

New Evidence On The Structuring Of CEO Incentive Pay Ratios

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Abstract

The model examines both determinants of CEO incentive pay ratios that are controllable by the CEO, and those that are less controllable, based on a sample of 316 Fortune 500 firms in 1992. Firm diversity, firm growth opportunities, outside blockholdings, and the number of analysts following the firm were positively related to CEO incentive compensation ratios, while firm unsystematic risk, CEO stockholdings, and industry regulation had a negative impact. Finally, industry-specific influences were evident on incentive compensation ratios.

Introduction

While the determinants and reasonableness of U.S. CEO compensation levels have been the topic of much debate (Gomez-Mejia, 1994; Gomez-Mejia & Wiseman, 1997), the business press as well as academic research has recently begun focusing more attention on the mix of CEO compensation (Finkelstein & Hambrick, 1988/1996), especially that part of total CEO compensation that is being increasingly linked to firm performance in the 1990s.

In the standard agency theory setting, where self-interested executives have access to private information, and where tasks are not completely programmable, this variable and risky (in the sense of performance-contingent) compensation (as opposed to fixed salary and other emoluments) is intended to provide incentives for CEOs to maximize stockholder wealth. Incentive compensation can lead CEOs to expend more effort and bear more risk on behalf of the

stock holders instead of pursuing their personal agendas (Jensen & Meckling, 1976; Stiglitz, 1974; Lazear, 1986).

While literally dozens of studies have investigated the determinants of CEO compensation levels, and the relationship between CEO compensation and performance (Murphy, 1999), there have been relatively few investigations of the determinants of the ratio of incentive compensation to total compensation. Building on the scant past research (Lewellen, Loderer & Martin, 1987), we develop and test a comprehensive model of the various contingencies that should influence the use of incentive pay in CEO compensation contracts (Finkelstein & Hambrick, 1996; Gomez-Mejia & Wiseman, 1997; Murphy, 1999). Our model investigates two sets of CEO incentive pay ratio determinants: (a) those factors such as firm diversification, risk, growth prospects, duality, stock ownership, and tenure that are more likely to be under the CEO's control, and, (b) those factors such as monitoring by institutional stockholders, security analysts, outside director representation and industry regula-

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tion that less likely to be under the CEO's control.

Our use of a more complete model of the determinants of the CEO incentive pay ratio is useful in two respects: (a) it reduces problems resulting from an omitted variables bias that may accompany less complete models, and, (b) it should provide for more explanatory power. We also believe our study has value in being the first to use CEO compensation data from the 1990s when investigating this phenomenon.

Lewellen, Loderer & Martin (1987) performed the seminal study of the determinants of incentive pay for the five-highest paid executives in 49 firms over the 1964-'73 decade. They identified the ratio of fixed to total assets, growth opportunities (as proxied by the market-to-book ratio), stock return variance, and financial leverage as positively related to both the level of CEO incentive pay, and separately, the level of pay for the other top five executives. Since then, researchers have separately made the case that industry-referents (Linsenmeyer-Hardman & Montgomery, 1992; Murdoch, 1991), monitoring (Beatty & Zajac, 1994; Boyd, 1994), and diversification as well as the extent of management discretion (Cordeiro, 1994) and CEO tenure (Hill & Phan, 1991) should determine the structure of CEO compensation. We draw on these insights to develop our theory and hypotheses.

Determinants of CEO Incentive Pay Ratio that are more controllable by the CEO

The following variables are taken to be more controllable by the CEO, for the reasons discussed below:

a. Firm Diversification

Diversification increases the complexity of the CEO's job (Finkelstein & Hambrick, 1989), since operating across multiple product-markets, types of customer segments, competitors, and technologies requires extra effort on the part of

the CEO and the top management team in order to coordinate the allocation of resources, control and regulate performance (Rose & Shepard, 1997), as well as the concomitant higher information processing demands (Henderson & Frederickson, 1996; Jones & Hill, 1988; Michel & Hambrick, 1992; Thompson, 1967). Henderson & Frederickson (1996) detected a positive relationship between the number of businesses managed and long-term compensation (which also included incentive compensation).

More importantly for our purposes, extensively diversified firms can provide better opportunities for income-smoothing and risk-avoidance on the part of top management (Agrawal & Mandelker, 1987; Amihud and Lev, 1981). It is reasonable therefore, that corporate boards may perceive the need for providing greater incentives for risk-taking (with associated higher stock returns) to CEOs of more diversified firms by providing a greater proportion of incentive compensation relative to total compensation. This argument is reinforced by the probability that boards of directors in more diversified firms are more likely to use objective financial controls in evaluation rather than more subjective strategic controls.

H1: CEO incentive pay ratio will be positively related to firm diversification.

Firm Risk

Financial economists decompose the total risk (variance of a firm's returns) into systematic and unsystematic risk. Unsystematic risk factors influence the variance in firm returns that is not related to broad market movements. These risk factors are firm-specific (e.g., lawsuits, strikes). On the other hand, systematic risk factors are due to broad economic forces and political events (e.g. oil shocks, tax hikes) that influence all firms in the economy.

Amihud & Lev (1981), Agrawal & Mandelker (1987) and Walsh & Seward (1990)

among others, argue that agents seek to reduce the risk of firm performance due to the noise that exists within the relation between the agents' actions and their resulting impact on firm performance. Following this reasoning, even though CEO decisions influence firm risk, the CEO of a firm that is operating in an inherently high risk environment may reasonably balk at accepting an incentive pay performance since firm performance is noisier and less controllable by the CEO. This is consistent with research by Beatty and Zajac (1994) demonstrating that under conditions of low risk, firm performance is more closely related to pay in the case of IPOs. Also, firms with higher unsystematic risk exacerbate management's tendency towards risk reduction. This tendency might be offset using incentive pay arrangements.

Some researchers have argued that systematic risk (which is inherent in the industry and market environment), is more beyond the CEO's and top management's control (Bartlett, Grant & Miller, 1992) than the unsystematic risk. This point notwithstanding, we maintain that CEOs are still able to influence the level of systematic risk at least to a degree through corporate acquisitions, restructuring, and borrowing decisions.

H2: CEO incentive pay ratio will be negatively related to firm risk.

CEO Stockholdings

CEO stockholdings have been theoretically linked to firm stock price by reducing potential agency conflicts between management and stockholders (Jensen & Meckling, 1976). Empirical surveys (for example, the 1996-97 Survey of Top Management Compensation by Watson Wyatt Worldwide) find that incentives provided by CEO stockholdings are correlated with higher returns to stockholders. Likewise, academic research (Griffith, 1999) finds that moderate CEO stockholdings are positively related to firm value. CEO stockholdings are also likely to be substitutes for CEO incentive compensation. A

board compensation committee will not find it necessary, *ceteris paribus*, to incorporate higher incentive compensation in the compensation contract, since the CEO's stockholdings provide motivation for the CEO to maximize stockholder wealth.

H3: CEO incentive pay will be negatively related to CEO stockholdings.

CEO Duality

CEO duality is the situation where the CEO is also the Chairman of the Board (Rechner & Dalton, 1991). Duality has been widely recognized as a situation where the CEO might possess undue influence over the board (Boyd, 1995; Finkelstein, 1992; Rediker & Seth, 1995), including influence on the board to elect him chair in the first place. From a 'managerial hegemony' perspective (Finkelstein & Hambrick, 1996), such circumstances might increase the CEO's political power and consequent ability to nominate favored allies on to the board's compensation committee. Thus, due to political power and maneuvering, the CEO may succeed in having his compensation ratcheted up. Moreover, the risk-averse CEO is likely to favor increases in the fixed component of the total compensation package since this component is more secure and less subject to risky performance. Consequently, the proportion of incentive compensation should decline.

H4: CEO incentive pay ratio will be negatively related to CEO duality.

CEO Tenure

CEO compensation level is positively impacted by CEO tenure (Gerhart & Milkovich, 1990; Hill & Phan, 1991; Leonard, 1990; Lippert & Moore, 1994; Mangel & Singh, 1993; Zajac, 1990). Greater tenure gives the CEO the ability to control both the flow of resources (Pfeffer & Salancik, 1978) and internal information (Hill & Phan, 1991), acquire greater exper-

tise and the opportunity to co-opt the board (Wade, et. al., 1990). Hambrick & Finkelstein (1995) found a curvilinear relationship in externally-controlled firms. We propose a positive impact of CEO tenure on incentive compensation for the following reasons. First, the fixed compensation component begins to reach a maximum threshold after the CEO has been in the job for some years because these are linked to labor market norms (e.g. industry referents) and not necessarily to CEO performance. In contrast, most observers are less likely to question the CEO's continuing to receive additional incentive compensation that is tied to firm performance. Second, as the CEO accrues more personal power with longer tenure, he is more able to influence board decisions on how the incentive pay component will in fact be linked to reasonable performance indicators. Thus, the CEO is less likely to be concerned that the board will use unreasonable performance measures when establishing the incentive pay-performance connection.

H5: CEO incentive pay ratio will be positively related to CEO tenure.

Firm Growth Opportunities

We argue that CEOs of firms with higher growth opportunities (corresponding to larger investment opportunity sets) are likely to have higher incentive compensation ratios for at least two reasons. First, a growing firm is less able, *ceteris paribus*, to afford fixed CEO pay. Second, the incentive compensation component helps ensure that the CEO does not pursue excessive growth at the expense of stockholder returns. Smith & Watts (1992) report that firms with more growth options have higher levels of CEO compensation, while Gaver & Gaver (1995) find that executives of growth firms receive a larger proportion of their compensation from long-term incentives, implying that the long-term incentive contracts reduce agency costs associated with manager-stockholder information asymmetries in growth firms.

H6: CEO incentive pay ratio will be positively related to firm growth opportunities.

Determinants of CEO Incentive Pay Ratio that are Less Controllable by the CEO

The following variables are taken to be less controllable by the CEO, for the reasons discussed below.

External Monitoring

The discussion so far has focused on agent risk-sharing and risk-avoidance behaviors in terms of their relation to incentive compensation contracts. However, there are other means to induce agents to serve the stockholders' interests. External monitoring by groups such as outside directors, large outside stockholders, and security analysts in particular have been suggested by researchers as potential substitutes for costly CEO incentive compensation (Agrawal & Knoeber, 1995; Cordeiro, 1993; Rediker & Seth, 1995). While the ultimate configuration is likely to be firm-specific and to depend on an assessment of marginal costs and benefits, we wish to stress that external monitoring is a potential substitute for CEO incentive compensation, and is thus, likely to reduce its use within the total compensation package. The following sections develop arguments for each of the key monitoring variables.

a. Outside Director Ratio

Outside directors are more vigilant monitors of top management on behalf of stockholders since they are less beholden to the CEO (Walsh & Seward, 1990), and have a greater incentive to monitor to protect their personal reputations as directors (Fama & Jensen, 1983). This incentive is especially pertinent in the 1990s era of board lawsuits and calls for board reform. Consistent with these insights, researchers have found that a higher proportion of outside directors lowers CEO total compensation levels (Beatty & Zajac, 1994; Boyd, 1994; Mangel & Singh, 1993). We

hypothesize that a similar effect will obtain in the case of CEO incentive pay ratios. A higher proportion of outside directors is more likely to oppose a risk-averse CEO's preference for lower incentive compensation and higher fixed compensation, especially if they believe that higher incentive compensation will benefit stockholders.

H7: CEO incentive pay ratio will be positively related to the proportion of outside directors on the board.

b. Outside Block-holdings

A very similar dynamic exists in the case of outside block-holders (i.e. outside investors with stock ownership of more than five percent of the company's outside stock). These outside block-holders have a bigger incentive in monitoring managers due to the size and relative illiquidity of their investments in the firm. Negative effects of outside block-holding on CEO pay levels have been previously documented (Mangel & Singh, 1993; Mehran, 1995; Werner & Tosi, 1995). We expect a positive impact on CEO incentive compensation ratio, since outside block-holders would prefer that the CEO accepts a greater proportion of his compensation package as incentive pay, so as to align his interests with theirs.

H8: CEO incentive pay ratio will be positively related to outside block shareholding.

c. Number of Security Analysts Monitoring the Firm

Security analysts make their living by keeping a close eye on management and their decisions. Thus, they reinforce the monitoring effects of outside directors and outside blockholders. Security analysts' forecasts have previously been found to influence CEO compensation (Riahi-Belkaoui & Picur, 1993) and their monitoring has been proposed to positively influence firm market value (Chung & Hoje, 1996). In addition, analysts' forecasts have been used as surrogate measures of board expectations of firm

performance (Puffer & Weintrop, 1991). We propose a positive impact of the number of analysts (following the firm) on CEO incentive compensation ratio since, given the potential for stockholder lawsuits brought by activist investors against the board, the board of directors is less likely to side with management against stockholders if it is being monitored more closely by outside security analysts.

H9: CEO incentive pay ratios will be positively related to the numbers of analysts tracking the firm.

In addition to firm-specific monitoring and CEO-specific variables such as tenure and duality, the industry context within which the firm operates is important to a board's incentive pay decision. Linsenmeyer-Hardman & Montgomery (1992) argue that "... the closer one looks at executive compensation, the more apparent it becomes that comparing CEO pay packets across industry lines is essentially a meaningless exercise (p. 30)." This is reasonable since industries differ with respect to their growth potential, environmental stability (which influences firm risk), entrenched practices, and resource availability. Moreover, compensation committees often look to the pay packages of other CEOs within the industry for referents in CEO compensation-setting. We seek to control for industry influences (e.g. Gibbons & Murphy, 1990; Murdoch, 1991) by using industry dummies in our empirical investigation. An additional important factor however, is the regulation of the industry.

Industry Regulation

Industry regulation has been suggested as a mechanism to control agency problems (Agrawal & Knoeber, 1996), and this would therefore be expected to have a bearing on CEO compensation practices. In regulated industries such as utilities, CEOs have much less discretion with respect to strategic, operational, and financial choices than in unregulated industries such as

software. Consequently, they may be expected to have both lower compensation levels and lower incentive ratios since the potential for information asymmetries and their attendant agency problems are reduced. While Agarwal & Knoeber (1995) note a negative impact of industry regulation on both CEO salary plus bonus as well as on total compensation levels, to date research has not investigated the impact of industry regulation on the CEO incentive pay ratio.

H10: CEO incentive pay ratios will be negatively related to industry regulation.

Methods

Sample

The sample consisted of 316 Fortune 1000 firms for which CEO compensation data for 1992 was compiled by the compensation firm of William H. Mercer Inc. This data has been used in prior research by Gaver & Gaver (1995). The firms represented eight broad industry sectors covering basic metals, cyclicals, energy, financial, industrial, non-cyclicals, technology and utilities. With the exception of agriculture, mining, real estate and insurance brokerages, all other industries are represented (Gaver & Gaver, 1995 provide additional details). In general, the distribution of industries in the sample is representative of the firms in the COMPUSTAT database. The median asset size was \$5668.4 million and the median return on market value for the sample was 3% in 1992 (Gaver & Gaver, 1995).

Measures

The Mercer compensation data contained information on different CEO compensation components such as *salary*, *bonus*, *incentive compensation*, *cash compensation*, and *total direct compensation*. *Incentive compensation* included the gains from the exercise of stock options or stock appreciation rights, the value of restricted stock grants, the value of performance and other long-term awards, the present value of current stock

option gains and bonuses. *Incentive pay ratio* was computed by dividing the above into the CEO's total compensation. We controlled for firm performance since CEOs of better-performing firms may be more likely to accept incentive compensation. *Firm performance* was measured by Jensen's Alpha (Jensen, 1969). This represents a risk-adjusted measure of market return based on the market model and is computed as:

$$R_{it} = \alpha_{it} + \beta_{it} \cdot R_{mt} + \text{error}$$

Daily stock returns for each firm (R_{it}) obtained from the Center for Research on Security Prices (CRSP) were regressed against the returns for the market as a whole (R_{mt}) for the previous two years, using the market model above. The same model provided *systematic risk* (i.e., the slope coefficient) and *unsystematic risk* (i.e., the standard deviation of the error term). *Accounting performance* was measured using average earnings-per-share data for the past five years, using data obtained from CD-Disclosure. *Firm Diversification* was the number of SIC codes the firm operated in (Hoskisson, Hitt, & Moesel, 1993), and coded from Dun & Bradstreet's Million Dollar Directory (1992). *Industry Regulation* was coded a '1' if the firm was in a regulated industry (viz. banking, finance, insurance, public utilities or railroads) and a '0' otherwise (see Agrawal & Knoeber, 1995/'96 for details). The firm's *growth opportunities* were operationalized as the expected five-year EPS growth forecast based on security analyst expectations. Data was obtained from the CD-Disclosure database.

Dun & Bradstreet's Directory (1992) provided information on the *total number of directors*, *outside directors*, *inside directors*, from which the *proportion of outside directors* was computed. This also indicated whether the CEO and the Chairman was the same person (i.e., *Duality*). The variable was coded '0' (if the two roles were split between two individuals) and '1' if the job was held by one person. *CEO Tenure* was obtained from the *Forbes* annual compensa-

Table 1
Descriptive Statistics

	<u>Mean</u>	<u>Standard Deviation</u>
Incentive Pay Ratio	.64	.25
Jensen's Alpha	-.056	-.047
Average earnings-per-share	1.21	2.48
Diversification	5.18	1.49
Systematic Risk	1.05	.38
Unsystematic Risk	.024	.020
Regulated Industry? (1=Yes; 0 = No)	.22	.42
CEO Percent Shareholdings (%)	1.06	3.36
Outside Director Ratio (%)	.77	.11
CEO Duality (1=Y; 0 = N)	.64	.37
Outside Blockholdings (%)	11.17	13.17
CEO Tenure (years)	5.85	5.35
Number of Analysts following firm	18.6	7.58
Analyst 5-year eps growth forecast (%)	11.19	3.70
Institutional Stockholdings(%)	59.08	14.15

tion survey for 1992, supplemented by information from corporate proxy statements.

Stockholding information was obtained from proxy statements for each firm. *CEO Stockholding* was the percentage of stock held by the CEO. *Outside Blockholdings* was the sum percentage of shares held by all the outside investors owning at least five percent of the firm's stock.

Analyses

Table 1 presents the descriptive statistics for major variables in the study. These results appear consistent with previous research in this area.

The hypotheses were tested using (OLS) multiple regression analyses. The general model was of the form:

CEO Incentive Pay ratio = *f* (*firm diversification, firm unsystematic risk, firm systematic risk, CEO duality, CEO tenure, firm growth opportunities, outside director ratio, outside blockholdings, number of security analysts following the firm, regulation dummy, industry effect*

dummies, stock performance, accounting performance, industry dummies, error)

The results of the regression analyses appear in Table 2. Variance inflation factors (VIF) of less than two indicated an absence of multicollinearity among the independent variables. We used White's heteroskedasticity-consistent approach.

Results and Discussion

The linear regression model explains roughly 26% of the variation in CEO incentive compensation ratios. While not too low, this adjusted R² points to the need for further research in this area in order to explain this phenomenon more fully. Seven of our ten independent variables were significant, and had the predicted signs. Consistent with our hypotheses, firm diversity, firm growth opportunities, outside blockholdings, and the number of analysts following the firm were positively related to CEO incentive compensation ratios. Likewise, firm unsystematic risk (but not systematic risk), CEO stockholdings, and industry regulation were negatively and significantly related to CEO incentive compensation ratios. We also note that some of the industry dummies were significant in

Table 2
Multiple Regression Analysis:
Determinants of CEO Incentive Pay Ratios

<i>Independent Variables</i>	
Jensen's Alpha	.090 (1.34)
Average earnings-per-share	.088 (1.66)+
Diversification	.186 (3.31)***
Systematic Risk	.093 (1.55)
Unsystematic Risk	-.200 (-3.60)***
Regulated Industry? (1=Y; 0=N)	-.168 (-1.89)*
CEO Shareholdings	-.137 (-2.42)**
Outside Director Ratio	-.059 (-1.11)
CEO Duality	-.012 (-0.24)
Percent Outside Block-holdings	.10 (1.88)*
CEO Tenure	-.037 (-.71)
Number of Analysts following firm	.168 (2.78)**
Analyst 5-year EPS growth forecast	.331 (5.08)***
Institutional Stockholdings	-.010 (-.176)
Energy Industry Dummy	-.124 (-2.03)*
Industrial Industry Dummy	.064 (.96)
Cyclical Industry Dummy	.072 (.99)
Non-cyclical Industry Dummy	.038 (.53)
Technology Industry Dummy	.136 (2.03)*
Financial Industry Dummy	.247 (2.63)**
Utilities Industry Dummy	.118 (1.36)
<i>Adjusted R²</i>	0.263
<i>F-value</i>	6.02***

Cells contain standardized beta coefficients with t-values in parentheses underneath;

Significance levels: # $p \leq 0.1$; * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$.

Model includes seven industry dummies. Basic industry is excluded.

our model, suggesting industry-specific influences on the CEO incentive compensation ratio.

The increasing use of CEO incentive compensation amounts and arrangements is a hallmark of corporate governance in the 1990s. Our research adds to the sparse literature on the determinants of CEO incentive compensation ratios, in contrast to most past research that has focused on the determinants of CEO cash compensation levels, and on CEO incentive compensation levels. Our results suggest that both CEO-controllable and non-CEO-controllable factors appear to influence boards when they set CEO incentive compensation ratios in the 1990s. We also note that these results appear to support the

key concepts of agency theory. Finally, the use of a comprehensive model also reduces the omitted variable problem that may accompany past studies that utilized fewer independent variables.

While encouraged by the support found for our hypotheses we are concerned that even a model as comprehensive as ours has relatively low explanatory power. This may indicate that we need to study more extensively the socio-political influences on CEO compensation arrangements rather than base our research exclusively on economic reasoning. An important part of this endeavor would be to interview directors to get a better feel for the actual board processes underlying CEO compensation-setting. For the

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most part, this process remains a black box, since directors are understandably reluctant to speak with investigators for fear of potential legal liability. Virtually all economics and finance-based research infers CEO compensation arrangements from observed outcome variables. This approach is necessarily incomplete if researchers persist in ignoring the process by which boards actually set CEO compensation. We discuss the possibilities for future work below.

Suggestions For Future Research

A number of issues provide opportunities for future research. For example, are the effects we observed in our sample of large firms demonstrable in small and medium-sized firms? Do they obtain in the case of other senior non-CEO executives? What additional evidence could we obtain from longitudinal analyses of these relationships, including evidence of the impact of CEO incentive compensation ratios on future firm performance? Research that looks at complete industry samples might also be very useful in pointing out differences in industry pay practices, since as the significance of the industry dummies in our model indicate, industry seems to play a significant role in CEO incentive design.

Finally, most researchers to date have relied on secondary data sources for measures of independent variables. A case in point is CEO stockholdings, which are available from proxy statements and the *Forbes* annual executive compensation surveys. A research program that moves beyond these easily-available sources to data that more closely mirrors the underlying constructs – CEO wealth rather than just CEO stockholdings, for example – might move us closer to an understanding of the complexities of CEO incentive schemes. □

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