing of risks between the principals and agents (e.g. Holmstrom, 1979; Jensen & Meckling, 1976). However, cash bonuses promote a largely short-term orientation since they focus on year-to-year accounting returns, and need to be supplemented with other longer-term compensation components like long-term incentive plans that reward managers for meeting long-term performance targets, stock grants, and stock options. These forms of long-term incentive compensation are more helpful in enhancing long-term shareholder value, by inducing risk-averse managers concerned with job and reputation loss to take on risky projects with the potential to boost shareholder returns. When added to cash compensation, these compensation components yield our measure of *total compensation*.

The next section reviews independent (predictor) variables that affect CEO compensation, such as the firm's governance and incentive structures and firm-specific diversification and risk variables.

Governance and Incentive Mechanisms

Corporate governance mechanisms such as board composition (% of outside directors), the job split between CEO and chairman (i.e., CEO duality), the proportion of internal director shareholding, and the relative concentration of external shareholding have received increased attention in the literature (Boyd, 1994; Conyon & Peck, 1998; Daily & Dalton, 1997; Finkelstein & Hambrick, 1996; Gomez-Mejia, Tosi, & Hinkin, 1992). The study of these mechanisms is rooted in the 'managerialism', 'political' and 'agency' perspectives (Gomez-Mejia, 1994; Finkelstein & Hambrick, 1996), and is important because they are argued to influence the processes by which corporate boards set CEO compensation (Boyd, 1994; Conyon & Peck, 1998; Crystal, 1991; Mangel and Singh, 1993).

Board composition (notably the proportion of outside directors on the board, and the unity of the CEO-Chair position) has been hypothesized to impact board effectiveness (Boyd, 1994; Conyon & Peck, 1998; Crystal, 1991; Daily & Schwenk, 1996; Lippert & Moore, 1994; Mallette and Hogler, 1995; Mangel and Singh, 1993). There ought to be an arms length relationship between the board and the CEO for the board to properly perform its oversight function over corporate managers. A key function in this regard is the setting of CEO compensation.

An increased proportion of outside directors (who

arguably have more of an arms length relationship with the firm and are therefore presumably less subject to management influence) increases the board's capacity to be properly objective in monitoring managers (Fama, 1980) and, in the extreme case, replacing poorly performing CEOs (Boeker, 1992; Daily & Schwenk, 1996). This objectivity increases the likelihood that CEO compensation levels will be tempered and brought into line with labor market and industry norms (Beatty and Zajac, 1994; Mangel & Singh, 1993). By contrast, boards with a larger proportion of inside directors are more susceptible to being hand in glove with the CEO and the top management team. This increases the chance that the CEO's pay levels will be disproportionately high, and out-of-line with firm performance as well as with external labor market norms (Boyd, 1994). Based on the discussion above, we frame the following hypothesis:

- H1a: The proportion of outside directors will be negatively related to CEO compensation.

CEO Duality (i.e., the situation where the same individual holds both CEO and Chair titles) is another important corporate governance variable that has been widely researched as an indicator of CEO influence over the board (Boyd, 1995; Conyon & Peck, 1998; Daily & Schwenk, 1996; Finkelstein, 1992; Rediker & Seth, 1995). If the two roles are split between two individuals, the Chair can be expected to exercise greater diligence and weigh equity considerations in the setting of levels of CEO pay. On the other hand, a CEO who is also the Chair of the Board of Directors will have more influence on the board's pay determination process since he/she is in a better position to appoint sympathetic directors to the board and to shape the information that the board reviews (e.g. Boyd, 1994; Crystal, 1991). Such undue political influence over the board (e.g., see Finkelstein & Hambrick, 1996, and Gomez-Mejia, 1994), is likely to cause the overall levels of compensation for the CEO to be ratcheted up. Consequently, we would expect a positive impact on the CEO's pay if the CEO concurrently serves as the Chair of the Board.

- H1b: CEO duality will be positively related to CEO compensation.

Inside Ownership Incentives

Inside owners are managers (especially the CEO) and directors who own the firm's stock and are therefore presumed to have a stronger incentive in taking actions that boost firm stock value (Jensen and Meckling, 1976). Thus, inside shareholdings enhance monitoring efficiency (Lippert & Moore, 1994) since inside owners have incentives to make sure that cash

is invested in valuable (i.e. positive NPV) projects to boost the stock value rather than being paid out to managers as on-the-job perquisites or used in empire building through wasteful growth and acquisition activity. Inside stockholdings are likely to act as substitutes for CEO compensation, since less incentive compensation is needed if the CEO already has incentives to maximize stock value by virtue of his or her stockholdings in the firm. Based on this argument, we offer the following hypothesis.

- H2: Inside director shareholding will be negatively related to CEO compensation.

Institutional Block Stockholders

Greater stockholdings by large outside block-holders (i.e. those shareholders owning more than 5% of the outstanding shares and thus constituting a takeover threat) such as individual investors, or institutional investors (such as pension funds, mutual funds, investment firms) are likely to negatively impact CEO compensation (Mangel & Singh, 1993; Werner & Tosi, 1995). Since they have a larger investment at risk, these stockholders have a greater incentive and also the financial and legal ability to discipline inefficient managers and directors (Fama and Jensen, 1983; Daily & Schwenk, 1996; Davis and Thompson, 1994).

Beatty and Zajac (1994), Mehran (1995), Zajac and Westphal (1994) have documented the efficacy of outside block shareholders in aligning the *mix* of CEO compensation with stockholder incentives. Since our sample of institutional shareholders was pressure-indeterminate (i.e., their relationships with the firms they invested in could not be identified), we assume our sample to be pressure-resistant and argue for a negative effect on CEO compensation (David, Kochhar & Levitas, 1998). Based on the preceding arguments and evidence, we would expect that the greater the number of blockholders controlling more than 5% of a company's outstanding shares the greater the pressure on corporate boards to become more vigilant when setting CEO compensation levels. These institutions would exert a downward pressure on the *cash* and *total* components of CEO compensation.

- H3: Greater numbers of blockholders will be negatively related to CEO compensation.

Firm-specific Strategic Variables

Firm diversification

Various aspects of the firm's strategic posture have been posited to impact managerial compensation (Balkin & Gomez-Mejia, 1990; Barkema & Gomez-Mejia, 1998; Gomez-Mejia, 1992; Kerr, 1985; Rajagopalan & Finkelstein, 1992; Rajagopalan &

Prescott, 1990; Veliyath, et. al., 1994). We expect total diversification to be positively related to CEO compensation, since the firm's overall diversification increases the complexity of the CEO's job (Finkelstein & Hambrick, 1989). Operating in different industries requires an understanding of several product markets and determining resource allocation priorities (Rose & Shepard, 1997). Second, multiple product lines entails understanding different customers and different competitors (*ibid.*), and dealing with the varied cyclicity inherent in different product lines (e.g. Rumelt, 1974) and different competitive strategies. These factors compound the problems of resource allocation, coordination and control, leading to added complexity. As a result, greater effort needs to be expended by the CEO. As the hypothesis indicates, this warrants increased compensation for the CEO as a reward for managing this added complexity.

- H4: Total diversification will be positively related to CEO compensation.

Firm Risk

The quest for stockholder value requires that the CEO and the top management team take risks. These risks carry the possibility of unexpectedly low performance outcomes (Miller & Bromiley, 1990) that can hurt CEO compensation (due to the compensation-performance linkage), reduce the value of the CEO's stockholdings and increase the risk of the CEO's being fired. Some of the risk that the CEO is exposed to is inherent in the industry and market environment (e.g. energy price hikes, new government regulation), and cannot be diversified away by the stockholders. This risk is termed systematic risk. By contrast, other risks are unique to the firm (e.g. the risks of strikes, lawsuits) and can be diversified away by stockholders who hold well-diversified portfolios. This risk is termed unsystematic risk. The combination of systematic and unsystematic risk gives total risk.

Executives also have their human capital invested in the firm. The value of this human capital asset is closely tied with the performance of the company. These managers risk losing jobs as well as earnings potential when their firm performs poorly. Therefore, the benefit of separating ownership and control (i.e., diversifying risk-bearing) is not available to executives, as they are to ordinary stockholders. Other organizational stakeholders, like bondholders and suppliers for example, are protected by debt covenants and market contracts, respectively.

All this makes executives particularly risk-averse concerning decisions which affect the company. We reason that, consistent with past research, boards will recognize that risk-averse CEOs and other top managers deserve to be compensated for the risk that they bear (Bartlett, Grant and Miller, 1992; Cordeiro, 1994).

This will also help ensure that ill-diversified managers work on behalf of the shareholders by being more willing to take on risky projects that have potentially superior stock returns.

- H5: Higher total risk will have a positive impact on CEO compensation.

Control Variables

We also controlled for a number of other variables because they have been found to be important in previous research on the determinants of CEO compensation.

Firm Size

One of the most important influences on compensation postulated in the literature is firm size. CEOs of larger firms have increased responsibility and must put forth more effort, *ceteris paribus*. It is not surprising that the relationship between firm size and CEO compensation is one of the most solidly documented findings in the literature (Ciscel & Carroll, 1980; Jensen and Murphy, 1990; Lambert, Larcker, and Weigelt, 1991; Rajagopalan & Prescott, 1990; Veliyath & Bishop, 1995). In keeping with these earlier findings, our study also controls for firm size. We expect firm size to positively impact CEO compensation.

Firm Performance

We expect firm performance to positively impact CEO compensation. There is ample theoretical and empirical support in the literature for this argument since pay-for-performance rewards to managers provide incentives for managers to initiate strategies that boost future stock performance (Coughlan & Schmidt, 1985; Jensen & Murphy, 1990; Murphy, 1985; Veliyath, 1999). We expect the positive relationship between performance and compensation to hold for both accounting performance (i.e., ROA) as well as stock market returns, given the increasing body of research that argues that they capture different facets of performance that the board takes into account when it determines CEO compensation (e.g. Gibbons and Murphy, 1990).

CEO Tenure

CEO compensation is also impacted by CEO tenure (Fisher & Govindrajan, 1992; Gerhart & Milkovich, 1990; Hill & Phan, 1991; Leonard, 1990; Lippert & Moore, 1994; Mangel & Singh, 1993; Rajagopalan & Prescott, 1990; Winkler & Duncan, 1991; Zajac, 1990). Most authors predict a positive impact of CEO tenure on CEO pay, although Hambrick and Finkelstein (1995) propose a curvilinear relationship in externally controlled firms. Following the bulk of the earlier research, we initially expect a positive effect of CEO tenure on compensation, because the CEO who has been on the job longer should have succeeded in establishing his

credibility and influence with the board (Hill & Phan, 1991). In addition he has had the time to enhance the value of his human capital, making his services more expensive and time to build coalitions and a power base. All these factors predicate that long-tenured CEOs should be able to increase their compensation.

However, beyond a certain point, the CEO may begin to outlive his usefulness to the organization. This occurs because a long-tenured CEO may often become rigid and limited in his strategic vision. In today's fast-paced, constantly changing industry environments, innovative, outside-the-box approaches may often be necessary to revitalize and turnaround a flagging company. Consequently, an increasing number of firms are opting to bring in outsiders at the top. Thus, once a CEO has been in the job for so long that he can no longer provide radical, breakaway solutions, his efficacy begins to decline. Correspondingly, the rates of increase in his compensation also begin to decline with further increases in tenure. This is consistent with Hambrick & Finkelstein's (1995) arguments for a curvilinear (i.e., inverted U-form) relationship of tenure with compensation. We expect to find such a curvilinear relationship.

METHODS

Sample

The sample consisted of 222 Fortune 1000 firms for which CEO compensation data for each of the years 1992-95 were compiled by the compensation firm of William H. Mercer Inc., and reported in the Wall Street Journal's annual report on executive compensation (Gaver & Gaver, 1995 provide a detailed description of the sample). The firms represented eight broad industry sectors covering basic metals, cyclicals, energy, financial, industrial, non-cyclicals, technology and utilities. Most industries are represented, and in general, the distribution of industries in the sample is representative of the firms in the COMPUSTAT database.

Measures

Information was available on components of CEO compensation as *cash compensation* (including separate figures for *salary*, *bonus*), and *total compensation* from the Mercer compensation survey databases. *Total compensation* is the sum of all compensation components including stock option valued using the Binomial Option Pricing model. Logarithmic conversion of the compensation variables was undertaken to ensure that they met the requirements for normality.

Firm size was measured by sales for each year obtained from SEC Disclosure data. A log transformation was also undertaken for the sales variable to ensure normality. The firm's *market performance* was measured by annual stock returns. Daily stock returns were obtained for each firm (R_{it}) from Standard & Poor's COMPUSTAT database. We used the variance of the

total returns over the period as the measure of firm **total risk**. Both market performance and total risk were calculated separately for each firm for each year.

Accounting performance was measured using ROA (i.e. return on assets) and was also obtained from Standard & Poor's COMPUSTAT. The total number of four digit SIC codes the firm operated in was taken as a measure of **total diversification** (Hoskisson, Hitt, and Moesel, 1993), and was coded from Dun & Bradstreet's Million Dollar Directory (for each of the years 1992-'95). Dun & Bradstreet's Directory also provided information on the total number of directors and the number of outside directors (for each year of the study). These enabled the **outside director ratio** to be computed. In addition, information on whether the CEO was also the Chair of the Board was noted (i.e., **CEO duality**). This variable was coded as 0 (if the two roles were split between two individuals) and as 1 (if the posts were held by the same person).

Shareholding information for the various constituents was obtained from the publicly available proxy statements of these firms for each year. The proxies also report on the **CEO's tenure**, and in most cases on the composition of the respective boards. **Inside ownership** was represented by the total percentage of stock held by inside directors. The **outside blockholder pressure** was represented by the number of companies individually holding more than 5% of the stock. Table 1 presents the descriptive statistics and intercorrelations of the major variables in the study.

ANALYSIS AND RESULTS

The hypotheses were tested using pooled time-series cross-sectional (TSCSREG) regression analysis. This procedure deals with data sets that consist of time series observations (i.e., in our case the 4 years from 1992-'95) on each of several cross-sectional units (i.e., in our case, 222 firms). Our pooled time-series cross-sectional regression (implemented using the TSCSREG function in SAS) provides a significant advance over earlier work in this area, which has primarily been cross-sectional (Bowen & Wiersema, 1999). The general model was of the form:

CEO Compensation = f [firm size, stock performance, accounting performance, diversification, CEO tenure, CEO tenure², CEO duality, outside directorratio, inside ownership, outside blockholder pressure, total risk]

The results of the regression analyses are given in Table 2. The regressions were repeated separately for the logarithm of cash compensation and logarithm of total CEO compensation as dependent variables.

Contrary to expectations (H1a), the outside director ratio had a strong positive impact on the cash compensation component, but none on total compensa-

tion. Thus, H1a was not supported. One possible explanation for this finding is that finer-grained measures of director relationships with top management may be required than simple classification of directors into insider and outsider categories. The proposed impact of CEO duality (H1b) was not supported for either pay formulation. These results do not seem to provide *prima facie* support for the proposals that advocate the formal separation of the jobs of CEO and Chairman (Daily & Dalton, 1997).

Hypothesis 2 was supported for the cash compensation formulation. Inside director ownership had a negative impact on CEO cash compensation (as proposed in H2), reflecting the possibility of 'substitution effects' between cash compensation and incentives furnished via stock ownership. This substitution did not appear to be present for total compensation (which includes other measures of stock-based compensation as part of its formulation).

As expected, outside pressure measured as the number of blockholders holding more than 5% of the outstanding stock, had a negative effect on cash compensation, providing some support to H3. However, this variable did not affect total pay. Perhaps, these institutional shareholders encouraged the CEO to accept a greater proportion of his compensation as incentive pay (in the form of stock and stock options). This would diminish cash compensation while at the same time increasing the incentive pay component of total compensation.

As proposed in H4, the level of firm diversification increased the cash component of CEO pay. However, there was no corresponding effect on Total Pay. Diversification increases the magnitude and scope of the CEO's responsibilities through increasing the firm's size. Therefore, the observed positive effects on cash compensation resemble the pay increases that result from increased firm size, and in keeping with the effects proposed by Rose & Shepard (1997). Overall, the findings are consistent with our reasoning that boards compensate CEOs for the additional complexity and responsibility that comes with managing diversified firms.

As hypothesized in H5, total risk positively influenced CEO cash compensation. In addition, it also positively impacted total compensation. This suggests that CEOs were compensated across the board for bearing the risk inherent in industry and market environments that is largely beyond their control.

Regarding the control variables, the observed positive influence of firm size, accounting and market performance controls on both the measures of CEO compensation component was as expected, and confirms the findings of numerous earlier studies. Also, as predicted, CEO tenure had an inverted-U relationship with both of measures of CEO pay. While the tenure term was positive, the square of the tenure term was

TABLE 1
Descriptive Statistics & Correlations

Variables ^a	Mean	Std Dev.	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
(1) Total Pay (Log)	7.94	0.83	1											
(2) Cash Compensation (Log)	7.14	0.59	0.70 (***)	1										
(3) Market (Stock) Return	16.62	24.29	0.14 (***)	0.14 (***)	1									
(4) Return on Assets	4.50	5.89	0.13 (***)	0.08 (*)	0.02	1								
(5) Sales (Log)	13.84	3.09	0.18 (***)	0.23 (***)	0.01	0.22 (***)	1							
(6) Total Diversification	5.29	1.35	0.17 (***)	0.14 (***)	-0.05	-0.10 (**)	0.05	1						
(7) CEO Duality	0.84	0.36	0.06 (#)	0.07 (*)	-0.05	0.02	0.004	0.13 (***)	1					
(8) Outside Director Ratio	0.77	0.11	0.13 (***)	0.10 (**)	0.02	-0.11 (***)	0.003	0.02	0.17 (***)	1				
(9) Inside Ownership(%)	1.74	3.98	-0.22 (***)	-0.20 (***)	0.04	-0.02	-0.02	-0.12 (***)	-0.24 (***)	-0.26 (***)	1			
(10) No. of Outside Blockholders	1.23	1.18	-0.16 (***)	-0.26 (***)	-0.02	-0.12 (***)	-0.10 (**)	-0.09 (**)	-0.04 (***)	0.13 (***)	0.03	1		
(11) Total Risk	29.03	17.84	0.06 (#)	0.09 (**)	0.08 (*)	-0.011	-0.10 (**)	-0.04	0.03	-0.00	0.04	0.03	1	
(12) CEO Tenure	6.44	4.85	-0.11 (***)	-0.10 (**)	-0.00	0.08 (*)	0.16 (***)	-0.03	0.01	-0.08 (*)	0.23 (***)	-0.06 (#)	-0.05	1
(13) Tenure Squared	64.92	124.47	-0.09 (**)	-0.12 (***)	0.00	0.06 (#)	0.08 (*)	-0.01	-0.11 (**)	-0.06 (#)	0.22 (***)	-0.07 (*)	-0.05	0.90 (***)

^a@ N varied from 886 to 888

Significance Levels (provided in parentheses underneath):

#p ≤ 0.1

*p ≤ 0.05

**p ≤ 0.01

*** p ≤ 0.001

TABLE 2
Time Series Regression Results (n = 222; t= 4 years)

Regressor Variable	Model 1 Log of Cash Compensation (Salary + Bonus)	Model 2 Log of Total Compensation
Intercept	5.0040 (16.7233)***	7.0706 (2.4923)*
Firm Size (Log of Sales)	.1125 (7.18)***	.0057 (0.3353)
Firm Stock Performance (Market Return)	.0029 (3.776)***	.0028 (3.5690)***
Firm Accounting Return (ROA)	.006 (1.936)*	.0121 (3.3869)***
Diversification	.0404 (3.056)**	.1266 (0.5175)
CEO Tenure	.0037 (.4044)	.0477 (1.001)
Tenure Squared	-.0007 (-1.9434)#	-0.0024 (-1.7517)#
CEO Duality	-.0143 (-.2711)	-1.2541 (-1.3751)
Outside Director Ratio	.4778 (2.828)**	1.4072 (0.4466)
Inside Ownership (%)	-.0194 (-4.0796)***	-0.0548 (-0.6232)
No. of Institutions holding Blocks of shares	-.1004 (-6.4868)***	-.1277 (-0.4565)
Total Risk	.0038 (3.8049)***	.0035 (1.9529)#
R ² .	.2187	.0380

(N.B.) Cells contain parameter estimates and T-values.

Significance Levels: # indicates $p < .1$; * indicates $p < .10$;

** indicates $p < .01$;

*** indicates $p < .001$

negative, indicating an inverted U-form relationship. This supports our premise that increasing CEO tenure is good up to an optimal point, beyond which it begins to diminish the efficacy of the CEO.

DISCUSSION

This study provides preliminary evidence that governance and ownership variables, *along with* firm-level variables such as diversity and risk are useful supplements to firm size and performance measures that have been traditionally used to investigate the determinants of CEO compensation levels. These results complement those of other researchers who have, however, studied them in the context of the CEO compensation *mix* (e.g. Beatty and Zajac, 1994; Mehran, 1995; Zajac and Westphal, 1994) or whose analysis has been limited to cross-sectional analysis (Core, Holthausen and Larcker, 1999).

Further, although other researchers have looked piecemeal at various subsets of variables [e.g. governance (Boyd, 1994; Mangel and Singh, 1993), and diversification (Rose and Shepard, 1997)], many of them have not simultaneously looked at the full complement that we have combined in our model. We argue that our more complete model provides a valuable correction to models that rely exclusively on size and per-

formance measures or add newer variables piecemeal. The more limited models utilized in earlier studies may be subject to an omitted variables problem, resulting in biased model coefficients. For example, it is possible that if risk and performance are correlated, then the omission of the risk variable leads to the performance coefficient picking up some of the impact of risk in the OLS regression estimation. Similar problems arise due to the likely correlation between diversity and performance, diversity and size, diversity and risk, governance and performance, governance and size, as well as governance with ownership. All of these relationships have been explored in the literature. Following Rediker and Seth (1995), we argue that our approach provides a better feel for the individual and joint impacts of all these variables, especially governance variables, on CEO compensation, and provides regression coefficients less subject to bias due to an omitted variables problem. The value of these findings is further augmented by our large sample encompassing a longitudinal time frame, and our use of a much more complete measure of CEO compensation. Consequently, we believe that our results are more representative of contemporary compensation practices.

Much contemporary debate is concerned with the possibility that CEOs are being overcompensated, angering stockholder groups and employees who are often victims of downsizing. It also raises fundamental concerns about the ethics of current board compensation practices (Walters, Hardin, Schick, 1995). The limited explanatory power of studies that focus only on size and performance as predictors of CEO compensation has been one of the major culprits in fueling the perception of overpayment (e.g., Jensen & Murphy, 1990). Our more comprehensive compensation model may alleviate these concerns about overpayment by demonstrating that CEOs are legitimately being paid for factors beyond size and performance — factors such as risk, business complexity, and experience. It also points to the effective monitoring by outside investors on the stockholders' behalf. These results should help advance the CEO "overcompensation" debate beyond the narrow and incomplete focus on "pay for performance" that underlies so much of recent public sentiment and governmental policy initiatives. Finally, our results concerning the insignificant impact of CEO duality call into question the validity of some of the current proposals by shareholder groups and governmental agencies to enhance corporate governance and improve board oversight.

Limitations

Some limitations of this research need to be acknowledged. The sample is biased towards large firms (largely a function of the data set used) and future tests should focus on smaller firms. Moreover, following Main & Johnston (1993), and Conyon & Peck

(1998), researchers would also do well to expand the study by investigating the impact of board size, compensation committee composition and additional governance and firm-specific variables.

Like most previous compensation research, our study relies on a U.S. sample. Many factors such as the stronger tradition of empirical research among U.S. academics, the relatively easy access to compensation data, the widespread popularity of executive compensation statistics generated by the business press, published ranking of best and worst boards (and corresponding governance practices) in large U.S. public limited companies, and the activism of U.S. institutional investors in monitoring CEO compensation and their linkages to company performance, are responsible for the preponderance of U.S. based studies.

However for a finer-grained and generalizable theory of executive compensation to emerge, these findings obtained from U.S. samples need be extended, validated and replicated in an international context. The practice of compensating CEOs in stock is a practice that (unlike in the U.S.) is only now gaining currency in other countries. In addition, most of the prior work on executive compensation has relied on the lens of Agency Theory to examine the relationships. Alternative theoretical perspectives such as CEO power vis-à-vis the Board may also be useful in examining the

factors determining CEO and top management compensation in overseas settings (Barkema & Pennings, 1998; Veliyath & Ramaswamy, 2000). Some recent work has sought to explore executive compensation in international contexts such as the U.K. (Conyon & Murphy, 2000; Conyon & Peck, 1998), Canada (Zhou, 2000), India (Ramaswamy, Veliyath, Gomes, 2000) and Japan (Kaplan, 1994).

As more of such studies are conducted in international contexts that differ from the U.S. in terms of economic, cultural, regulatory and political milieus, the impact of these contextual variables on the relationships discovered in the U.S. will become more apparent. It may also transpire that Agency theoretic approaches are not as widely applicable in overseas contexts due to a preponderance of family owned and managed businesses, large sectors of publicly-owned enterprises (i.e., state-owned and controlled), shareholding in public companies by state-controlled or government agencies, and social and public policy constraints. Undoubtedly these developments will lead us to a richer and middle range theory of the determinants of executive compensation. Thus, replication of U.S. findings in overseas contexts and establishing their generalizability is a potentially fruitful area for future research to pursue.

NOTE

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REFERENCES

- Agrawal, A., & Knoeber, C.R. "Firm performance and mechanisms to control agency problems between managers and shareholders." *Journal of Financial and Quantitative Analysis*, 31: (Sept.1996): 377-397.
- Antle, R., & Smith, A. "An empirical investigation of the relative performance evaluation of corporate executives." *Journal of Accounting Research*, 24(1): (1986): 1-39.
- Balkin, D. B., & Gomez-Mejia, L. R. "Matching compensation and organizational strategies." *Strategic Management Journal*, 11: (1990): 153-169.
- Barkema, H. G., & Gomez-Mejia, L. R. "Managerial compensation and firm performance: A general research framework." *Academy of Management Journal*, 41(2): (1998): 135-145.
- Barkema, H.G., & Pennings, J.M. "Top management pay: Impact of overt and covert power." *Organization Studies*, 19(6): (1998): 975-1003.
- Bartlett, R.L., Grant, J.H., and Miller, T. I. "The earnings of top executives: Compensating differentials for risky business." *Quarterly Review of Economics and Finance*, 32(1): (1992): 38-49.
- Beatty, R.P. & Zajac, E.J. "Managerial incentives, monitoring, and risk bearing: A study of executive compensation, ownership, and board structure in initial public offerings." *Administrative Science Quarterly*, 39: (1994): 313-335.
- Boeker, W. "Power and managerial dismissal: Scapegoating at the top." *Administrative Science Quarterly*, 37: (1992): 400-421.
- Bowen H. P. & Wiersema, M.F. "Matching method to paradigm in strategy research: Limitations of cross-sectional analysis and some methodological alternatives." *Strategic Management Journal*, 20: (1999): 625-636.
- Boyd, B.K. "CEO duality and firm performance: A contingency model." *Strategic Management Journal*, 16: (1995): 301-312.

- Boyd, B. K. "Board control and CEO compensation." *Strategic Management Journal*, 15: (1994): 335-344.
- Ciscel, D. H., & Carroll, T. M. "The determinants of executive salaries: An econometric survey." *The Review of Economics and Statistics*, 62(1): (1980): 7-13.
- Conyon, M.J., & Murphy, K.J. "The prince and the pauper? CEO pay in the United States and United Kingdom." *The Economic Journal*, 110: (2000): F640-F671.
- Conyon, M. J., & Peck, S. I. "Board control, remuneration committees, and top management compensation." *Academy of Management Journal*, 41(2): (1998):146-157.
- Cordeiro, J. "Role of director interlocks, governance and management incentives in explaining stockholder gains from joint ventures." *1993 Best Papers of the Academy of Management*.
- Cordeiro, J. "A study of the relationships between chief executive officer compensation, risk, and diversification strategy." *Unpublished doctoral dissertation, SUNY at Buffalo*. (1994).
- Core, J.E., Holthausen, R.W., & Larcker, D.F. "Corporate governance, chief executive officer compensation, and firm performance." *Journal of Financial Economics*, 51: (1999): 371-406.
- Coughlan, A. T., & Schmidt, R. M. "Executive compensation, management turnover, and firm performance." *Journal of Accounting and Economics*, 7: (1985):43-66.
- Crystal, G. S. "Why CEO compensation is so high." *California Management Review*, 34(1): (1991): 9-29.
- Daily C.M. & Dalton D.R. "CEO and board chair roles held jointly or separately: Much ado about nothing?" *Academy of Management Executive*, 11(3): (1997): 11-20.
- Daily C.M. & Schwenk C. "Chief executive officers, top management teams, and boards of directors: congruent or countervailing forces?" *Journal of Management*, 22(2): (1996):185-208.
- David, P., Kochhar R., & Levitas E. "The effect of institutional investors on the level and mix of CEO compensation." *Academy of Management Journal*, 41(2): (1998): 200-208.
- Davis, G.F., & Thompson, T.A., "A social movement perspective on corporate control." *Administrative Science Quarterly*, 39: (1994):141-173.
- Fama, E. "Agency problems and the theory of the firm." *Journal of Political Economy*, 88: (1980): 301-325.
- Fama, E., & Jensen, M.C. "Separation of ownership and control." *Journal of Law and Economics*, 26: (1983): 301-325.
- Finkelstein, S. "Power in top management teams: Dimensions, measurement, and validation." *Academy of Management Journal*, 35: (1992): 505-538.
- Finkelstein, S., & Hambrick, D.C. *Strategic Leadership: Top Executives and Their Effects on Organizations*. St. Paul, MN: West Publishing. 1996.
- Finkelstein, S., & Hambrick, D.C. "Chief executive compensation: A study of the intersection of markets and political processes." *Strategic Management Journal*, 10(2): (1989):121-134.
- Finkelstein, S., & Hambrick, D. C. "Chief executive compensation: A synthesis and reconciliation." *Strategic Management Journal*, 9: (1988): 543-558.
- Fisher, J., & Govindarajan, V. "Profit center manager compensation: An examination of market, political and human capital factors." *Strategic Management Journal*, 13: (1992): 205-217.
- Gaver, J.J., & Gaver, K.M. "Compensation policy and the investment opportunity set." *Financial Management*, 24(1): (1995): 19-32.
- Gerhart, B., & Milkovich, G. T. "Organizational differences in managerial compensation and financial performance." *Academy of Management Journal*, 33: (1990): 663-691.
- Gibbons, R., & Murphy, K.M. "Relative performance evaluation for chief executive officers." *Industrial and Labor Relations Review*, 43: (Special Issue, 1990): 30s-51s.
- Gomez-Mejia, L. R. "Executive compensation: A reassessment and a future research agenda." *Research in Personnel and Human Resources Management*, JAI Press. 12: (1994):161-222.
- Gomez-Mejia, L. R. "Structure and process of diversification, compensation strategy, and firm performance." *Strategic Management Journal*, 13: (1992):381-397.
- Gomez-Mejia, L. R., Tosi, H., & Hinkin, T. "Managerial control, performance, and executive compensation." *Academy of Management Journal*, 30(1): (1992): 51-70.
- Hambrick, D. C., & Finkelstein, S. "The effects of ownership structure on conditions at the top: The case of CEO pay raises." *Strategic Management Journal*, 16: (1995):175-193.
- Hill, C.W.L., & Phan, P. "CEO tenure as a determinant of CEO pay." *Academy of Management Journal*, 34(3): (1991): 707-717.

- Hoskisson, R., Hitt, M. & Moesel, D. "Construct validity of objective entropy and SIC count based categorical measures of diversification strategy." *Strategic Management Journal*, 14(3): (1993): 215-235.
- Holmstrom, B. "Moral hazard and observability." *Bell Journal of Economics*, 10: (1979):74-91.
- Jensen, M. C., & Murphy, K. J. "Performance pay and top-management incentives." *Journal of Political Economy*, 98(2): (1990): 225-264.
- Jensen, M.C., & Meckling, W. H. "Theory of the firm: Managerial behavior, agency costs, and ownership structure." *Journal of Financial Economics*, 3: (1976): 305-350.
- Kaplan, S. "Top executive rewards and firm performance: A comparison of Japan and the U.S." *Journal of Political Economy*, 102(3): (1994): 510-546.
- Kerr, J. L., & Kren, L. "Effect of relative decision monitoring on chief executive compensation." *Academy of Management Journal*, 35(2): (1992): 370-397.
- Kerr, J. L. "Diversification strategies and managerial rewards: An empirical study." *Academy of Management Journal*, 28(1): (1985): 155-179.
- Lambert, R. A., Larcker, D. F., & Weigelt, K. "How sensitive is executive compensation to organizational size?" *Strategic Management Journal*, 12: (1991): 395-402.
- Leonard, J. S. "Executive pay and firm performance." *Industrial and Labor Relations Review*, 43: (1990): 13S-29S.
- Lippert, R. L., & Moore, W. T. "Compensation contracts of chief executive officers: Determinants of pay-performance sensitivity." *The Journal of Financial Research*, 17(3): (1994): 321-332.
- Main, B.G. "Top executive pay and performance." *Managerial and Decision Economics*, 12: (1991): 219-229.
- Main, B.G., & Johnston. "Remuneration committees and corporate governance." *Accounting and Business Research*, 23: (1993): 351-362.
- Mallette, P., & Hogler, R. L. "Board composition, stock ownership and the exemption of directors from liability." *Journal of Management*, 21(5): (1995): 861-878.
- Mangel, R., & Singh, H. "Ownership structure, board relationships and CEO compensation in large U.S. corporations." *Accounting and Business Research*, 23(91A): (1993): 339-350.
- Mehran, H. "Executive compensation structure, ownership, and firm performance." *Journal of Financial Economics*, 38: (1995):163-184.
- Miller, K., & Bromiley, P. "Strategic risk and corporate performance: An analysis of alternative risk measures." *Academy of Management Journal*, 33: (1990): 756-779.
- Murphy, K. J. "Corporate performance and managerial remuneration: An empirical analysis." *Journal of Accounting and Economics*, 7: (1985):11-42.
- O' Reilly, C. A., Main, B. G., & Crystal, G. S. "CEO compensation as tournament and social comparison: A tale of two theories." *Administrative Science Quarterly*, 33: (1988): 257-274.
- Rajagopalan, N., & Finkelstein, S. "Effects of strategic orientation and environmental change on senior management reward systems." *Strategic Management Journal*, 13: (1992):127-142.
- Rajagopalan, N., Prescott, J. E. "Determinants of top management compensation: Explaining the impact of economic, behavioral, and strategic constructs and the moderating effects of industry." *Journal of Management*, 16(3): (1990): 515-538.
- Ramaswamy, K., Veliyath, R., & Gomes, L. "A study of the determinants of CEO compensation in India." *Management International Review*, 40(2): (2000): 167-191.
- Rediker, K. J., & Seth, A. "Boards of directors and substitution effects of alternative governance mechanisms." *Strategic Management Journal*, 16: (1995): 85-99.
- Rumelt, R. P. *Strategy, Structure, and Economic Performance*. Boston, MA: Harvard University Press. 1974.
- Rose, N. L., & Shepard, A. "Firm diversification and CEO compensation: Managerial ability or executive entrenchment?" *Rand Journal of Economics*, 28(3): (Autumn 1997): 489-514.
- Tosi, H. L. Jr., & Gomez-Mejia, L. R. "CEO compensation monitoring and firm performance." *Academy of Management Journal*, 37(4): (1994): 1002-1016.
- Veliyath, Rajaram. "Top management compensation and shareholder returns: Unravelling different models of the relationship." *Journal of Management Studies*, 36(1): (1999): 123-143.
- Veliyath, R., & Bishop, J. W. "Relationship between CEO compensation and firm performance: Empirical evidence of labor market norms." *The International Journal of Organizational Analysis*, 3(3): (1995): 268-283.

- Veliyath, R., & Ramaswamy K. "Social embeddedness, overt and covert power, and their effects on CEO pay: An empirical examination among family businesses in India." *Family Business Review*, 13(4): (2000): 293-311.
- Veliyath, R., Ferris, S. P., & Ramaswamy, K. "Business strategy and top management compensation: The mediating effects of employment risk, firm performance and size." *Journal of Business Research*, 30: (1994):149-159.
- Walters, B., Hardin, T., & Schick, J. "Top executive compensation: Equity or excess? Implications for regaining American competitiveness." *Journal of Business Ethics*, 14: (1995): 227-234.
- Werner, S., and Tosi, H. L. "Other people's money: The effects of ownership on compensation strategy and managerial pay." *Academy of Management Journal*, 38(6): (1995): 1672-1691.
- Westphal, J., & Zajac, E.J. "Substance and symbolism in CEOs' long-term incentive plans." *Administrative Science Quarterly*, 39: (1994): 367-390.
- Winkler, D.T., and Duncan, F. "The effect of contextual and individual attributes on the compensation of Chief Executive Officers." *The Journal of Business and Economic Studies*, 1(1): (1991): 17-32.
- Zajac, E.J. "CEO selection, succession, compensation and firm performance: A theoretical integration and empirical analysis." *Strategic Management Journal*, 11: (1990): 217-230.
- Zajac, E.J. & Westphal, J.D. "The costs and benefits of managerial incentives and monitoring in large U.S. corporations: When is more not better?" *Strategic Management Journal*, 15: (1994): 121-142.
- Zhou, X. "CEO pay, firm size, and corporate performance: Evidence from Canada." *Canadian Journal of Economics*, 33(1): (2000): 213-251.