

# **CEO reputation and the use of earnings- and stock-based performance measures in CEO evaluation\***

**Christo Karuna<sup>†</sup>**

September 2006

## **Abstract**

This study examines the association between CEO reputation and firms' relative use of earnings- and stock-based performance measures to evaluate their CEOs. I provide evidence that firms whose CEO reputation is higher substitute away from earnings-based and toward stock-based performance measures, compared to firms whose CEO reputation is lower. This study contributes to the literature by providing evidence that CEO attributes play a vital role in the design of short- and long-term CEO incentives. Further, it adds to our understanding of the heterogeneity in the relative use of earnings- and stock-based performance measures across firms.

*JEL classification:* G3; J3; J41; M4

*Keywords:* Managerial incentives; CEO reputation; CEO compensation; Corporate Governance; Performance Evaluation

I would like to thank Judson Caskey, Joel Demski, Sanjeev Dewan, Thomas Hemmer, David Hirshleifer, Scott Masten, Ken Merchant, Jone Pearce, Mort Pincus, Margarethe Wiersema, and workshop participants at Penn State University, the University of California, Irvine, and the University of Technology, Sydney, for their comments and suggestions. I would also like to thank Todd Milbourn for sharing his data on CEO press citations. All errors are my own.

<sup>†</sup>Christo Karuna, The Paul Merage School of Business SB416, University of California at Irvine, Irvine, CA 92697-3125; Phone: (949) 824-9653; Fax: (949) 725-2885; Email: ckaruna@uci.edu

*“Recent transgressions in financial markets have underscored the fact that one can hardly overstate the importance of reputation in a market economy” Alan Greenspan, 16<sup>th</sup> April 2004*

## **1. Introduction**

Prior research shows that while firms use both earnings-based and stock-based performance measures in evaluating their Chief Executive Officers (CEOs), the relative use of these measures varies across firms (e.g., Lambert and Larcker, 1987; Baber, Janakiraman, and Kang, 1996). Although these studies show that much of this variation is caused by firm and industry characteristics, evidence from these studies also suggests that after accounting for several firm-level factors and industry fixed effects, a large portion of unexplained variation still exists, suggesting that other factors, such as CEO attributes, may also be important determinants of this variation.<sup>1</sup> Several studies show that CEO attributes can affect CEO incentives in general. For example, they show that CEO horizon (Dechow and Sloan, 1991; Gibbons and Murphy, 1992), CEO origin (Parrino, 1997; Farrell and Whidbee, 2003), and CEO power (Bebchuk, Fried, and Walker, 2002; Bebchuk and Fried, 2003) can influence CEO incentives. However, little research has been conducted on how CEO attributes influence CEO incentives across firms.

A CEO attribute that may have an influence on CEO incentives is reputation, defined as the market’s perception of the CEO’s ability to ensure the long-term success and survival of her firm. The information asymmetry between the CEO and the firm’s stakeholders like investors, employees, suppliers, etc. (both incumbent and prospective) about the CEO’s ability to ensure the long-term success and survival of the firm (and hence the stakeholders’ stakes in the firm)

---

<sup>1</sup> In addition, Bertrand and Schoar (2003) show that, controlling for observable and unobservable firm characteristics, manager fixed effects are incrementally important determinants of a wide range of corporate practices including grants of executive compensation.

forces the stakeholders to rely on the CEO's reputation (Fombrun, 1996, Hamilton and Zeckhauser, 2004). For example, consumers rely on CEO reputation because they have less information than the CEO does about the firm's commitment to delivering desirable product qualities like quality or reliability (Grossman and Stiglitz, 1980; Stiglitz, 1989). CEOs with high reputation have proven their ability along several dimensions like competence, integrity, reliability, charisma, etc. (Park and Berger, 2004), which are crucial in influencing the firms' perceptions of the CEOs' ability to successfully carry out forward-looking activities that ensure the long-term success and survival of the firms. Therefore, higher CEO reputation is associated with a higher estimate of CEO ability to ensure the long-term success and survival of her firm.

In economics, it is widely held that reputation matters to contracting (e.g., Fama, 1980; Crocker and Reynolds, 1993; Banerjee and Duflo, 2000). In the practitioner arena, recent studies by Gaines-Ross (2000) and a leading consulting firm, Burson-Marsteller (2003), show that CEO reputation accounts for up to 50% of corporate reputation and has a significant influence on financial analysts' stock recommendations and investors' stock purchase decisions. In addition, Hayes and Schaefer (1999) provide evidence that differences in CEO ability can affect shareholder wealth, and Jensen and Fuller (2002) assert that CEO reputation is a major determinant of the long-term success and survival of a firm. Collectively, evidence from these studies suggests that CEO reputation may influence CEO incentives provided by the firm. Direct evidence on this relation is provided by several recent studies. For example, Milbourn (2003) shows that CEOs with higher reputation are provided with stronger stock-based pay-performance sensitivities. In addition, Malmendier and Tate (2005) and Hamilton and Zeckhauser (2004) show that the celebrity status that some CEOs enjoy not only affects the value of firms, but also the levels of CEO pay.

Several studies in accounting suggest that firms' relative use of stock-based and earnings-based performance measures in evaluating their managers is important in executing firms' overall strategies and therefore enhancing firm value (e.g., Simons, 1987; Ittner, Larcker, and Rajan, 1997). According to these studies, because stock price reflects expectations of future cash flows, stock-based measures encourage managers to consider the implications of their current actions on future cash flows (forward-looking actions). In contrast, because current earnings reflect past managerial actions, earnings-based measures encourage managers to engage in short-term backward-looking actions (historic actions). It is conceivable that firms use more stock-based measures relative to earnings-based measures when they believe that their managers have the ability to understand the future consequences of their current actions. In this case, they give their managers greater latitude to engage in forward-looking actions. On the other hand, they use less stock-based relative to earnings-based measures when they do not have such confidence in their managers' ability. In this case, they give their managers less latitude to engage in forward-looking actions, encouraging the managers to focus on historic activities instead.

Studies in economics (e.g., Rosen, 1982; Prendergast, 2002) provide theoretical support for this reasoning. According to these studies, when managers have higher ability, firms provide them with greater authority and discretion over firm resources. Due to this greater discretion given to managers, firms need to evaluate them with more aggregate performance measures (that more closely and directly tie shareholder value to managerial pay) like stock-based measures so that the managers do not appropriate benefits for their personal use, which can be detrimental to shareholders' interests. In contrast, when managers are given less discretion, more disaggregate measures like earnings-based measures are more useful in evaluating managerial actions as it is easier to see how managerial actions translate into earnings (Gjesdal, 1981).

The preceding discussion suggests that CEO reputation may influence firms' use of stock-based and earnings-based measures in evaluating their CEOs. In particular, it suggests that when CEO reputation is greater, firms substitute toward stock-based measures and away from earnings-based measures. However, to the best of my knowledge, no study has examined this relation.

The purpose of this study is to provide evidence on this relation. To test my prediction, I use data obtained from the Execucomp and Industrial databases in Compustat, the CRSP database, and the Dow Jones News Retrieval Service. Consistent with prior research, I use CEO media prominence to denote CEO reputation and measure it by the number of business-related articles that contain the CEO's name (e.g., Milbourn, 2003; Hamilton and Zeckhauser, 2004; Rajgopal, Shevlin, and Zamora, 2006). My findings support my prediction and are robust to including firm, industry, and CEO fixed and random effects, and to alternative explanations and several other sensitivity checks.

This study contributes to the literature in three ways. First, it is one of the few studies to show that CEO characteristics determine the relative use of earnings- and stock-based performance measures to evaluate the CEO. Second, it provides additional evidence that CEO characteristics are vital in the design of CEO incentives. Finally, it adds to our understanding of the observed heterogeneity in the relative use of earnings- and stock-based performance measures across firms.

The rest of the paper is organized as follows. In the next section, I provide the theoretical background leading to my hypothesis. Section 3 describes the sample selection procedure I adopt and the measures I use, while section 4 outlines my methodology. I present and discuss

my results, alternative explanations, and sensitivity checks in section 5. In section 6, I conclude with suggestions for future research.

## **2. Theoretical Background**

The informativeness hypothesis in Holmstrom (1979) predicts that the managerial compensation contract should place non-zero weight on any performance measure that provides incremental information content about the dimensions of managerial action that the firm wishes to motivate. Following this study, numerous studies show that it is optimal for firms to use both earnings- and stock-based performance measures to evaluate their CEOs (e.g., Lambert and Larcker, 1987; Banker and Datar, 1989; Sloan, 1993). Accounting measures are explicitly used in bonus plans, and as stock price impounds all available information based on market efficiency, stock-based measures can be viewed as a proxy for other available performance measures.

A number of these studies show that in determining the use of these performance measures, more weight is placed on earnings- relative to stock-based performance measures when earnings is a more informative or less noisy measure to evaluate the CEO's actions relative to stock price (e.g., Bushman and Indjejikian, 1993; Clinch, 1991; Feltham and Xie, 1994). An argument for preferring earnings-based to stock-based performance measures in CEO compensation contracts is that because stock prices are affected by factors beyond management's control (for example, uncertainty about future cash flows), accounting information can be more informative with respect to management's current actions (Gjesdal, 1981). An argument for preferring stock-based to earnings-based performance measures is that arbitrary accounting rules can distort accounting profits as accurate indicators of economic returns and possibly discourage forward-looking activities like investing in positive net present value projects (Clinch, 1991).

For example, generally accepted accounting principles (GAAP) require the firm to recognize research and development outlays as expenses in the period in which they are incurred.

However, since the benefits from such an activity are likely to be realized in the future, the accounting recognition of such benefits is also likely to be made in the future. In contrast, as current stock prices reflect both current and future cash flows, which include earnings, they would better reflect the future economic benefits of current CEO actions pertaining to current research and development.

The preceding discussion suggests that current earnings (current stock price) is a poor (good) reflection of more complex and less predictable forward-looking CEO actions like those pertaining to current research and development activities, product differentiation activities, etc., but is a good (poor) reflection of less complex and more predictable historic CEO actions like focusing on improving firm efficiency, etc. To generate the prediction for my study, I argue that when CEOs possess higher reputation, their firms are more confident in the CEOs' ability to understand the future consequences of their current actions, including anticipating future contingencies that may affect future cash flows. Being able to successfully carry out complex forward-looking activities requires immense talent, which CEOs with high reputation are perceived to possess. Therefore, all else equal, when CEOs have higher reputation, their firms are willing to allow them to undertake more forward-looking activities relative to historic activities and thus place a heavier emphasis on stock measures compared to earnings measures in evaluating these CEOs. In contrast, firms perceive that CEOs with low reputation have not yet proven or do not have the ability to ensure the long-term success and survival of the firms. Therefore, all else equal, earnings-based performance measures would be more useful to these firms relative to stock-based performance measures to encourage these CEOs to focus on historic

actions rather than forward-looking ones. In addition, these CEOs may be better at historic actions like maintaining the status quo of the firm than at forward-looking actions like research and development, differentiation strategies, etc.<sup>2</sup>

Several prior studies that provide theoretical support for the above reasoning show that when firms have a higher estimate of the CEOs' ability to ensure the long-term success and survival of the firm, they will provide the CEOs with greater control of firm resources that will enable the CEOs to engage in current actions that have consequences for future cash flows (e.g., Rosen, 1982; Hayward et al., 2004). Due to this greater discretion given to the CEOs, firms need to evaluate them with aggregate performance measures (that more closely and directly tie shareholder value to CEO pay) so that the CEOs do not appropriate benefits for their personal use, which can be detrimental to shareholders' interests (Baiman, Larcker, and Rajan, 1995; Prendergast, 2002). According to Prendergast, when managers are given greater discretion, firms should use more aggregate output measures relative to input measures to evaluate the managers even if the former are noisier, contrary to the informativeness criterion in the standard agency model used in much of prior accounting research (e.g., Ittner et al., 1997; Engel et al., 2002). These aggregate output measures provide summary information about all actions taken by the CEOs and encourage them to make relevant tradeoffs among the courses of actions available to them (Moers, 2006). Therefore, given the discussion above, all else equal, stock-based performance measures are more useful to these firms than earnings-based performance measures to encourage their CEOs to undertake forward-looking actions whilst keeping the CEO's actions closely aligned to shareholders' interests.<sup>3</sup>

---

<sup>2</sup> Abhijit and Duflo (2000) show that firms with lower reputation opt for simpler and more predictable tasks.

<sup>3</sup> Stock measures can be regarded as a more aggregate measure of firm (and hence CEO) performance than earnings measures.

It can also be argued that when CEOs have higher reputation, their firms may encourage them to use their specific knowledge or expend greater effort. These CEOs' knowledge and effort are more valuable compared to CEOs that have lower reputation. Kole and Lehn (1999) and Himmelberg and Hubbard (2000) show that when managers have higher ability, their firms provide them with stronger incentives because their efforts are more valuable. In a recent paper, Raith (2005) shows that output measures (e.g., stock measures) are more useful relative to input measures (e.g. earnings measures) when firms want their managers to use their specific knowledge in decision-making or when managerial effort is more valuable. This is because when managerial knowledge and effort are more valuable, firms delegate greater responsibility to the managers, making stock measures more attractive compared to earnings measures.<sup>4</sup> Therefore, this suggests that firms whose CEOs have higher reputation may choose to place more emphasis on stock measures and less emphasis on earnings measures to evaluate their CEOs.

Yet another line of thought is that when CEOs possess higher reputation, they have greater bargaining power with their board of directors and, consequently, can influence their own pay (Hermalin and Weisbach, 1998). These CEOs can negotiate with their firms a substitution toward stock measures and away from earnings measures. They may do this for two reasons. First, stock measures enable them to receive higher compensation payouts when they perform well (Jensen and Murphy, 1990; Hubbard and Palia, 1995). Second, they may want to signal their higher ability to the market by opting for riskier pay.

The discussion in this section leads to this study's hypothesis stated in alternate form:

---

<sup>4</sup> This is consistent with the reasoning given in Prendergast (2002) and discussed above.

*H<sub>a</sub>: Firms whose CEOs possess higher reputation substitute away from earnings-based performance measures and toward stock-based performance measures in evaluating the CEOs, compared to firms whose CEOs possess lower reputation, ceteris paribus.*

Testing the above prediction would yield additional evidence on how CEO attributes, in particular reputation, affect the design of CEO incentives across firms. The next section discusses how the sample was generated for this study and the measures used.

### **3. Sample Selection and Measures Used**

#### 3.1 Sample

My sample consists of 3,911 firm-years arising from 1,035 companies and comprising 1,129 CEOs for the period 1993 to 1998.<sup>5</sup> To be included in the sample, data must be complete across Compustat, CRSP, and the Dow Jones Retrieval Service. All dollar items are CPI-adjusted to 2000 dollars to adjust for the effects of inflation. Where there is a change in CEO in a particular year, I include data for the incoming CEO for that year and exclude data for the outgoing CEO.<sup>6</sup> The measures are discussed next.

#### 3.2 Measures

*Dependent variable - CEO compensation*

---

<sup>5</sup> The sample is restricted to this time period due to data availability.

<sup>6</sup> Corporate founders are removed from the sample to focus on the most direct principal-agent relationship. Further, founders may be provided with considerably more stock-based pay (controlled by the founding family members) than non-founders, which enables founding CEOs to retain their positions longer than other non-founding CEOs (Morck, Shleifer, and Vishny, 1989; Parrino, 1997).

Executive compensation data is obtained from the October 2001 version of the Execucomp database in Compustat.<sup>7</sup> I collect data for a CEO's salary and bonus and other annual compensation (collectively called short-term compensation), as well as data on the value of stock option grants, long-term incentive payouts, value of restricted stock grants and all other compensation (collectively called long-term compensation). I use two measures for my compensation variable. The first measure is total compensation where I take the sum of short-term and long-term compensation. This comprehensive compensation grants measure has been used as the dependent variable in prior research on the relative use of earnings- and stock-based measures (e.g., Engel et al., 2002). The second measure is the sum of salary and bonus (cash compensation), which has also been used in prior studies (e.g., Sloan, 1993). As seen in Table 1, these compensation measures appear skewed to the right with the mean much larger than the median and the median much closer to the 1<sup>st</sup> quartile than the 3<sup>rd</sup> quartile. Log-transforming these raw compensation variables corrects this skewness as seen from the closer mean and median values. Hence, I use the log compensation variable as the dependent variable for my regression analysis in the next section.<sup>8</sup> I label the log total compensation and log (salary and bonus) variables TOTCOMP and SALBON, respectively.

### *Performance*

Annual return on equity for a firm is the measure of the firm's earnings performance in this study. This is calculated by dividing earnings before extraordinary items for a particular

---

<sup>7</sup> This database comprises data on many items of compensation for the top five officers (ranked annually by salary and bonus) of companies in the S & P 500, S & P Mid Cap 400, and the S & P Small Cap 600. Typically, the five officers include the CEO.

<sup>8</sup> Prior studies have used the level of log compensation as the dependent variable in regressions (e.g., Core et al., 1999; Himmelberg and Hubbard, 2000; Engel et al., 2002).

year by the average of the book values of shareholders' equity taken from the beginning and end of that year. I label this measure ROE. Annual firm stock return is the measure of annual stock performance for the firm. I label this measure RET. Since the CEO of a firm is evaluated on how her firm performs, her performance is tied to that of her firm's. Data to compute these measures are taken from Compustat.

### *CEO reputation*

As is the case with intangibles in general, finding a suitable proxy for CEO reputation is challenging. I use CEO media prominence, which is widely used in the literature to proxy for CEO reputation (e.g., Milbourn, 2003; Francis et al., 2004; Hamilton and Zeckhauser, 2004; Park and Berger, 2004; Rajgopal et al., 2006). When media prominence for the CEO is greater, this suggests that the CEO is generally perceived by the media as a more successful leader, compared to CEOs whose media prominence is less (Hayward and Hambrick, 1997; Hayward et al., 2004). As an illustration, Hamilton and Zeckhauser (2004) find that the top 40 CEOs of firms in the S&P 200 accounted for 80% of the press coverage in 1995, 1996, and 1997. The media attributes firm performance to the CEO (Meindl, Ehrlich, and Dukerich, 1985). In addition, CEOs with greater media prominence, on average, possess higher values of characteristics such as competence, integrity, credibility, charisma, etc., traits that increase the CEOs' reputation (Park and Berger, 2004) and help them to ensure their firms' long-term success and survival.<sup>9</sup>

I measure media prominence as the number of business-related articles returned by Dow Jones Retrieval Service in which the executive's name appears at least once over a time period of

---

<sup>9</sup> CEO competence (e.g., decision-making ability, firm performance, etc.) is the most frequently discussed dimension of CEO reputation in the media (Park and Berger, 2004).

five years prior to the Execucomp data year.<sup>10</sup> Only selected business publications are searched, and these include newswires, business periodicals, and major newspapers. I provide full details of the search methodology in Appendix A. This measure is skewed to the right as seen in table 1. Its mean value of 127.47 is much larger than its median value of 62. Therefore, I use its log transformation. I label this measure DJHITS. Therefore, the higher the value for DJHITS, the higher the estimate of the CEO's ability by the media, and therefore the higher the CEO reputation.

Although it is often the case that CEOs are mentioned for their positive attributes, it is conceivable that they could also be mentioned for the undesirable attributes, e.g., scandals, etc. Consequently, a higher number of articles that mention the CEO may not translate into higher CEO reputation. However, evidence is provided in Milbourn (2003) that for a random subsample of fifty CEOs in Execucomp selected in each of the years 1993 to 1998, very few negative articles appear in print. Conducting more comprehensive analyses, Francis et al. (2004) and Rajgopal et al. (2006) also show that press coverage is generally associated with favorable mentions of the CEO. Thus, this evidence supports the notion that prominence in the business publications is associated with favorable assessments of the CEO on average (Park and Berger, 2004). Moreover, any effect of negative press coverage would only bias against the prediction in this study.<sup>11</sup>

It is possible that certain CEOs or their firms are more in favor of the CEOs "being in the limelight" than others and so may aggressively communicate with the press. In addition, CEOs

---

<sup>10</sup> This rolling five-year window is updated each time the CEO appears in the sample.

<sup>11</sup> My sample period is ideal as CEO media coverage in my sample would not contain many negative articles about CEOs like in more recent years (e.g., Kenneth Lay, Bernie Ebbers, etc.) – negative articles about CEOs increased significantly from 2000 to 2002 (Hamilton and Zeckhauser, 2004). Consequently, it is safe to assume in my study that a higher number of CEO mentions in the media can be associated with a more favorable CEO reputation on average.

in large firms or those in certain industries (e.g. those specializing in information technology) may receive greater coverage by the media although these CEOs do not possess high reputation. In such instances, we may observe higher number of mentions in press articles for such individuals. On the other hand, many CEOs who possess high reputation may not be cited in press articles for various reasons; for example, those in small firms or in particular industries. It is unlikely that this potential under- or over-estimation of CEO reputation causes a bias in this study as these effects may cancel each other out on average across the large number of observations in my sample. In a later section, I control for observed and unobserved CEO, firm, and industry characteristics that could give rise to cross-sectional differences that could affect CEO reputation.

### 3.3 Correlation matrix

Table 2 presents the Pearson correlation matrix for the independent variables of interest used in the regression analysis in this study. No particularly high correlations are shown among the independent variables. The next section outlines the methodology I employ in this study.

## **4. Methodology**

This section outlines the methodology I use to test my hypothesis. Consistent with prior empirical compensation research, I pool observations across firms and time thus assuming that the performance measures are identical across firms and time (Core, Holthausen, and Larcker, 1999; Bushman, Engel, and Smith, 2003). I employ the following regression model to test my prediction:

$$\begin{aligned} \text{TOTCOMP OR SALBON} = & \beta_0 + \beta_1\text{ROE} + \beta_2\text{RET} + \beta_3\text{DJHITS} + \beta_4\text{DJHITS*ROE} + \\ & \beta_5\text{DJHITS*RET} + \beta_6\text{SALE} + \beta_7\text{TENURE} + \beta_8\text{VOLAT} + \beta_9\text{MTB} + \beta_{10}\text{R\&D} + \beta_{11}\text{CEOAGE} + \\ & \beta_{12}\text{MKRET} + \beta_{13}\text{ADV} + \beta_{14}\text{STKHOLD} + \beta_{15}\text{OPTHOLD} + \text{YEAR INDICATOR} + \text{INDUSTRY} \\ & \text{INDICATOR} + \varepsilon \end{aligned} \quad (\text{equation 1})$$

The definitions for the above variables are given in Appendix B. The coefficients  $\beta_1$  and  $\beta_2$  measure how compensation varies with earnings performance, ROE, and stock performance, RET, respectively. In line with the standard principal-agent model and prior research, I predict that these coefficients are positive, which is consistent with the notion that CEOs are rewarded for improving the performance of their companies. Prior studies have shown that when the CEO's perceived ability is greater, she receives higher pay because her value of effort is also higher (e.g., Hubbard and Palia, 1995; Kole and Lehn, 1999; Himmelberg and Hubbard, 2000). Therefore, I predict  $\beta_3$  to have a positive sign.

My prediction in this study is there is a substitution away from earnings-based performance measures and toward stock-based performance measures when CEO reputation is higher. To test this, I examine the estimates of the coefficients  $\beta_4$  and  $\beta_5$  obtained after running the above regression. These coefficients capture the sensitivity of compensation, TOTCOMP or SALBON, to both earnings and stock performance when the proxy for CEO reputation, DJHITS, increases in value.  $\beta_4$  ( $\beta_5$ ) measures the sensitivity of TOTCOMP or SALBON to earnings ROE, (RET) when DJHITS increases in value. Based on my prediction,  $\beta_4$  can have either a positive or negative sign. I predict that  $\beta_5$  is positive consistent with Milbourn (2003). Consistent with the methodological reasoning given in Baber, Janakiraman, and Kang (1996), who use a regression

specification similar to mine, if  $\beta_4$  is negative or insignificant and  $\beta_5$  is positive, this is evidence of a substitution away from earnings measures and toward stock measures in determining CEO compensation when CEO reputation increases in value, and my hypothesis is supported. However, if both these coefficients are positive, then further statistical tests are necessary to determine the magnitude/strength of  $\beta_4$  relative to  $\beta_5$ .

I also include control variables documented in prior research to affect the level of managerial compensation. SALE, TENURE, VOLAT, and MTB denote the natural log of sales, number of years the CEO has been at the helm at the firm, volatility of stock returns, and market-to-book ratio; they proxy for firm size, CEO tenure in the firm, firm risk, and investment opportunities, respectively. R&D, CEOAGE, MKRET, and ADV denote research and development intensity (proxying for growth opportunities), the CEO's age, returns on the stock market, and advertising intensity (proxying for the effect of intangibles like differentiation strategies by the firm). STKHOLD and OPTHOLD denote the CEO's stock and option holdings, respectively. I make predictions (given in the table of results) on the coefficients for these variables consistent with the findings from prior research.

Year indicator and industry indicator variables are included in the regressions to control for observed and unobserved year and industry effects, respectively. However, as the coefficients on these indicator variables are not of interest in this study, they are not included in the table of results, for brevity. The next section presents and discusses the results of the tests I conduct in this section.

## 5. Results

Table 3 provides results for OLS regressions conducted based on equation 1. Column I provides results for the regression where log total compensation, TOTCOMP, is the dependent variable. As far as the coefficients of interest are concerned, the coefficient on the interaction between DJHITS and ROE,  $\beta_4$ , is -0.117, which is negative and statistically significant (at 1% level). This coefficient is also economically significant as it shows that for a 1 unit increase in CEO press coverage, the sensitivity of total compensation to earnings performance decreases by approximately 12%. Therefore, DJHITS has a negative relation with how TOTCOMP varies with ROE. The coefficient on the interaction between DJHITS and RET,  $\beta_5$ , is 0.025, which is positive and statistically significant (at 5% level). This result suggests that a unit increase in CEO press coverage increases the sensitivity of total compensation to stock performance by approximately 3%, showing that this relation is also economically significant.<sup>12</sup> Therefore, DJHITS has a positive relation with how TOTCOMP varies with RET, consistent with Milbourn (2003). Taken together,  $\beta_4$  and  $\beta_5$  show that, in the cross-section, when the number of times the CEO is cited in the business press is greater, there is a substitution away from earnings measures and toward stock measures to evaluate the CEO, supporting my hypothesis.

The coefficient on DJHITS,  $\beta_3$ , is 0.034, which is positive and significant (at 1% level). A one unit increase in CEO press coverage is associated with an approximate 3% increase in CEO total compensation. This shows that when CEO reputation is higher, the CEO receives a higher level of pay, consistent with studies that show that higher managerial ability is associated

---

<sup>12</sup> Note that ROE and RET are measured to different scales as expected.

with higher pay. The coefficients on the control variables are generally consistent with prior research.

Column II provides results for the regression where  $\log(\text{salary and bonus})$ , SALBON, is the dependent variable. The results are similar to those for TOTCOMP in column I. The coefficient on the interaction between DJHITS and ROE,  $\beta_4$ , is -0.047, which is negative and significant (at 5% level). The coefficient on the interaction between DJHITS and RET,  $\beta_5$ , is 0.028, which is positive and significant (at 1% level). Taken together,  $\beta_4$  and  $\beta_5$  again show that, in the cross-section, when the number of times the CEO is cited in the business press is greater, there is a substitution away from earnings measures and toward stock measures to evaluate the CEO, again supporting my hypothesis. The results in columns I and II show that the results are robust to different specifications of the dependent variable.

In a separate analysis (results not reported), I find that DJHITS and its interactions with both ROE and RET explain an additional 5% and 2.5% of the variation in TOTCOMP and SALBON, compared to the 3% and 4.3% of variation explained by only ROE and RET, respectively. This provides some evidence that CEO reputation is important in determining CEO pay and the use of earnings and stock measures in explaining CEO pay.

An interesting finding in this study is that my results hold after controlling for CEO tenure, thus making another incremental contribution to the literature relative to Milbourn (2003). The theoretical reasoning in Milbourn's study posits that CEO reputation influences the market's expectation of the CEO's tenure in the firm and thus the use of stock measures in evaluating the CEO. However, my study shows that if actual CEO tenure is a reasonable proxy for expected tenure, then the use of stock measures (as in Milbourn's study), and the relative use

of earnings and stock measures (as in my study) may be due to alternative theoretical explanations to that given in Milbourn (2003).

To summarize, the results in table 3 show that when CEO reputation is greater, (i) firms substitute away from earnings measures and toward stock measures, (ii) less weight is placed on earnings to evaluate the CEO, and (iii) the level of CEO pay is higher.

### *Alternative explanations*

#### Matching Hypothesis

It is conceivable that there is a match between the CEO and the firm or industry (Francis et al., 2004). Here, the type of firm or industry could require a certain type of CEO. For example, companies with high reputation may require CEOs with high reputation. Other firms or industries may not require CEOs with high reputations. Further, company reputation may affect CEO reputation (Gary, 1986). When companies have high reputation, their CEOs inadvertently acquire high reputation. According to the matching hypothesis, it may be appropriate to simultaneously model the choice of CEO and firm or industry (Francis et al., 2004). However, there is no need for this procedure in my study as its main purpose is to show that CEO attributes like CEO reputation affect the use of earnings and stock measures by firms irrespective of the needs of the firm. Further, by including a plethora of firm-level control variables and industry indicator variables in my regressions in table 3, I attempt to control for several firm and industry factors that could play a role in influencing the level of pay or DJHITS.

To carefully address the concern that unobserved firm factors could confound my analysis above, in separate regressions (results not reported), I include firm fixed and random effects in addition to the control variables included in the regressions in table 3 without the

industry indicator variables. By including these firm effects, I avoid the omitted variable bias that could arise due to firm factors (e.g., firm size, firm reputation, etc.). Since the sample in this study comprises panel data, by including these effects, I am also able to control for unobserved firm characteristics that are constant for a given firm over time but vary across firms.<sup>13</sup> The findings in table 3 are robust to these additional tests.

### Endogeneity of CEO Reputation

There could be a concern that in the regressions above, the causality runs from the level of pay or pay-performance sensitivities to CEO reputation. In particular, providing a CEO with higher pay or stronger stock-based pay-performance sensitivities relative to earnings-based pay-performance sensitivities could result in the CEO engaging in more forward-looking actions than historic actions thus attempting to enhance her reputation. However, this is not a major concern in this study for two reasons. First, developing CEO reputation takes a considerable amount of time. Thus it is unlikely that the contemporaneous annual pay or stock-based or earnings-based incentives that I study would have a major impact on CEO reputation on an annual basis. Second, by controlling for CEO fixed and random effects, as discussed above, I control for any tendency for some CEOs to attempt to bolster their reputation.

Overall, this study's findings are robust to additional tests and alternative explanations. In the next section, I conduct additional sensitivity checks to determine whether the above results are robust.

---

<sup>13</sup> In separate regressions, I also include CEO fixed and random effects in the regressions to control for other CEO characteristics, like tendency to self-report to the press, etc., that could confound the analysis. This does not alter this study's main findings.

### *Sensitivity Checks*

Several prior studies show that it is important to control for the noise pertaining to ROE and RET as it may influence the relative weights placed on these measures across firms (e.g. Lambert and Larcker, 1987; Sloan, 1993). One way to control for this noise in these studies is to include some measure of variability of these measures in the regressions. To control for potential effects of the variability in these measures across firms and industries, I run a random coefficients regression where I allow ROE and RET to vary across firms and then industries. I also allow for serial correlation in the error term for firms. This study's findings are not affected by these additional tests.<sup>14</sup>

In line with the standard principal-agent model, it is possible that the performance of a firm (and hence CEO performance) may be judged relative to that of its industry.<sup>15</sup> I rerun the above regressions using industry-adjusted performance for both ROE and RET. The results remain the same. The results are also robust to using the return on assets as the earnings performance measure instead of the return on equity as in the analysis above. Further, the findings are qualitatively similar when I include the change in log compensation as the dependent variable and the first difference in return on equity or return on assets as the earnings performance measure as in some prior accounting studies (e.g., Sloan, 1993).

In summary, the results in this study are robust to several sensitivity checks. The next section concludes this study and provides suggestions for future research.

---

<sup>14</sup> The findings also remain when I include the ratio of the standard deviations of ROE and RET to control for exogenous noise in these measures as in prior research (e.g., Lambert and Larcker, 1987; Ittner et al., 1997).

<sup>15</sup> The empirical evidence to date on the existence of relative performance evaluation is mixed.

## 6. Conclusion

In this paper, I empirically examine the effect of CEO reputation on the relative use of earnings- and stock-based CEO incentives across firms. Although much prior research has examined firm determinants of this relative use in performance measures, little research has been conducted on how CEO characteristics affect it. I find that firms whose CEOs have higher reputation substitute away from earnings-based performance measures and toward stock-based performance measures in evaluating their CEOs. This finding is robust to including firm, industry, and CEO fixed and random effects, potential alternative explanations, and several sensitivity checks.

This paper contributes to the literature by providing additional evidence that CEO characteristics are vital in the design of CEO incentives. Further, it adds to our understanding of the observed heterogeneity in the relative use of earnings- and stock-based performance measures across firms.

It would be interesting to examine whether my finding for CEOs extends to the rest of the top five executives in firms. Since Bertrand and Schoar (2003) show that CEOs and other top managers seem to have larger effects on organizational strategy than CFOs do, the findings in this study may not hold across all top executives in a firm. Another extension to this study that is worthwhile studying if long time series data is available is whether the finding in this study applies intertemporally; in particular, whether changes in CEO reputation over time affects the relative use of earnings and stock measures over time in the manner suggested by this study. This may increase our understanding of the documented trend in the relative use of these measures

over time in the literature, especially the declining role of earnings measures relative to stock measures in evaluating managers.

## Appendix A – Identifying Dow Jones Article Counts

In any executive year, the reputation proxy DJHITS represents the total number of articles returned by the Dow Jones Retrieval Service that mention the CEO's name at least once over the preceding five-year period.<sup>16</sup> That is, if the executive data year is 1993, DJHITS is the total number of articles in which the CEO's name appears over the January 1988 to December 1992 time period. To be clear, only the total number of articles that are identified by the Dow Jones search are recorded in the full sample, and these articles are not individually read to insure that the correct CEO has always been identified. To minimize some potential errors in the identification process, only the "Dow Jones-Selected Publications" list was searched. This list includes:

- Major News and Business Publications (112 International Publications)
- Top 50 US Newspapers (several, such as *The New York Times*, are already included in the first group)
- Wires: Press Release Wires (six newswires)

Invariably, article counts for executives could be understated. For example, there exists possible misspellings in Execucomp's name fields, shortened names (e.g. Bill for William), and so on, which would return an empty or lower count. Or the count could be overstated due to very common names (e.g., Johnson), names combined with Jr. or III, and so on which would return a higher count. However, there seems no obvious direction that this bias would occur across the large sample of CEOs.

---

<sup>16</sup> See <http://www.djinteractive.com/>

## Appendix B - Definitions and Computations of Variables

Definitions of variables:		Method of calculation - calculated annually
TOTCOMP	log total compensation	natural log of total compensation.
SALBON	log (salary and bonus)	natural log of (salary and bonus).
ROE	annual return on equity	earnings before extraordinary items / [(shareholders' equity at the beginning of year + shareholders' equity at end of year) / 2].
RET	annual stock return	obtained directly from Execucomp.
DJHITS	natural log of press mentions of CEO	natural log of number of articles in which the executive's name appears at least once over a time period of five years in selected business publications (see Appendix A).
LOGSALE	log sales	natural log of sales.
TENURE	CEO tenure	natural log of number of years the CEO held that position continuously. Number of years is calculated as the difference between the current fiscal year and the year in the 'date became CEO' field.
VOLAT	volatility of stock returns	standard deviation of monthly company stock returns.
MTB	market-to-book ratio	natural log of [(number of outstanding shares*market price at end of fiscal year) / (total assets – total liabilities)].
R&D	R & D intensity	natural log of (R & D expenditure / sales); R&D/sales set to zero for missing values.
CEOAGE	age of CEO	as defined.
MKRET	market returns	returns on the stock market
ADV	advertising intensity	advertising expenditure / sales; values set to zero when missing.
STKHOLD	stock holdings of CEO	lagged natural log of value of stock holdings.
OPTHOLD	option holdings of CEO	lagged natural log of value of option holdings.

## **Bibliography**

- Agrawal, A., Knoeber, C., Tsoulouhas, T., 2004. Are outsiders handicapped in CEO succession. *Journal of Corporate Finance*, in press.
- Allgood, S., Farrell, K., 2000. The effect of CEO tenure on the relation between firm performance and turnover. *Journal of Financial Research* 23(3), 373-390.
- Baber, W., Janakiraman, S., Kang, S., 1996. Investment opportunities and the structure of executive compensation. *Journal of Accounting and Economics* 21, 297-318.
- Baiman, S., Larcker, D., Rajan, M., 1995. Organizational design for business units. *Journal of Accounting Research* 33(2), 205-229.
- Baker, G., Gompers, P., 2003. The determinants of board structure at the initial public offering. *Journal of Law and Economics* 46, 569-598.
- Banker, R., Datar, S., 1989. Sensitivity, precision, and linear aggregation of signals for performance evaluation. *Journal of Accounting Research* 27, 21-39.
- Banerjee, A., Duflo, E., 2000. Reputation effects and the limits of contracting: A study of the Indian software industry. *The Quarterly Journal of Economics*, 989-1017.
- Bebchuk, L., Fried, J., 2003. Executive compensation as an agency problem. *Journal of Economic Perspectives* 17, 71-92.
- , Walker, 2002. Managerial power and rent extraction in the design of executive compensation. *University of Chicago Law Review* 69, 751-846.
- Bertrand, M., Schoar, A., 2003. Managing with style: The effect of managers on firm policies. *The Quarterly Journal of Economics* 118 (4), 1169-1208.
- Burson-Marstellar, 2003. Reputation management; CEO reputation. Retrieved March 19, 2003, from <http://www.bm.com/expertise/repmgmt.html>
- Bushman, R., Indjejikian, R., 1993. Accounting income, stock price, and managerial compensation. *Journal of Accounting and Economics* 16, 1-23.
- , Engel, E., Smith, A., 2003. An analysis of the relation between the stewardship and valuation roles of earnings. Working Paper, University of Chicago.
- Cheng, S., 2004. R&D expenditures and CEO compensation. *The Accounting Review* 79, 305-328.
- Clinch, G., 1991. Employee compensation and firms' research and development activity. *Journal of Accounting Research* 29(1), 59-78.

Core, Holthausen, R., Larcker, D., 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics* 51, 371-406.

Crocker, K., Reynolds, K., 1993. The efficiency of incomplete contracts: An empirical analysis of Air Force engine procurement. *Rand Journal of Economics* 24, 127-146.

Dechow, P., Sloan, R., 1991. Executive incentives and the horizon problem. *Journal of Accounting and Economics* 14, 51-89.

Engel, E., Gordon, E., Hayes, R., 2002. The roles of performance measures and monitoring in annual governance decisions in entrepreneurial firms. *Journal of Accounting Research* 40(2), 485-518.

Fama, E., 1980. Agency problems and the theory of the firm. *Journal of Political Economy* 88(2), 288-307.

Farber, H., 1999. Mobility and stability: The dynamics of job change in labor markets. In O.Ashenfelter and D. Card (eds.). *Handbook of Labor Economics* vol. 3, chap.37. New York: Elsevier Science.

Farrell, K., Whidbee, D., 2003. Impact of firm performance expectations on CEO turnover and replacement decisions. *Journal of Accounting and Economics* 36, 165-196.

Feltham, G., Xie, J., 1994. Performance measure congruity and diversity in multi-task principal/agent relations. *The Accounting Review* 69, 429-453.

Fombrun, C., 1996. *Reputation – Realizing value from the corporate image*. Harvard Business School Press, Boston, Massachusetts.

Francis, J., Huang, A., Rajgopal, S., Zang, A., 2004. CEO reputation and earnings quality. Working Paper, Duke University.

Fuller, J., Jensen, M., 2002. What's a Director to do? Negotiations, Organization and Markets Research Papers. Harvard NOM Research Paper No. 02-38.

Gaines-Ross, L., 2000. CEO reputation: A key in shareholder value. *Corporate Reputation Review* 3, 366-370.

Gary, J., Jr., 1986. *Managing the corporate image*. Westport, CT: Quorum.

Gibbons, R., Murphy, K., 1992. Optimal incentive contracts in the presence of career concerns: theory and evidence. *Journal of Political Economy* 100(3), 468-505.

Gjesdal, F., 1981. Accounting for stewardship. *Journal of Accounting Research* 19, 208-231.

Grossman, S., Stiglitz, J., 1980. On the impossibility of informationally efficient markets. *American Economic Review* 70, 393-408.

Hamilton, J., Zeckhauser, R., 2004. Media coverage of CEOs: Who? What? Where? When? Why? Working Paper.

Hayes, R., Schaefer, S., 1999. How much are differences in managerial ability worth? *Journal of Accounting and Economics* 27, 125-148.

Hayward, M, Hambrick, D., 1997. Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative Science Quarterly* 42, 103-127.

-----, Rindova, V., Pollock, T., 2004. Believing one's own press: the causes and consequences of CEO celebrity. *Strategic Management Journal* 25(7), 637-653.

Hermalin, B., Weisbach, M., 1998. Endogenously chosen boards of directors and their monitoring of the CEO. *The American Economic Review* 88(1), 96-118.

Himmelberg, C., Hubbard, G., 2000. Incentive pay and the market for CEOs: An analysis of pay-for-performance sensitivity. Working Paper, Columbia University.

Holmstrom, B., 1979. Moral hazard and observability. *Bell Journal of Economics* 10, 74-91.

-----, 1999. Managerial incentive problems: A dynamic perspective. *Review of Economic Studies* 66, 169-182.

Hubbard, R., Palia, D., 1995. Executive pay and performance: evidence from the U.S. banking industry. *Journal of Financial Economics* 38, 105-130.

Huson, M., Malatesta, P., Parrino, R., 2004. Managerial succession and firm performance. *Journal of Financial Economics* 74(2), 237-275.

Indjejikian, R., Cheng, S., 2005. Accounting versus stock based performance incentives: An agency solution or an agency problem? Working paper, University of Michigan.

Ittner, C., Larcker, D., Rajan, M., 1997. The choice of performance measures in annual bonus contracts. *The Accounting Review* 72(2), 231-255.

Jensen, M., Murphy, K., 1990. CEO incentives – it's not how much you pay, but how. *Journal of Applied Corporate Finance*, 3, 36-49.

Kim, Y., 1996. Long-term firm performance and chief executive turnover: An empirical study of the dynamics. *Journal of Law, Economics and Organization* 12, 480-496.

- Kole, S., Lehn, K., 1999. Deregulation and the adaptation of governance structure: the case of the U.S. airline industry. *Journal of Financial Economics* 52, 79-117.
- Lambert, R., Larcker, D., 1987. An analysis of the use of accounting and market measures of performance in executive compensation contracts. *Journal of Accounting Research* 25 (Supplement), 95-125.
- Malmendier, U., Tate, G., 2005. Superstar CEOs. Working Paper, Stanford University.
- Meindl, J., Ehrlich, S., Dukerich, J., 1985. The romance of leadership. *Administrative Science Quarterly* 30, 78-102.
- Milbourn, T., 2003. CEO reputation and stock-based compensation. *Journal of Financial Economics* 68, 233-262.
- Moers, F., 2006. Performance measure properties and delegation. *The Accounting Review* 81(4), 897-924.
- Morck, R., Shleifer, A., Vishny, R., 1989. Alternative mechanisms for corporate control. *American Economic Review* 79, 842-852.
- Murphy, K., 1999. Executive compensation, in Orley Ashenfelter and David Card (eds.). *Handbook of labor economics*. Vol.3b Elsevier Science North Holland, chapter 38: 2485-2563.
- Park, D., Berger, B., 2004. The presentation of CEOs in the press, 1990-2000: Increasing salience, positive valence, and a focus on competency and personal dimensions of image. *Journal of Public Relations Research* 16, 93-125.
- Prendergast, C., 2002. The tenuous trade-off between risk and incentives. *Journal of Political Economy* 110, 1071-1102.
- Parrino, R., 1997. CEO turnover and outside succession: A cross-sectional analysis. *Journal of Financial Economics* 46, 165-197.
- Paul, J., 1992. On the efficiency of stock-based compensation. *Review of Financial Studies* 5, 471-502.
- Raith, M., 2005. Specific knowledge and performance measurement. Working Paper. University of Rochester.
- Rajgopal, S., Shevlin, T., Zamora, V., 2006. CEOs' outside employment opportunities and the lack of relative performance evaluation in compensation contracts. *The Journal of Finance* 61 (4), 1813-1844.

Rosen, S., 1982. Authority, control and the distribution of earnings. *Bell Journal of Economics* 13, 311-323.

Simons, R., 1987. Accounting control systems and business strategy: An empirical analysis. *Accounting, Organizations and Society* 12, 357-374.

Sloan, R., 1993. Accounting earnings and top executive compensation. *Journal of Accounting and Economics* 16, 55-100.

Stiglitz, J., 1989. Imperfect information in the product market, in Schmalensee, R. and Willig, R., (eds.). *Handbook of industrial organization*. Amsterdam, Holland: North Holland Press, chapter 13: 769-847.

**Table 1 - Descriptive Statistics**

Descriptive Statistics for firm and compensation characteristics are based on data items extracted from Compustat, Execucomp (October 2001), and CRSP for years 1993 to 1998; those for CEO characteristics are based on data collected from the Execucomp and the Dow Jones News Retrieval Service. The data items are taken for executives who are defined as "CEO" by Execucomp and also if the person is the CEO based on start and end dates provided by Execucomp). Sales and compensation items are given in 2000 dollars.

	<b>Mean</b>	<b>Median</b>	<b>Min</b>	<b>Q1</b>	<b>Q3</b>	<b>Max</b>	<b>Obs</b>
Total compensation (\$' 000s)	3,781.00	2,132.29	160.47	1,238.98	3,958.57	202,185.14	3,904
Log total compensation (TOTCOMP)	7.75	7.66	5.08	7.12	8.28	12.22	3,904
Salary and bonus (\$'000s)	1,377.68	1,050.49	0.00	663.78	1,635.30	112,581.00	3,911
Log salary and bonus (SALBON)	6.93	6.96	-6.86	6.50	7.40	11.60	3,911
Return on equity (ROE)	0.12	0.14	-11.19	0.08	0.19	2.98	3,826
Stock return (RET)	0.20	0.15	-0.85	-0.06	0.39	4.79	3,896
Number of article mentions	127.47	61.00	0.00	25.00	129.00	5,180.00	3,911
Log number of article mentions (DJHITS)	3.81	4.11	0.00	3.22	4.86	8.55	3,911
Sales (\$M)	4,786.96	1,527.36	0.48	547.44	4,585.62	165,190.00	3,909
Log sales (SALE)	7.32	7.33	-0.74	6.31	8.43	12.01	3,909
CEO tenure (YRS)	7.94	6.08	1.00	4.00	10.00	40.00	3,911
Log CEO tenure (TENURE)	1.81	1.81	0.22	1.25	2.36	3.79	3,911
Standard deviation of stock returns (VOLAT)	0.10	0.08	0.02	0.06	0.12	2.74	3,632
Market-to-book ratio	3.88	2.40	0.18	1.65	3.68	674.78	3,856
Log market-to-book ratio (MTB)	0.99	0.88	-1.71	0.50	1.30	6.51	3,856
R&D intensity	0.13	0.00	0.00	0.00	0.03	77.19	3,911
Log R&D intensity (R&D)	-1.44	0.00	-9.06	-3.08	0.00	4.35	3,911
Age of CEO (CEOAGE) (YRS)	55.80	56.00	32.00	52.00	60.00	83.00	3,911
Return on market (MKRET)	0.21	0.23	-0.02	0.12	0.30	0.47	3,815
Advertising intensity (ADV)	0.01	0.00	0.00	0.00	0.00	0.35	3,911
CEO's stock holdings (\$'000s)	39,849.69	6,314.40	0.00	2,016.94	18,433.60	4,415,550.00	3,904
Log CEO's stock holdings (STKHOLD)	8.41	8.58	-1.64	7.40	9.65	15.80	3,859
CEO's option holdings (\$'000s)	5,519.60	0.00	0.00	0.00	1,464.59	668,855.00	3,903
Log CEO's option holdings (OPTHOLD)	-96.68	0.00	-0.07	-128.70	7.25	14.10	3,818

Table 2 - Correlation Matrix

	TOTCOMP	SALBON	ROE	RET	DJHITS	SALE	TENURE	VOLAT	MTB	R&D	CEOAGE	MKRET	ADV	STKHOLD	OPTHOLD
TOTCOMP	1.000	0.517***	0.135***	0.132***	0.217***	0.542***	0.082***	-0.044***	0.282***	-0.043***	0.116***	0.085***	0.132***	0.259***	-0.097***
SALBON		1.000	0.197***	0.100***	0.145***	0.497***	0.077***	-0.174***	0.037**	-0.056***	0.197***	0.012	0.012	0.15	-0.159***
ROE			1.000	0.093***	0.004	0.233***	-0.009	-0.163***	0.065***	-0.123***	0.044***	-0.015	0.048***	0.112***	-0.078***
RET				1.000	0.009	-0.015	-0.014	0.076***	0.393***	0.030*	-0.077***	0.236***	0.02	-0.044***	0.017
DJHITS					1.000	0.223	-0.018	-0.024	0.031**	-0.051***	0.079***	0.047***	0.066***	0.037**	-0.045***
SALE						1.000	-0.010	-0.332***	-0.037**	-0.16***	0.246***	0.000	0.065***	0.233***	-0.238***
TENURE							1.000	0.001	-0.003	0.099***	0.281	0.013	0.011	0.385***	0.022
VOLAT								1.000	0.094***	0.050***	-0.196***	0.053***	0.012	-0.050***	0.201***
MTB									1.000	-0.086***	-0.064***	0.121***	0.186***	0.154***	0.007
R&D										1.000	-0.136***	-0.003	-0.070***	-0.002	0.131***
CEOAGE											1.000	-0.001	0.014	0.156***	-0.185***
MKRET												1.000	0.009	-0.022	0.008
ADV													1.000	0.087***	-0.024
STKHOLD														1.000	-0.051***
OPTHOLD															1.000

\*\*\*, \*\*, & \* indicate significance at the 1%, 5% & 10% levels respectively.

**Table 3 – OLS regressions**

OLS regressions on log total compensation for CEOs, including year and industry indicator variables. Data items on compensation and other firm-level information are obtained for the 1993 to 1998 period from Execucomp (October 2001), Compustat and CRSP. Data for CEO characteristics are collected from Execucomp and the Dow Jones News Retrieval Service. The data items are taken for executives who are defined as "CEO" by Execucomp and also if the person is the CEO based on start and end dates provided by Execucomp. Year and industry indicators are not reported for brevity. Dollar amounts of variables (before transformation) are CPI-adjusted to 2000 dollar amounts. Two-tailed tests of p-values are conducted. I run the following regression:

$$\text{TOTCOMP or SALBON} = \beta_0 + \beta_1\text{ROE} + \beta_2\text{RET} + \beta_3\text{DJHITS} + \beta_4\text{DJHITS*ROE} + \beta_5\text{DJHITS*RET} + \beta_6\text{SALE} + \beta_7\text{TENURE} + \beta_8\text{VOLAT} + \beta_9\text{MTB} + \beta_{10}\text{R\&D} + \beta_{11}\text{CEOAGE} + \beta_{12}\text{MKRET} + \beta_{13}\text{ADV} + \beta_{14}\text{STKHOLD} + \beta_{15}\text{OPTHOLD} + \text{YEAR INDICATOR} + \text{INDUSTRY INDICATOR} + \varepsilon$$

Independent variables	Predicted sign	Dependent Variable	
		I TOTCOMP	II SALBON
Intercept	?	4.673***	4.382***
ROE	+	0.489***	0.306**
RET	+	-0.021	0.067*
DJHITS	+	0.034***	0.029***
DJHITS*ROE	+/-	-0.117***	-0.047**
DJHITS*RET	+	0.025**	0.028***
SALE	+	0.369***	0.297***
TENURE	+	0.041**	0.052***
VOLAT	+	0.899***	-0.204*
MTB	+	0.212***	0.057***
R&D	+	0.042***	0.016***
CEOAGE	?	0.001	0.006***
MKRET	?	-0.176	-0.089
ADV	+	1.639***	0.680**
STKHOLD	?	0.021***	0.014***
OPTHOLD	?	0.000	-0.000
No. of Observations		3,424	3,417
Adjusted R <sup>2</sup>		0.64	0.70

\*\*\*, \*\*, \* represent significance levels at the 1%, 5%, and 10% levels respectively.