

# Optimal Incentive-Based Compensation Contracts for CEOs: The Impacts of CEO Age and Tenure

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This study examines the relationship between CEO compensation packages and firm performance. We suggest the optimal compensation contract is partially dependent on the CEO's age and tenure. Our results indicate that firms with younger CEOs and firms with newly minted CEOs perform better with greater proportions of incentive-based compensation while firms with older CEOs and firms with longer tenured CEOs perform better when offering greater proportions of guaranteed pay. These findings suggest firms should evaluate the characteristics and preferences of their CEOs prior to designing the compensation package.

*Keywords:* Executive compensation, agency theory

## Introduction

The relationship between CEO compensation and firm performance has been extensively studied (Jensen & Meckling, 1976; Jensen & Murphy, 1990; Sundaramurthy, Rhoades, & Rechner, 2005; Wright, Ferris, Sarin, & Awasthi, 1996). Research has been largely grounded in agency theory, which suggests that executives should be given equity stakes in their companies in order to properly align their interests with the interests of shareholders (Jensen & Meckling, 1976; Fama, 1980; Jensen & Murphy, 1990). This perspective assumes that CEOs and shareholders often have conflicting goals and interests. Accordingly, to ensure that CEOs pursue strategies in the best interest of the shareholders, executive compensation plans often include a large portion of stock options, hoping to assure that CEO decisions are focused on firm performance and value.

The idea of tying CEO pay to firm performance has received some empirical support in the literature. The impact of compensation packages on firm performance, however, is not clear. For example, Aupperle, Figler, & Lutz, (1991), Jensen & Murphy, (1990), and Murthy & Salter, (1975) found little to no relationship between CEO compensation and firm performance. Other studies, however, have found a significant relationship between CEO compensation and firm performance (Veliyath & Bishop; 1995). Crumley (2008) found a weak relationship between CEO compensation and return on equity and a strong relationship between sales and CEO compensation. Mehran (1995) and Finkelstein and Hambrick (1990) found a direct and positive relationship between executive ownership through CEO compensation and firm performance. These inconsistent results suggest additional research is necessary to better understand the relationship.

Some of the inconsistent findings of research on CEO compensation are likely due to the reliance on agency theory alone. A more complex relationship seems to be present, calling for research

to examine other factors to help better understand application of optimal executive compensation. Aaron, Harris, McDowell, and Cline, (2014) provide evidence that a moderate amount of incentive-based compensation leads to optimal firm performance, suggesting executive compensation is one of many applications of the Pierce and Aquinis (2011) *too-much-of-a-good-thing effect* (TMGT effect). Firms receive benefit from using incentive-based compensation but there exists an inflection point beyond which firm performance is hindered by additional incentive compensation. Since there are individual characteristics that impact how successful managers are at improving firm performance (Howell & Avolio, 1993) and their preferences for different decisions (Sitkin & Weingart, 1995), we suggest that individual characteristics will also impact what executive compensation structure is optimal for achieving performance.

Research on motivation has found that the use of different kinds of rewards has varying impacts on individual motivation (Pappas & Flaherty, 2006). The same holds true of CEOs. Hence, we believe that the CEO compensation to firm performance relationship will be stronger if the CEO is more highly motivated by the compensation structure. Thus, the ability to negotiate a package that meets the individual needs of the CEO should correspond with better firm performance. Accordingly, managerial power theory suggests that powerful CEOs work to and are able to structure their compensation in a manner consistent with their interests (Sanders, Davis-Blake, & Fredrickson, 1995). Continuing that reasoning, we suggest that CEOs may differ in motivation needs based on individual characteristics, which will consequently affect the type of compensation they prefer.

Expectancy theory (Vroom, 1964) helps to explain how different incentive structures will have varying effects on CEO motivation. According to the theory, individuals are motivated when a goal is desirable, and when they perceive a high likelihood that effort exerted will lead to the attainment of the goal. In the context of CEO incentive based compensation, motivation would be present if an executive both believes their efforts put forth are likely to result in receiving incentives, *and* that those incentives are valuable enough to warrant increased effort (Lawler, 1981). According to this perspective, the motivating mechanism of incentive compensation can be influenced by considering how likely a CEO perceives incentives to be attainable, and the economic value they place on the specific compensation.

Total compensation for a CEO is comprised of performance-based compensation and fixed compensation. Performance-based compensation plans typically include equity interest such as stock purchase programs and stock options. Fixed compensation plans are primarily composed of annual salary and bonuses. Fixed compensation represents a guaranteed amount of money and therefore represents a lower risk for CEOs than performance-based plans which depend on firm performance and market value for their worth. We expect that, as CEOs age and their tenure with a firm increases, they will prefer and perform better when paid more fixed compensation relative to total compensation.

This study examines the role of CEO age and tenure on optimal incentive contracts. Specifically, we argue that firm performance will be stronger when CEO compensation is incentivized in line with CEO preferences. Those preferences are likely to change over time, with firms employing younger and newly minted CEOs performing better with greater proportions of incentive-based compensation than firms with older and longer tenured counterparts. To develop our arguments, this paper will begin with a brief description of both agency and managerial power perspectives on CEO compensation, focusing on some major advantages and disadvantages of each. Then, we examine characteristics of executives that are likely to influence the favorableness of incentive-based compensation systems making predictions about optimal amounts of incentive pay. Finally, we will discuss the findings of our study and the implications they have on structuring executive pay.

## Literature Review

The decisions made by chief executives are some of instrumental importance (Armstrong, 1982; Dean & Sharfman, 1996). Many of their decisions are accompanied with consequences, both for the organization and the CEO. Sometimes the consequences for organizations are different than those for the CEO, creating a situation where the interests of executives are not necessarily aligned with what is best for the organization. Accordingly, agency theory (Eisenhardt, 1989) describes how principals of organizations implement mechanisms to control CEO decisions so that they serve the long-term interests of the organization. This need presents itself because agents (e.g. CEOs) and principals are known to have different goals (Boyd, 1995) as well as different perspectives about risk (Kim & Lu, 2011). However, simply monitoring the actions and behaviors of executives proves difficult, as the incomplete information available to shareholders makes it challenging to detect and make sense of CEO actions (Chaudri, 2003).

Efforts to avoid the agency issues raised above, commonly rely on linking CEO compensation with factors of firm performance that are desired by shareholders – mainly stock price (Rappaport, 1999). Those incentive-based systems are meant to highlight shareholder interests and avoid self-interested decisions on the part of the CEO. Linking firm performance to executive pay is not foolproof however, as CEOs often have influence on how pay structures are determined.

Managerial power theory suggests “compensation arrangements approved by boards often deviate from optimal contracting because directors are captured or subject to influence by management, sympathetic to management, or simply ineffectual in overseeing compensation” (Bebcuk, Fried, & Walker, 2002; pg. 754). Therefore, CEOs may have influence over the board in determining the type of compensation package offered; influence which is commonly used to meet the CEOs’ personal needs and preferences. For example, some CEOs may prefer a compensation package that is variable and includes a large portion of stock options, while other CEOs may prefer a compensation package that is fixed with fewer stock options and higher amounts of salary. We propose that the preference for a particular compensation package is influenced by the CEOs age and tenure. As such, it is logical to assume a CEO’s preferred mix of compensation will change over time. Specifically, we suggest that older CEOs and longer tenured CEOs prefer more fixed packages while younger CEOs and newly minted CEOs prefer compensation packaged with less guaranteed pay but more upside potential (incentive-based compensation). We believe the effect of age and tenure on the compensation-firm performance relationship is influenced by preferences for risk.

Risk propensity is defined as an individual’s general tendency toward taking or avoiding risk (Sitkin & Pablo, 1992). While definitions of risk, risk preferences, and risk taking propensity vary, they mainly agree that risk involves the “unspecified possibility of an undesirable outcome and includes some element of choice for the decision maker” (Williams & Narendran, 1999; 104). Studies have examined a range of risk preference and behavior determinants including culture, personality, and demographic variables. Williams and Narendran (1999) found that need for achievement, Type A behavior, age and nationality were significant predictors of risk behavior. They did not however find a significant relationship between education, managerial level, tenure, or length of employment and risk behavior. Yet, MacCrimmon and Wehrung, (1990), found that maturity characteristics (age, seniority, and dependents) were significantly and negatively related to risk factors. In other words, the more “mature” a manager was, the less likely he/she was to take risk.

Another factor likely to impact the effectiveness of a compensation package is whether it is successful at motivating the CEO. In order for incentive-based pay to motivate, the incentive offered must be something desired by the CEO as well as something perceived to be attainable (Flaherty & Pappas, 2002). We expect various factors will impact how incentive-based compensation effectively

motivates a CEO to achieve competitive advantage. We now turn to discuss individual characteristics likely to influence that motivation.

### **Individual CEO Characteristics**

The CEO's preferred compensation contract structure is likely a function of their individual circumstances and characteristics. We believe those influential characteristics include, but are not limited to, the CEO's age and tenure.

**CEO Age.** To properly motivate a CEO, an accurate understanding of the individuals' needs is necessary. Motivation is a psychological process that arouses action toward fulfillment of organizational or individual needs (Robbins, 1993). When a need remains unsatisfied, attention is stimulated, driving the exertion of efforts toward satisfying that unmet need. Many motivation theories exist which assert that different needs influence motivation. Organizational research has found that managers' motivation can be affected by their needs to achieve, be affiliated with others, control a situation (McClelland, 1961), achieve fair social exchange relationships (Adams, 1965), and participate in exciting and meaningful work activities (Herzberg, Mausner, & Snyderman, 1959). These grand theories of motivation describe well the things that motivate individual behavior, and prescribe how to use them to motivate others. At the same time, research has found that individuals' needs – and their accompanying motivation – change with age (Cook & Wall, 1980). Thus, we see CEO age as an important determinant of the motivational component of compensation systems.

Considering the impact of age on CEO motivation, we have learned that the motivation to pursue risk-taking behaviors decreases as retirement approaches (Harris & Weiss, 1984). Older CEOs have proven themselves to be successful and are likely becoming focused on their future after retirement. On average, older CEOs are expected to prefer a large portion of their compensation to be guaranteed. Since variable pay structures create more uncertain future income, a fixed compensation package is more likely to satisfy the needs of an older CEO. Therefore, it may be prudent for firms to design compensation packages that meet CEO preferences. Additionally, the firm should be willing to guarantee more of the older CEOs' compensation because they are receiving the proven track record in return.

Younger CEOs on the other hand have yet to establish this track record. They are likely more energetic, confident, and willing to assume more uncertain future income for the potential upside of performance-based pay. They may even prefer less guaranteed compensation if it meant the ceiling for incentive pay was higher. More incentive-based compensation is advantageous for the firm as well because it can “test out” the new CEO with a smaller guaranteed investment and reap the mutual monetary benefits if indeed the young CEO is successful. Thus, firms may do well to design compensation contracts for younger CEOs that include more performance-based pay.

**Hypothesis 1:** Firms with older CEOs will perform better when offering a greater proportion of fixed compensation relative to performance-based compensation.

**Hypothesis 2:** Firms with young CEOs will perform better when offering more performance-based compensation relative to fixed compensation.

**CEO Tenure.** Previous research regarding the effect of CEO tenure on the compensation to firm performance relationship suggests the connection between CEO compensation and firm performance weakens as CEO tenure increases because the board of directors learns more about the CEO and does not need to use firm performance as a proxy for CEO performance (Murphy, 1996). In addition, Hill and Phan (1991) suggest that the relationship weakens as CEO tenure increases, because of a CEOs increase in power and influence over his/her compensation package.

We believe the relationship between CEO compensation and firm performance can be further explained by examining the CEO's preference for performance-based or fixed compensation

packages. In particular, as CEO tenure increases the percentage of performance based compensation should decrease (Bebchuk et al., 2002). This is because CEOs with longer tenure have accumulated a large portion of their wealth through stock options and they now desire a more fixed compensation package due to changes in personal needs and preferences (Natarajan, 1999).

As such, newly minted CEOs and experienced CEOs are likely to have different desires and preferences. New CEOs lack a proven history of service with their current firm. Therefore, even if a short-tenured CEO has been successful at another firm, it remains to be seen whether that success can be duplicated in a new setting. Experienced CEOs are likely older and feel a greater sense of commitment to the firm. A long tenure for a CEO is a signal for adequate past success. Therefore, firms that have long tenured CEOs are likely satisfied with the performance results of that CEO and should be prepared to offer more guaranteed pay in return for the reduced agency costs of monitoring the experienced CEO.

**Hypothesis 3:** Firms with longer tenured CEOs will perform better when offering more fixed compensation relative to performance-based compensation.

**Hypothesis 4:** Firms with short tenured CEOs will perform better when offering more performance-based compensation related to fixed compensation.

## Methodology

Hypotheses are tested on more than 4,000 CEO observations (for CEO age) and 15,000 CEO observations (for CEO tenure) from ExecuComp covering 1992-2004. Performance-based compensation (Perf Comp) pay was operationalized as the percent of performance-based compensation (i.e., Black-Scholes option value plus the value of the restricted stock grants) relative to the overall compensation (i.e., includes performance-based compensation plus salary and bonus) for the CEO. Performance was measured as the equally weighted mean cumulative abnormal return (CAR) as derived from CRSP (Center for Research in Security Prices). The model was assessed using the EVENTUS software to conduct an event study that ties groups of CEOs (young, old, short-tenured, long-tenured) to their performance as measured by CAR. The use of the CRSP models to estimate abnormal performance allow us to handle multiple and overlapping option grants for CEOs, aggregating them to one date. The fiscal year end for a firm serves as the focal date because we did not have the option grant date and some CEOs have several grants in one year. We used mean cumulative abnormal returns to examine the performance around that date. Cumulative abnormal returns are the returns for a specific firm for one year, two years, etc. following the event over and above the return for the market as a whole. Thus, we have implicitly controlled for market returns and fluctuations. Previous research has used CAR as a common measure of performance with event studies (McWilliams & Siegel, 1997). The primary reason for using CAR as the performance indicator in this study is because of its connection to the other focal variable in our study – performance-based compensation. Since we are interested in how performance-based pay serves to influence firm performance, and this performance-based pay is often highly reliant on stock options granted to the CEO, we see CAR as the best proxy for firm performance.

We utilize a two-step methodology to test the impact of CEO compensation package on firm performance for each subset of CEOs. The first step is to split the CEO dataset (originally containing 24,000 observations) into groups (younger, older, short-tenured, long-tenured) in order to run an event study to determine the CARs associated with various compensation packages, allowing us to observe the pattern of the data. In order to identify the younger and older CEOs, we sort the data based on age. The youngest one-third of the CEOs are included in the “younger” subset and the oldest one-third are included in the “older” dataset. In order to identify the short-tenured and long-tenured CEOs, we sort the data based on tenure. The lowest one-third in years of tenure are included in the

“short-tenured” subset and the highest one-third in years of tenure are included in the “long-tenured” subset. For each group, we then sort the data on the focal variable (Perf Comp) to create quintiles. For example, in terms of short-tenure CEOs, Q1 represents the smallest proportion of Perf Comp in the shortest tenured third while for longer-tenured CEOs, Q1 represents the smallest proportion of Perf Comp for the longest tenured third. This was done to examine the firm performance associated with the various CEO compensation packages. In essence, we can see where firms are performing best in terms of offering more or less incentive-based compensation.

The second step in the methodology is to conduct listwise regressions for each of the subsets of CEOs in order to determine whether the compensation package-firm performance relationship is linear or curvilinear as well as the magnitude and significance of the observed relationship. The regressions follow a three model sequence and use the same primary independent and dependent variables: Perf Comp and cumulative abnormal returns. The equations for those models are as follows.

*Model 1: CAR = Sales + Number of Employees + Total Pay*

*Model 2: CAR = Sales + Number of Employees + Total Pay + Perf Comp*

*Model 3: CAR = Sales + Number of Employees + Total Pay + Perf Comp + Perf Comp<sup>2</sup>*

In model 1, we controlled for firm size by including net sales and number of employees. We also controlled for the total amount of compensation of the CEO in order to alleviate concerns that the relative amount of Perf Comp will not matter for CEOs with large amounts of total compensation. In Model 2, we enter the focal variable of Perf Comp to obtain an R-square assuming a linear relationship. In Model 3, we enter the squared term of Perf Comp to determine whether the curvilinear assumption added any explanatory power and is a more appropriate fit for the data.

## Results

The results of our two step methodology are presented below. We discuss hypotheses 1 and 2 together (younger and older CEOs) and hypotheses 3 and 4 together (short and long-tenured CEOs). For each dyad of hypotheses, we first discuss the event study results revealing the underlying pattern of the data. Then, we discuss the results of listwise regressions to determine the importance of the focal variable.

### CEO Age

In order to test Hypotheses 1 and 2, the observations were sorted by the age of the CEO. CEO ages in the dataset range from 37 – 91 years. There was a great deal of missing data for CEO age, producing only 4,156 usable observations. We discarded the middle one-third of the data (1,386 observations) and examined the younger CEOs (1,385 observations) and older CEOs (1,385 observations). For the purposes of this test, young CEOs were those age 37 – 55, the discarded group were CEOs age 56 – 61, and the old CEOs were age 62 – 91. Next, the observations in each dataset were sorted on the focal variable (Perf Comp) and then divided into five equal segments. The purpose of dividing the younger and older CEOs in to quintiles was to observe the pattern of the firm performance data based on Perf Comp. Therefore, quintile 1 represents the bottom 20% of firms in terms of the percentage of Perf Comp they offer and quintile 5 represents the top 20% of firms. Each quintile in the younger CEO dataset and the older CEO dataset contains 277 observations. Then, the event study was performed in EVENTUS to match the firms in each quintile with their abnormal return. The results are displayed in Table 1 below. The highlighted observations represent the peak quintile for each year (representing the optimal Perf Comp package for each year).

Table 1  
*Cumulative abnormal returns (CAR) by CEO age.*

Older CEOs					
	1 Year	2 Year	3 Year	4 Year	5 Year
Q 1	3.63	6.44	11.58	11.54	12.68
Q 2	2.08	4.23	4.02	6.68	5.55
Q 3	2.62	5.91	4.86	4.99	6.41
Q 4	1.51	-1.78	-2.20	-3.22	-2.71
Q 5	3.80	6.21	1.96	-1.81	-2.24

  

Younger CEOs					
	1 Year	2 Year	3 Year	4 Year	5 Year
Q 1	3.65	5.77	8.08	11.24	12.92
Q 2	3.55	8.21	9.98	11.29	11.65
Q 3	4.25	3.46	4.08	4.55	5.19
Q 4	1.75	-1.16	-1.54	-2.09	-1.51
Q 5	0.30	-4.08	-9.69	-13.10	-14.44

*Note: Q1 represents the lowest 20% of observations and Q5 the highest 20% in terms of Perf Comp. Highlighted values indicate highest CAR within each time period.*

Hypothesis 1 stated that firms with older CEOs will perform better when offering a greater proportion of fixed compensation related to performance-based compensation. Table 1 lends support to the hypothesis given the peak in quintile 1 for older CEOs in 4 of the 5 time periods observed.

Hypothesis 2 stated firms with young CEOs will perform better when offering more performance-based compensation relative to fixed compensation. While, there is some support for the notion that younger CEOs perform better with more Perf Comp than do older CEOs (peak in Q2 versus Q1), the hypothesis is not supported. We hypothesized a positive, linear relationship between younger CEO Perf Comp and firm performance. We found a nonlinear, concave relationship, meaning firms with younger CEOs perform optimally with a moderate amount of CEO Perf Comp. The poorer performance in Q4 and Q5 suggests that beyond the inflection point (primarily Q2), additional Perf Comp will be detrimental to firm performance.

While Table 1 shows the underlying pattern of the data, we need to determine the importance of our focal variable (Perf Comp) for each subset of CEOs. Recall that we examined the regression results for 3 models. Model 1 represents the control variables related to company size and the total compensation of the CEO. Model 2 introduces our focal variable (Perf Comp) to determine if this variable is meaningful in terms of explaining subsequent firm performance. Model 3 includes the squared term of our focal variable to assess whether underlying nature of the relationship is best described as linear or nonlinear (concave).

Table 2 below displays the regression results for older CEOs for 1 year, 3 years and 5 years respectively. Overall regression models for older CEOs were not significant. There is no significance at all for the 1 year return. There are significant R-squared values for year 3 and year 5 returns, however, all of the explanatory power is coming from the control model (Model 1). The Perf Comp variable is not significant for older CEOs.

**Table 2***Regression analysis for Older CEOs*

	1 Year CAR			3 Year CAR			5 Year CAR		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Constant	.005 (.052)	-.010 (-.117)	-.006 (- .068)	.064 (.380)	.089 (.520)	.064 (.371)	.078 (.334)	.137 (.578)	.059 (.246)
<i>Control Variables</i>									
Net Sales	-.004 (-.074)	-.003 (- .068)	-.002 (- .037)	.004 (.075)	.003 (.069)	-.001 (- .024)	.016 (.332)	.016 (.323)	.005 (.109)
Number of Employees	.018 (.378)	.015 (.315)	.014 (.299)	.036 (.768)	.039 (.820)	.041 (.865)	.037 (.803)	.042 (.893)	.047 (.999)
Total Compensation	-.049 (-1.568)	-.058† (-1.77)	-.060† (-1.782)	-.08* (-2.596)	-.073* (-2.244)	-.065* (-1.93)	-.115*** (-3.737)	-.102** (-3.17)	-.084* (-2.528)
<i>Compensation Variables</i>									
Percent Perf Comp		.027 (.920)	.003 (.036)		-.023 (- .798)	.048 (.555)		-.040 (- 1.361)	.123 (1.419)
Percent Perf Comp <sup>2</sup>			.026 (.290)			-.078 (- .873)			-.178* (-1.993)
<i>Model Significance</i>									
R-Squared	.006	.007	.007	.018***	.019***	.019**	.029***	.031***	.034***
Adjusted R-Squared	-.001	-.001	-.002	.011***	.011***	.010**	.022***	.023***	.025 ***
Change in R-Squared		.001	.000		.000	.001		.001	.003*

*Note:* Values in parentheses are t-statistics†  $p < .10$    \* $p < .05$    \*\* $p < .01$    \*\*\* $p < .001$



**Table 3***Regression analysis for Younger CEOs*

	1 Year CAR			3 Year CAR			5 Year CAR		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Constant	-.089 (-.627)	-.021 (-.144)	-.061 (-.429)	-.409 (-1.504)	-.234 (-.859)	-.342 (-1.258)	-.724 (-1.910)	-.411 (-1.082)	-.587 (-1.559)
<i>Control Variables</i>									
Net Sales	.020 (.449)	.017 (.378)	.018 (.408)	.051 (1.142)	.046 (1.052)	.048 (1.102)	.044 (.990)	.038 (.875)	.040 (.933)
Number of Employees	.040 (.890)	.047 (1.061)	.042 (.935)	.045 (1.032)	.055 (1.264)	.047 (1.093)	.052 (1.176)	.064 (1.479)	.055 (1.283)
Total Compensation	-.089 (-3.261)	-.068 (-2.441)	-.043 (-1.519)	-.130*** (-4.869)	-.103*** (-3.772)	-.070* (-2.501)	-.123 (-4.583)	-.088 (-3.225)	-.049 (-1.761)
<i>Compensation Variables</i>									
Percent Perf Comp		-.086 (-3.085)	.232 (2.592)		-.113*** (-4.125)	.318*** (3.643)		-.145 (-5.322)	.358 (4.140)
Percent Perf Comp <sup>2</sup>			-.341 (-3.737)			-.463*** (-5.190)			-.540 (-6.114)
<i>Model Significance</i>									
R-Squared	.019**	.026***	.036***	.050***	.062***	.080***	.053***	.072***	.097***
Adjusted R-Squared	.011**	.017***	.026***	.043***	.054***	.072***	.045***	.064***	.088***
Change in R-Squared		.007**	.010***		.012***	.018***		.019***	.025***

*Note:* Values in parentheses are t-statistics†  $p < .10$    \*  $p < .05$    \*\*  $p < .01$    \*\*\*  $p < .001$

Table 3 tells a much different story. All overall regression models were significant for young CEOs. Additionally, the change in R-square is significant for all models. Taken together with results illustrated in Table 1, the interpretation of this finding is that Perf Comp is significant and the relationship follows an inverse U-shaped curve for young CEOs. The magnitude of the R-square values is striking for young CEOs. The curvilinear model accounts for 3.6% of the variance in firm performance for the 1 year return, 8.0% of the 3 year return and 9.7% of the 5 year return (see Table 3 above). Thus, Perf Comp is clearly much more influential for younger CEOs than for older CEOs. While Hypothesis 2 is not supported, (due to the nonlinear relationship), we do find the optimal contracts for young CEOs have more Perf Comp than their older counterparts and the Perf Comp is a much more influential determinant of organizational performance for young CEOs.

### CEO Tenure

In order to test Hypotheses 3 and 4, the observations were sorted by the tenure of the CEO. Again, we discarded the middle one-third of the data (4,897 observations) and examined the short-tenured CEOs (5,222 observations) and long-tenured CEOs (5,102 observations). For the purposes of this test, short-tenured CEOs were those with 0-3 years of tenure, the discarded group was CEOs with 4 – 7 years of tenure and the long-tenured CEOs were those with 8 – 54 years of tenure. Next, the observations in the each dataset were sorted on the focal variable (Perf Comp) and then divided into five equal segments. Quintile 1 represents the bottom 20% of firms in terms of Perf Comp they offer and quintile 5 represents the top 20% of firms. Each quintile in the short-tenured CEO dataset contains 1,044 observations while the long-tenured CEO dataset has 1,020 in each quintile. Then, the event study was performed in EVENTUS to match the firms in each quintile with their abnormal return. The results are displayed in Table 4 below. The highlighted observations represent the peak quintile for each year (representing the optimal Perf Comp for each year).

Table 4  
*Cumulative abnormal returns (CAR) by CEO tenure.*

Long-Tenured CEOs					
	1 Year	2 Year	3 Year	4 Year	5 Year
<b>Q 1</b>	2.14	4.05	4.46	3.71	2.23
<b>Q 2</b>	-0.05	-1.52	-2.56	-3.01	-2.94
<b>Q 3</b>	-0.90	-3.66	-8.39	-8.98	-10.06
<b>Q 4</b>	-7.12	-9.60	-11.54	-12.68	-12.82
<b>Q 5</b>	1.72	-2.15	-6.02	-6.37	-8.78

  

Short-Tenured CEOs					
	1 Year	2 Year	3 Year	4 Year	5 Year
<b>Q 1</b>	2.44	4.79	7.28	7.77	9.96
<b>Q 2</b>	1.72	5.62	7.00	7.91	6.20
<b>Q 3</b>	3.75	6.8	10.09	12.84	14.95
<b>Q 4</b>	2.70	7.04	9.44	12.23	11.58
<b>Q 5</b>	2.41	3.98	0.25	-1.30	-1.30

*Note: Q1 represents the lowest 20% of observations and Q5 the highest 20% in terms of Perf Comp. Highlighted values indicate highest CAR within each time period.*

Hypothesis 3 stated firms with longer-tenured CEOs will perform better when offering a greater proportion of fixed compensation relative to performance-based compensation. Data from Table 4 lends support to the hypothesis given the peak in quintile 1 for longer-tenured CEOs in all 5 time periods observed.

Hypothesis 4 stated firms with shorter-tenured CEOs will perform better when offering more Perf Comp relative to fixed compensation. Table 4 lends support to the hypothesis given the peaks occur in Q3 and Q4. Similar to younger CEOs, we hypothesized a positive, linear relationship between shorter-tenured CEO Perf Comp and firm performance. Again, we found a nonlinear, concave relationship, meaning firms with shorter-tenured CEOs perform optimally with a moderate amount of CEO Perf Comp. The poorer performance in Q5 suggests that beyond the inflection point (primarily Q3), additional Perf Comp will be detrimental to firm performance.

While Table 4 above shows the underlying pattern of the data, we need to determine the importance of our focal variable (Perf Comp) for each subset of CEOs. Recall that we examined the regression results for 3 models. Model 1 represents the control variables related to company size and the total compensation of the CEO. Model 2 introduces our focal variable (Perf Comp) to determine if this variable is meaningful in terms of explaining subsequent firm performance. Model 3 includes the squared term of our focal variable to assess whether underlying nature of the relationship is best described as linear or nonlinear (concave).

Table 5 below displays the regression results for longer-tenured CEOs for 1 year, 3 years and 5 years respectively. All regression models for longer-tenured CEO were significant. Additionally, the change in R-square is significant for all models. Taken together with results illustrated in Table 4, the interpretation of this finding is that Perf Comp is significant and the relationship is negative for longer-tenured CEOs. The curvilinear model actually fits the data best, primarily due to a slight increase in performance from Q4 to Q5. The curvilinear model accounts for 2.1% of the variance in firm performance for the 1 year return, 4.9% of the 3 year return and 6.0% of the 5 year return. Overall, Hypothesis 3 is supported. The optimal contracts for longer-tenured CEOs have very little Perf Comp relative to guaranteed pay.

**Table 5**  
*Regression analysis for Long-Tenured CEOs*

	1 Year CAR						3 Year CAR			5 Year CAR		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Constant	-.033 (-.382)	-.006 (-.071)	-.034 (-.398)	-.091 (-.520)	.002 (.012)	-.085 (-.488)	-.104 (-.434)	.033 (.139)	-.100 (-.425)			
<i>Control Variables</i>												
Net Sales	.002 (.096)	.004 (.197)	.002 (.107)	.011 (.541)	.014 (.716)	.012 (.583)	.004 (.208)	.008 (.395)	.005 (.243)			
Number of Employees	.024 (1.186)	.026 (1.282)	.024 (1.201)	.030 (1.493)	.033† (1.661)	.031 (1.543)	.021 (1.041)	.024 (1.220)	.021 (1.085)			
Total Compensation	-.082*** (-5.719)	-.067*** (-4.553)	.047** (-3.068)	-.114*** (-8.047)	-.089*** (-6.123)	-.058*** (-3.897)	-.123*** (-8.718)	-.097*** (-6.650)	-.062*** (-4.157)			
<i>Compensation Variables</i>												
Percent Perf Comp		-.054*** (-3.704)	.196*** (4.221)		-.092*** (-6.123)	.285*** (6.241)		-.099*** (-6.854)	.324*** (7.139)			
Percent Perf Comp <sup>2</sup>			-.268*** (-5.673)			-.405*** (-8.692)			-.455*** (-9.804)			
<i>Model Significance</i>												
R-Squared	.013***	.015***	.021***	.027***	.035***	.049***	.034***	.043***	.060***			
Adjusted R-Squared	.010***	.013***	.019***	.025***	.032***	.046***	.032***	.040***	.058***			
Change in R-Squared		.003***	.006***		.008***	.014***		.009***	.018***			

Note: Values in parentheses are t-statistics

†  $p < .10$  \*  $p < .05$  \*\*  $p < .01$  \*\*\*  $p < .001$

**Table 6***Regression analysis for Short-Tenured CEOs*

	1 Year CAR			3 Year CAR			5 Year CAR		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Constant	-.004 (-.058)	.021 (.267)	-.020 (-.257)	.069 (.440)	.144 (.913)	.031 (.195)	.174 (.813)	.304 (1.410)	.132 (.609)
<i>Control Variables</i>									
Net Sales	.022 (.918)	.024 (1.002)	.019 (.788)	.025 (1.063)	.028 (1.187)	.021 (.896)	.017 (.735)	.021 (.891)	.013 (.568)
Number of Employees	-.007 (-.291)	-.006 (-.251)	-.004 (-.149)	.000 (-.013)	.001 (.046)	.004 (.186)	.001 (.046)	.003 (.121)	.006 (.276)
Total Compensation	-.095*** (-7.013)	-.084*** (-5.994)	-.070*** (-4.887)	-.129*** (-9.649)	-.114*** (-8.188)	-.095*** (-6.685)	-.125*** (-9.329)	-.105*** (-7.593)	-.085*** (-5.964)
<i>Compensation Variables</i>									
Percent Perf Comp		-.040** (-2.837)	.131** (2.930)		-.057*** (-4.153)	.174*** (3.914)		-.073*** (-5.249)	.184*** (4.160)
Percent Perf Comp <sup>2</sup>			-.183*** (-4.887)			-.248*** (-5.483)			-.276*** (-6.103)
<i>Model Significance</i>									
R-Squared	.011***	.012***	.015***	.024***	.027***	.032***	.023***	.028***	.034***
Adjusted R-Squared	.009***	.012***	.015***	.022***	.024***	.029***	.021***	.026***	.032***
Change in R-Squared		.001**	.003***		.003***	.005***		.005***	.006***

*Note:* Values in parentheses are t-statistics†  $p < .10$     \*  $p < .05$     \*\*  $p < .01$     \*\*\*  $p < .001$

Table 6 above displays the regression results for shorter-tenured CEOs for 1 year, 3 years and 5 years respectively. All overall regression models were significant for shorter-tenured CEOs. Additionally, the change in R-square is significant for all models. Taken together with results illustrated in Table 4, the interpretation of this finding is that Perf Comp is significant and the relationship follows an inverse U-shaped curve for shorter-tenured CEOs. Here, the curvilinear model accounts for 1.5% of the variance in firm performance for the 1 year return, 3.2% of the 3 year return and 3.4% of the 5 year return. Overall, Hypothesis 4 is partially supported. The optimal contracts for shorter-tenured CEOs have more Perf Comp than their longer-tenured counterparts (peak in Q3 for shorter-tenured and Q1 for longer-tenured). It should be noted that, while all regression models were significant for both short-tenured and long-tenured CEOs, the magnitude of the R-square values is greater for long-tenured CEOs (max of 6.0%) than short-tenured CEOs (max of 3.4%).

## Discussion

In this study, we sought to contribute to our understanding of the link between CEO compensation and performance. The abundant empirical research examining that relationship is surprisingly inconsistent, and at times even contradictory. We have learned that many organizations attempt to influence firm performance by fixing CEO compensation to future achievement (Jensen & Meckling, 1976). Separately, there is ample evidence that CEOs leverage their individual power and control over information to influence a compensation package that is personally favorable (Grinstein & Hribar, 2004; Bebchuk et al., 2002). By integrating an agency approach with a managerial power perspective, this study was able to advance literature on optimal CEO compensation structure. Specifically, we leveraged those two theories and investigated the important role of CEO age and tenure on the relationship between compensation structure and performance. This section begins with a brief discussion about the findings of our hypotheses, highlighting the most interesting findings. Each hypothesis received some support through the event studies and regressions, but there was a substantial range in the level of support for each one. Next, we detail the theoretical contributions derived from these results. We then discuss practical applications, suggesting how these data can influence more optimal CEO pay. We close with the limitations of this paper and the study conclusions.

Hypothesis 1 proposed that firms with older CEOs would perform better when offering a greater proportion of fixed compensation relative to performance-based compensation. We find the pattern of the data to be consistent with the prediction (Table 1) but the predictive power of the Perf Comp variable to be minimal (Table 2). As such, we have evidence that says older CEOs do seem to prefer, and their firms perform optimally, when offered more guaranteed pay. Despite the insignificance of the variable in the regressions, we argue for CEOs to be given more guaranteed pay as they age and have proven themselves worthy of the additional certainty of their compensation package.

Hypothesis 2 stated firms with young CEOs will perform better when offering more performance-based compensation relative to fixed compensation. As stated in the results section, we found a nonlinear concave relationship rather than a positive, linear relationship (Table 1). Additionally, we find the predictive power of the Perf Comp variable to be quite high (Table 3). While not precisely what we hypothesized, we believe this finding to be of particular importance. Firms with younger CEOs perform better in the lower levels of performance-based compensation (Q1 – Q3) than in the higher levels (Q4 – Q5). But, the firms with younger CEOs peak most often in Q2 suggesting the optimal amount of Perf Comp is somewhere in the 20% – 40% range. Additionally,

the regressions show the Perf Comp variable is highly significant and an important predictor for firms with younger CEOs.

Taken together, Hypotheses 1 and 2 suggest there is, indeed, a difference in optimal compensation contracts for CEOs based on age. Firms with younger CEOs flourish more with more performance-based compensation than the firms with older CEOs.

Hypothesis 3 stated firms with longer-tenured older CEOs will perform better when offering a greater proportion of fixed compensation relative to performance-based compensation. We find the pattern of the data to be consistent with the prediction (Table 4) and the predictive power of the Perf Comp variable significant (Table 5). This finding is similar to but stronger than the findings for older CEOs. In essence, firms with both older and longer-tenured CEOs perform best with higher levels of guaranteed pay, but the Perf Comp variable is more significant for longer-tenured CEOs. This finding has face validity. The longer a CEO stay on the job and proves themselves, the more guaranteed pay is warranted.

Hypothesis 4 stated firms with short tenured CEOs will perform better when offering more performance-based compensation related to fixed compensation. As stated in the results section, we found a nonlinear concave relationship rather than a positive, linear relationship (Table 4). Additionally, we find the predictive power of the Perf Comp variable to be quite high (Table 6). While not precisely what we hypothesized, we believe this finding to be quite interesting. Firms with short-tenured CEOs perform better with moderate amounts of Perf Comp (Q3 – Q4) than with low levels (Q1 – Q2) or with high levels (Q5). Additionally, the regressions show the Perf Comp variable is highly significant and an important predictor for firms with short-tenured CEOs.

Taken together, Hypotheses 3 and 4 suggest there is, indeed, a difference in optimal compensation contracts for CEOs based on tenure. Firms with short-tenured CEOs (peak in Q3) flourish more with more Perf Comp than the firms with long-tenured CEOs (peak in Q1). Additionally, the Perf Comp variable is significant for both longer and shorter-tenured CEOs. This suggests tenure is even more of an important determinant of the optimal compensation contract than age. It is important for firms to take the tenure of the CEO in to account when designing their compensation package.

### **Theoretical Contributions**

The expansive literature regarding CEO compensation generally takes one of several theoretical directions. The principal-agent relationship that exists in many organizations guides much of that literature to apply agency theory for predicting the impact of CEO pay on firm performance. Indeed, some empirical research has demonstrated that aligning executive compensation with shareholder interests may predict performance (Hambrick, 1995). However, some challenges have been presented for the effectiveness of the agency perspective, with mixed results across numerous empirical studies (Boyd, 1994). Because CEOs have considerable power and control much information, managerial power theory has been applied in some research to investigate the CEO compensation – performance relationship.

In the current paper, we sought to contribute to the overall literature on optimal CEO compensation. Specifically, we advanced empirical findings regarding the relationship between executive compensation and performance, by testing the supplementary role of CEO age and tenure. The results of our study suggested that the relationship between performance-based CEO pay and firm performance is different depending on a CEO's age and organizational tenure.

### **Practical Implications**

There are several important implications provided by this study. The first is not to assume that controlling CEO behavior through performance-based compensation mechanisms will necessarily result in superior firm performance. Rather, the results cited above show that performance-based

compensation is a significant predictor of firm performance for some CEOs, but not for others. Specifically, tying executive compensation to performance is more efficacious for young CEOs and more short-tenured CEOs than for older and longer-tenured executives. This finding suggests that corporate governance structures give consideration to individual differences when establishing compensation packages for executives. The entire purpose of using stock options and other performance-based compensation is to properly align individual interests with those of the firm. However, individuals differ in their risk-preferences and those differences will play an instrumental role in properly aligning principal and agent interests. Firms should thus evaluate the factors that are likely to influence risk preferences of their CEOs prior to designing compensation packages.

Our results also suggest that the impact of age and tenure on the compensation-performance relationship is not as straightforward as assigning more (less) performance-based compensation to younger (older) CEOs. Rather, our analysis found that these relationships are not linear. Of course, this finding is not completely surprising given that age and tenure are not static characteristics. Additionally, while not developed in our hypotheses, there is some evidence that might provide insight into this dissonant finding. According to several lines of research, we see that the positive impact of a given variable diminishes at excessive levels. For example, increases in individuals' conscientiousness leads to higher task performance initially; however, that relationship eventually disappears at higher levels of conscientiousness (Le, Oh, Robbins, Ilies, Holland, & Westrick, 2011). In fact, numerous such inverted U-shaped relationships, which Pierce and Aquinis (2011) refer to as the *too-much-of-a-good-thing effect* (TMGT effect), have been found throughout the management literature. Applying the TMGT effect to further interpretation of our findings, it appears that increases in performance-based pay for younger and shorter-tenured executives enhance firm performance initially, but at some level cease to have a positive effect. Stated differently, we think the inflection point at which the positive relationship between performance-based pay and firm performance weakens is determined by CEO age and tenure. Thus, compensation committees should realize that optimal compensation contracts too should not be static, but rather should adapt with characteristics of individual CEOs as well as other contextual changes.

### Limitations and Future Directions

While the methodologies used in this study provide confidence in interpreting our findings, we also note a few limitations. First, we are examining groups of CEOs (i.e. young, old) to determine the optimal compensation packages. We do this by aggregating individual CEOs into groups given shared characteristics. We believe this to be a useful first step in understanding the individual differences among CEOs, but does not provide a comprehensive analysis of preferences at the individual level. One implication of our results is that the individual CEO should have a voice in designing what is truly optimal for them. Future research should examine this relationship further with insights from CEOs themselves.

Second, by examining cumulative abnormal returns (through the EVENTUS software), we are limited to large publicly traded firms and incentive-based pay for executives is primarily comprised of stock options. We understand the need to establish optimal compensation contracts includes smaller publicly traded firms and privately held firms as well.

Third, we are making a logical leap from performance-based pay to subsequent firm performance. Wright et al. (1996) argue the amount of equity ownership influences more directly the amount of risk executives take. We do not have a way to gather and test the risk propensity of the firm in light of the "appropriate" amount of risk they "should" take. The relationship between compensation package and firm performance may be moderated (mediated) by risk-taking behaviors. Future research should examine this relationship.



Finally, we believe there will be other factors that will influence the performance-based compensation to firm performance relationship. We know firm size and firm age have an impact in that performance-based compensation is a much more influential variable for CEOs in young and small firms (Aaron, McDowell, Harris, & Cline, 2013). Other factors we are interested in that may influence the relationship include the industry in which the firm participates and CEO duality. We also are interested in whether the Sarbanes-Oxley act of 2002 had a role in reshaping this relationship. Our study is limited to the 1992-2004 time frame which may or may not be generalizable to a post Sarbanes-Oxley business landscape.

## Conclusion

Encouraging individuals to achieve superior performance is of paramount importance across all organizations. Those organizations apply numerous mechanisms aimed at improving productivity and performance. While the sources of organization productivity and performance are many, the activity of an organization's chief executive is a principal factor. However, the interests of executives are not always aligned with those of shareholders, which results in the need of owners to control CEO behavior. Because of this dynamic, the topic of CEO compensation has garnered a considerable amount of attention from researchers. Despite this great deal of interest, our understanding of the most effective use of compensation to motivate a CEO is incomplete. In this research, we attempted to advance the topic of CEO compensation by investigating the variability in performance-based compensation influenced by individual characteristics of the CEO. Our results suggest that younger CEOs and those with shorter-tenure will perform better as compared to older CEOs and those who are longer-tenured, when a greater percentage of compensation is tied to performance. These results help explain some of the mixed results in the literature, and suggest that it might be prudent for corporate boards to consider CEO differences when designing optimal compensation packages.

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