Relative Performance Evaluation

and the Use of Discretionary Bonuses in Executive Compensation

by

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ABSTRACT

In this study, I examine the extent to which firms rely on relative performance evaluation (RPE) when setting executive compensation. In particular, I examine whether firms use information about peer performance to determine compensation at the end of the year, i.e. after both firm and peer performance are observed. I find that RPE is most pronounced for firms that allow little or no scope for ex post discretionary adjustments to annual bonuses. Conversely, firms grant mainly discretionary bonuses exhibit little use of RPE. These findings suggest that information about peer performance is not used at the end of the year. Instead, peer performance seems to be incorporated in performance targets at the beginning of the year, at least among firms primarily using objective performance targets. In addition, I provide new evidence on the determinants of the use of subjectivity in annual bonus plans.

ACKNOWLEDGMENTS

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Chapter 1

INTRODUCTION

This study examines the use of relative performance evaluation ("RPE") and the use of discretionary bonuses in annual bonus contracts of executives. The design of executive compensation has been the subject of a large stream of literature (Murphy, 1999; Ittner and Larcker, 2001). More specifically, there is also extensive empirical and theoretical literature examining the extent to which firms rely on RPE when awarding incentive compensation (Holmström, 1979; 1982; Albuquerque, 2009).

However, the results from this stream of research provide mixed support for the theoretical prediction that firms incorporate information about peer performance into their evaluations to protect their managers from uncontrollable shocks to their environment. Early empirical studies infer the use of RPE implicitly from a negative coefficient on peer performance when regressing executive compensation on both firm and peer performance (Antle and Smith, 1986). Several studies (Gibbons and Murphy, 1990; Janakiraman et al., 1992) find support for the use of RPE while others (Jensen and Murphy, 1990; Garvey and Milbourn, 2003) find no such support.

Recent studies take advantage of SEC's 2006 executive compensation disclosure rules which require detailed information on how executive compensation is determined including information on the use of relative peer performance and the composition of the peer group. These additional disclosure requirements provide an opportunity to examine the explicit use of RPE. Gong et al. (2011)[1] find about 25% of their sample firms make at least one component of executive compensation contingent on firm performance

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[1] Similarly, Gao et al. (2012) find about 35% of the firms use RPE and Black et al. (2011) show about 18% firms use RPE in setting CEO's compensation.

relative to a group of peers. This low use of RPE is puzzling given the use of RPE allows firms to filter out noise from performance evaluations and reduce the compensation risk for their managers.

In addition to the finding that the use of RPE is relatively low in practice, the literature provides little, if any, insight into how RPE is implemented. Specifically, firms can use information on peer performance in at least two ways when determining compensation. First, RPE can be used ex post in that a firm compares its own performance against that of a peer group during a period. This approach requires room for discretionary adjustments to incorporate peer performance information which becomes available only after the period is over. Without room for discretionary adjustments, objective formulas that determine compensation based on pre-determined targets would leave little scope for incorporation of information about current period's peer performance. Second, RPE can also be implemented ex ante by setting beginning-of-period performance targets dependent upon prior years' peer performance.

Studies examining the use of RPE do not distinguish between the two types of RPE due to data availability constraints. In this study, I rely on improved disclosures about the design of executive annual bonus plans to study the use of RPE and the use of discretionary bonuses. I focus on executive annual bonus plans because the disclosure of bonus formulas provides an opportunity to empirically measure the extent to which companies rely on discretionary bonuses. In contrast, prior literature mainly focuses on total compensation where it is practically infeasible to measure the extent of subjectivity or discretionary compensation awards.

In this paper, I hand collect data on the proportion of executive annual bonus that is to be determined subjectively at the end of a period (which I refer to as discretionary bonuses) and examine the extent to which it is related to the use of RPE. First, I provide evidence that firms relying more on discretionary bonuses in annual bonus contracts use RPE less frequently. This finding is inconsistent with the conventional belief that RPE is done ex post after information about contemporaneous peer performance becomes available. Conversely, the use of RPE is more pronounced among firms who rely more on objective performance measures. This evidence is consistent with the notion that past peer performance is built into performance targets.

Second, I use more detailed data than available in prior literature to examine whether the reliance on subjectivity and discretionary bonuses is due to optimal contracting or management entrenchment. Based on predictions consistent with optimal contracting, I show that the use of discretionary bonuses is positively related to the noisiness of financial performance measurements and firms' growth opportunities. Additionally, I show that the use of discretionary bonuses is higher for financially distressed firm. On the contrary, I do not find support for the management entrenchment prediction that CEO power is positively associated with the use of subjectivity. In particular, CEO tenure, ownership, influence over the board, and institutional ownership are not significantly associated with the use of discretionary bonuses.

My findings contribute to the literature as follows. First, I provide evidence that the use of RPE differs for firms relying more on objective performance measures in performance evaluation and frims granting mainly discretionary bonuses. This offers one possible explanation for the mixed findings in prior RPE literature. Specifically, prior

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studies do not distinguish between firms with objective performance measures from those with subjective performance measures in performance evaluation. The results from this study suggest that tests of RPE may have more power in samples of firms relying primarily on objective performance measures.

Second, my results suggest that firms incorporate peer performance in target setting. Firms relying solely on objective formulas have limited scope to implement RPE at the end of a performance period. At the same time, my results suggest that these are the firms where RPE is most pronounced. Hence, it is likely that these firms incorporate peer performance at the beginning of the performance period via target setting. Theoretically, the benefit of basing targets on peer performance is that it helps alleviate the negative consequences of target ratcheting arising when targets are based solely on a firm's own past performance (Milgrom and Roberts, 1992).

Third, this study replicates and extends some findings of prior studies on the use of subjectivity (Ittner et al., 1997; Gibbs et al., 2004; Matějka et al., 2009; Höppe and Moers, 2011). Given data limitation, prior studies use crude indicator variables to measure subjectivity. This study uses a continuous measure reflecting discretionary awards as a percentage of total bonuses for a larger sample over multiple years. I replicate prior findings that firms with greater growth opportunities, adopting a prospector strategy, or with noisier financial measures rely more on subjectivity when determining CEO's annual bonus. Moreover, consistent with prior literature, I do not find support for the management entrenchment prediction that CEO power is positively associated with the use of subjectivity.

In the next chapter, I discuss prior theory and empirical evidence on the use of RPE, the choice of performance measures, and the use of subjectivity in setting compensation. Chapter 3 describes the data collection and sample selection procedure. The results from empirical tests are presented in Chapter 4. Chapter 5 concludes.

Chapter 2

PRIOR LITERATURE AND HYPOTHESIS

2.1. RPE Literature

The informativeness principle predicts that a signal about performance should be incorporated in the compensation contract if and only if it reveals information about an agent's effort that is not subsumed by the performance measures already included in the contract (Holmström, 1979). One source of information that is useful when evaluating an agent's performance is the performance of a peer group. Specifically, peer performance reflects the same exogenous shocks as those affecting the agent's performance and consequently can be used to filter out these common shocks or noise facing a group of peers (Holmström, 1982).

In spite of the appealing theoretical logic, empirical evidence on the use of RPE is mixed. Several empirical studies regress compensation on firm performance and peer performance and infer the use of RPE from a negative coefficient on peer performance. Using a small sample, Antle and Smith (1986) document that good peer performance as measured by accounting and market return reduces compensation. Gibbons and Murphy (1990) find support for the use of RPE but only for market returns as measures of performance. Using larger samples, Garvey and Milbourn (2003, 2006) find some support for the use of RPE for young executives and Rajgopal et al. (2006) find support for the use of RPE in S&P 500 firms. In contrast, several studies find little support for theoretical prediction of RPE (Barro and Barro, 1990; Jensen and Murphy, 1990).

More recent studies examine the explicit use of RPE relying on SEC's new disclosure requirements[2]. Gong et al. (2011) find about 25% of the S&P 1500 firms and Black et al. (2011) find 18% of the S&P 500 firms explicitly use peer performance in setting compensation in 2006[3]. In both studies, a firm is defined as a RPE firm if it mentions that at least one component of executive compensation is determined based on firm performance relative to a group of peers in the compensation disclosure.

Given the potential of RPE to filter out uncontrollable shocks to performance, the use of explicit RPE documented empirically seems to be relatively low, and the evidence based on the implicit approach is relatively weak. Moreover, in spite of an ample amount of research in the area, it is still unclear how exactly firms incorporate information about peer performance into compensation contracts. There are at least two ways for firms to do so. First, firms can incorporate information on peer performance by comparing firm performance against that of a peer group at the end of the period (ex post RPE). Given that payout of performance contingent compensation (such as annual bonus) is usually determined based upon the attainment of a set of performance targets, firms can only incorporate peer performance at the end of the performance period if discretionary ex

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[2] Securities and Exchange Commission release No.33-8732, Executive Compensation and Related Person Disclosure issued on August 11, 2006 with November 7, 2006 as the effective date. This disclosure rule requires firms to provide detailed information on what the compensation elements are and how each element of compensation is determined (amount and the formula including weights and nature on each performance targets, if applicable). Additionally, firms are required to disclose the use of RPE and the composition of peer groups if applicable.
[3] Using data from United Kingdom, Carter el al. (2009) find about fifty percent of the performance-vested equity grants plan uses some level of explicit RPE.

post adjustments are allowed[4]. Thus, RPE can enter into compensation contracts at the end of a performance evaluation period.

Second, firms can use information about prior year's peer performance to adjust targets set at the beginning of the year along with other determinants of performance targets (ex ante RPE). If past performance of peer firms provides additional information about the type of environment managers will be facing in the current period, it should be incorporated into performance targets. For example, if past peer performance is favorable, it is more likely that managers face a favorable economic environment, and firms should revise their targets upward. Conversely, if past peer performance is unfavorable, it is more likely that managers face unfavorable exogenous shocks, and therefore, firms should revise their targets downward.

Several analytical studies show the benefits of incorporating information about peer performance when setting performance targets (Shleifer, 1985; Milgrom and Roberts, 1992)[5]. In particular, when targets depend more on past peer performance and less on past own performance, they are less likely to be affected by the ratchet effect (Milgrom and Roberts, 1992). The ratchet effect arises when firms use current performance to set future goals (Weitzman, 1980). When targets are set using prior performance, managers

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[4] Less commonly, firms can combine ex ante and ex post approach and determine the bonus payout based on the pre-determined ranking among itself in relation to other firms in a comparable group. For example, Comerica Inc's 2009 bonus payout is based on its earnings per share growth in relation to EPS growth in pre-determined peer group consisting of 11 companies.

[5] When setting targets, a regulator can base them on own-performance or performance of peers. An example is Medicare's reimbursement scheme to hospitals. Each patient is assigned to a diagnostically related group. Medicare reimburses hospitals a fixed fee per patient calculated by averaging the costs of all patients treated in a particular group over the previous year. A hospital can keep the difference between the costs of treating a patient and the average costs of treating a particular type of patient in the previous period.

have less incentive to work hard in the current period, as the outcome of the current period is likely to increase the performance target in the future period. Using peer performance to set targets provides incentives to work hard and does not suffer from the ratchet problem.

Empirically, using data from a single firm, Aranda et al. (2010) show that peer performance is incorporated in the target setting process and that the use of past peer performance alleviates target ratcheting. Similarly, using survey data, Indjejikian et al. (2012) show that peer performance is incorporated when firms revise their performance targets.

Figure 1 gives a timeline illustrating how different types of RPE reflect different timing of peer performance information is incorporate in to performance evaluation. Ex post RPE entails the use of contemporaneous peer performance (Peer Performance$_t$) at the end of the period in determining bonuses Conversely, when a compensation contact is determined in part based on past peer performance (Peer Performance$_{t-1}$) at the beginning of a performance period, this is referred to as ex ante RPE. Compensation formulas (performance measurements, weight on each performance measurement, and performance targets) are determined at the beginning of a performance period, and it is costly for firms to renege on the contracts[6].

In summary, firms can use ex ante RPE to incorporate prior year's peer performance into targets and then rely on an objective performance formula when evaluating

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[6] There are two directions firm can renege on contacts: Upward adjustment and downward adjustment. When firms renege contacts through making downward adjustments to bonuses, it reduces the effectiveness of the contracts by weakening the incentive for future periods. On the other hand, firms may choose to deviate from compensation formula by making upward adjustments. This is also costly as this upward adjustment can be viewed as evidence for rent extraction.

managers' performance. Alternatively, firms can use ex post RPE and rely on the use of discretionary bonuses to incorporate information on peer performance.

2.2   The Choice of Performance Measure and Discretionary Bonuses

Much of the RPE literature implicitly assumes that executive compensation is primarily determined by stock returns and accounting returns. Prior research also provides evidence on the use of different performance measures. Early studies focus on the choice between accounting and market returns in setting compensation (Lambert and Larcker, 1987; Sloan, 1993). More recent literature focuses on the choice of non-financial performance measures. For example, Ittner et al. (1997) hypothesize and find positive relation between noise in financial measures and the use of non-financial measures. Bushman et al. (1996) show that the use of individual performance evaluation is positively related with the noisiness of objective measures. Overall, consistent with optimal contracting predictions, the findings in this stream of literature suggest that firms put more emphasis on measures that are less noisy, more sensitive to managers' actions and more congruent with firms' goals.

Following this stream of research, several studies also examine the use of discretionary bonuses or subjectivity in general when awarding incentive compensation. When used appropriately in incentive contracting, the use of subjectivity can improve managerial incentives (Baker et al., 1994). Specifically, objective measures, such as accounting returns are more likely to be short-term focused, backward looking, and subject to manipulations. Relying solely on the objective measures may motivate a narrow focus on the short-term measures and destroy value in the long term (Bol, 2008).

Additionally, some dimensions of managerial effort are not easily quantifiable, and reliance solely on objective measures would lead to inefficient task allocation (Holmström and Milgrom, 1991). Therefore, the use of subjectivity can induce actions that are more congruent with the firms' goals (Feltham and Xie, 1994).

Conversely, there are some costs associated with using subjectivity to determine compensation. For example, the management entrenchment hypothesis predicts that CEO power is positively associated with the use of subjectivity as boards use subjectivity to increase CEO compensation above the level justifiable by performance evaluated on objective measures. Bebchuk and Fried (2006) argue that the use of discretionary bonuses ensures "managers are well paid even with poor performance based on objective criteria". Subjectivity in compensation can be used as a means to justify "excess" pay and to provide an illusion that the compensation is linked to performance.

2.3 Hypothesis

In this section, I integrate both streams of literature discussed above and state two competing hypothesis. First, discretionary bonuses can be complementary with RPE in that they allow firms to incorporate information about peer performance which is only available at the end of a performance period. One common goal shared by the use of discretionary bonuses and the use of RPE is that both improve contracting by reducing the risk faced by managers. When companies allow scope for discretionary bonuses in their annual bonus contract, they allow information about peer performance to be incorporated and consequently reduce exogenous risks faced by managers. Therefore, if companies

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primarily care about minimizing compensation risks, RPE and discretionary bonuses should be complements and I would expect:

> *Hypothesis 1a: The negative association between executive compensation and peer performance is more pronounced in companies that rely on discretionary bonuses to a greater extent.*

Alternatively, information about peer performance can be built in into beginning-of-the-period targets. For example, if all peers performed well in the prior period, the company is more likely to adjust the current period's targets upward. In addition to eliminating the need for discretionary bonuses, this approach also makes targets more efficient in the sense that it limits managerial ability to game future targets by reducing the current effort. When targets are set based on peer performance, a manager has less incentive to shirk as her good performance in the current period has less of an impact on future targets.

Therefore, if firms are primarily concerned about minimizing adverse incentive effects of targets, I would expect RPE to be built into the performance targets ex ante. In other words, RPE should be more pronounced in companies that use mainly objective measures. Hence, if RPE is built ex ante into the performance targets at the beginning of the performance period, I would expect

> *Hypothesis 1b: The negative association between executive compensation and peer performance is less pronounced in companies that rely on discretionary bonuses to a greater extent.*

Chapter 3

RESEARCH DESIGN

3.1. Sample Selection

The sample selection begins with firms that have December 31st as their fiscal year-end. I retrieve the proxy statements for a randomly selected sample of 500 firms between the years 2007 to 2009. Information about performance measurements and the weight assigned to each of these performance measurements in annual bonus contracts are based on the Compensation Discussion and Analysis (CD&A) section. I require sample firms to have executive compensation data from Standard & Poor's ExecuComp database, financial data from Standard & Poor's Compustat and monthly stock return data from the Center for Research in Security Price (CRSP).

Similar to Albuquerque (2009), I drop a firm-year from the sample if CEO tenure is less than one year, or if the total compensation is less than or equal to zero. I drop additional firm-year if total assets are less than ten million dollars, sales are less than zero, or if common equity at year-end is less than zero.

3.2. Variable Measurement

Firms' Use of Subjective Performance Measures in Executive Annual Bonus Contracts

Höppe and Moers (2011) suggest that the use of discretionary bonuses is one of the main ways to incorporate subjectivity into annual bonus plans. To empirically quantify the extent to which companies rely on discretionary bonuses, I collect information for all performance measurements mentioned in the annual incentive plan discussion in the

CD&A section of each proxy statement. Appendix A provides representative proxy disclosures for the use of different performance measures in cases with varying extents of reliance on discretionary bonuses. I classify performance measures into three categories: (i) financial, (ii) non-financial (such as customer satisfaction, diversity, quality, innovation, safety and investor relations), and (iii) subjective including discretionary, individual, and strategic measures that are likely to be evaluated subjectively.

After categorizing all the performance measures, I calculate *DiscretionaryBonus* for each firm-year as the sum of all the weights placed on the measures in category (iii). Additionally, I use a broader definition based on the lack of pre-determined performance standards. In this alternative approach, I take all the performance measures classified into category (ii) and check if there is a pre-determined threshold, a target or an upper bound performance level associated for these non-financial measures. *DiscretionaryBonuses2* is then calculated as the sum of weights on measures in category (iii) above as well as nonfinancial measures (category ii) without targets.

I follow Albuquerque (2009) when defining all measures used in the RPE models. *Peer return* is calculated based on equal-weighted stock return portfolio for peer firms that are in the same two-digit SIC code and size quartile group. I sort all firms with assets more than $10 million in the merged CRSP-Compustat with the same two-digit SIC (SIC_2) into size-quartile grouped by beginning-of-year market value. *Peer return* is the return of the equal-weight portfolio after excluding the return of the own firm. When the number of firms in a SIC_2-Size group is less than two, the SIC_2 group is used.

Other Variables

In addition to my primary variable of interest, I also include controls for other variables related to the use of subjectivity in prior studies. Ittner et al. (1997) use the ratio of research and development to sales (RD/sales) and the ratio of employees to sales (EMP/Sales) to capture firm strategy. Firms with higher RD/sales ratio and firms with higher EMP/Sales are assumed to be following a prospector strategy as prospectors respond to the environment by maintaining innovations and providing quality goods and services, whereas a defender strategy focuses on delivering goods and services efficiently (Miles et al., 1978). In addition to these variables, I also control for firm size (Smith and Watts, 1992), growth opportunities (Core and Guay, 1999; Albuquerque, 2009) and four different measures of corporate governance: CEO tenure, ownership, influence over the board, and institutional ownership. I include the noisiness of financial measures as Ittner et al. (1997) show the weight placed on financial measures is negatively associated with the noisiness of these measures. Appendix B provides a detailed explanation on how each variable is constructed.

3.3. Descriptive Statistics

Table 1 presents descriptive statistics for the variables in the empirical tests. Panel A of Table 1 describes the annual bonus compensation in the sample and shows the mean (median) level of annual bonus is $813,030 ($540,220). Firm performance and industry-size peer performance are measured by stock returns. The average (median) of firm

return is 3.0% (0.4%) and mean (median) industry-size peer return is 2.1% (3.3%). Furthermore, the average CEO tenure in my sample is 8.31 years which is comparable to 8.5 years, the average tenure of CEO in the sample of Albuquerque (2009). Lastly, the average CEO total compensation is $4.31 million and the median CEO total compensation is $3.03million.

3.4. Model Specification

My hypotheses predict that the extent to which firms rely on subjective evaluation is related to their use of RPE. Thus, I first estimate a model validating my measure of subjectivity. Second, I specify a model of RPE based on prior literature.

To validate my measures, I follow Matějka et al. (2011) and estimate a tobit regression7 examining the association between my measures of subjectivity and the known determinants of the use of subjectivity.

$$DiscretionaryBonus_{it} = C_0 + \alpha_1 Firm\ Size_{it} + \alpha_2 Growth_{it}$$

$$+ \alpha_3 ROA\ Noise_{it} + \alpha_4 ROE\ Noise_{it} + \alpha_5 ROS\ Noise_{it}$$

$$+ \alpha_6 Bankruptcy_{it} + \alpha_7 Prior\ Financial_{it}$$

$$+ \alpha_8 RD\ Sales\ Ratio_{it} + \alpha_9 Employees\ Sales\ Ratio_{it}$$

$$+ \alpha_{10} Institutioanl\ Ownership\ Ratio_{it} + \alpha_{11} CEO\ Tenure_{it} + \alpha_{12} CEO\ Ownership_{it}$$

$$+ \alpha_{13} CEO\ Chairman\ Duality_{it} + \varepsilon_{it.} \tag{1}$$

To estimate a model of RPE, I rely on the same specification as in Albuquerque (2009). In both equations below, the subscript *it* indicates a firm-year pair where the subscript *t* indicates time in year and the subscript *i* indicates a firm.

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7 A tobit model is estimated because the dependent variable ranges between 0 to 100 with probability mass at both corner values (Wooldridge, 2002).

$$CEOPay_{it} = C_0 + \alpha_1 FirmPerf_{it} + \alpha_2 PeerPerf_{it} + \alpha_3 ControlVariables_{it} + \varepsilon_{it}. \qquad (2)$$

In addition, I include an interaction term to examine the relation between the use of RPE and the use of subjectivity in annual bonus contracts.

$$CEOPay_{it} = C_0 + \alpha_1 FirmPerf_{it} + \alpha_2 PeerPerf_{it} + \alpha_3 DiscretionaryBonus_{it}$$

$$+ \alpha_4 DiscretionaryBonus_{it} \times PeerPerf_{it} + \alpha_5 ControlVariables_{it} + \varepsilon_{it}. \qquad (3)$$

Equation (2) is the model specified in Albuquerque (2009) and Equation (3) is an extension of Equation (2) incorporating the use of discretionary bonuses (*DiscretionaryBonus*).

Chapter 4

EMPIRICAL RESULTS

4.1. Use of the Discretionary Bonuses

Table 3 presents the results of estimating Equation (1). The dependent variable in Panel A of Table 2 is *DiscretionaryBonus*, the proportion of bonus based on measures that likely require subjective evaluation. I find that the use of discretionary bonuses is positively associated with growth opportunities, noise in financial measures, financial distress, and firm's strategy as reflected in EMP/Sales. The results are largely similar when using *DiscretionaryBonus2* as an alternative measure.

These findings replicate the results of prior studies (Ittner et al., 1997; Höppe and Moers, 2011) and extend them by using a continuous measure of discretionary bonuses rather than an indicator variable. The evidence supports the prediction of contracting theory that firms use incentive weights proportional to their signal-to-noise ratios (Banker and Datar, 1989). I find firms rely on subjective evaluations (via discretionary bonuses) to a greater extent when financial measures are less informative. Additionally, relying solely on objective measures may not be appropriate for distressed firms and firms with greater growth opportunities because some of the performance dimensions are either difficult to quantify or long-term in nature; therefore, these firms choose to rely more on discretionary bonuses to induce efforts in areas that are more aligned with maximizing firm value.

As in prior studies (Ittner et al., 1997; Höppe and Moers, 2011), I do not find support for the relation between CEO power and the use of discretionary bonuses predicted by the management entrenchment hypothesis.

Finally, I find distressed firms are more likely to rely on subjective measures in determining bonuses. Ittner et al. (1997) hypothesize that financially distressed firms place greater weights on financial measures and find no support for their predicted relation. Matějka et al. (2011) show distressed firms are less likely to use nonfinancial performance measures in annual bonus plan. The discrepancy between my findings and those in prior studies may be due to the sample period under study (2007 – 2009) when the recessionary environment made objective measures with predetermined targets noisier particularly for financially distressed companies.

4.2. Relative Performance Evaluation

Table 4 presents the results of estimating Equation (2). Column 1 and column 2 replicate the results of Albuquerque (2009) while column 3 and column 4 present the results of extending the sample period through 2009. I find that the coefficient on firm performance is positive and statistically significant, and the coefficient on peer performance is negative and significant (both $p<0.01$) for both sample periods.

Table 5 presents the results of estimating Equation (2) using 2007 - 2009 for which data on subjectivity are available and all other sample selection criteria are met (n=1,088). Panel A presents the results using annual cash bonus as the dependent variable. The results are as expected in that firm performance is positive and statistically significant, and

the coefficient on peer performance is negative and significant (both $p<0.01$). Panel B presents the results of estimating Equation (2) using total compensation as the dependent variable. In contrast to Table 4, the coefficient on firm performance is not statistically significant while the coefficient on peer performance remains negative and significant ($p=0.01$). However, total compensation is not the main focus of this study because it is practically infeasible to measure the use of discretionary bonuses in equity compensation. Instead, the main RPE model relates to how bonuses respond to peer performance and Panel A shows the results are as expected.

For the main test, I estimate Equation (3) which also includes the interaction term, allowing the effect of peer performance to be moderated by the use of discretionary bonuses. Table 6 presents the results of estimating Equation (3) using a sample from 2007 to 2009. The main results are in Panel A where the dependent variable is annual cash bonus. Consistent with the standard RPE prediction, firm performance is significantly positive and peer performance is negatively associated with annual bonuses (both $p<0.01$). More importantly, the association between the use of RPE and the use of subjectivity (*Peer return and DiscretionaryBonus*) is significantly positive ($p=0.022$) which is consistent with H1b. In other words, the negative association between peer performance and the annual bonus payout is dampened by the use of discretionary bonuses. This suggests that firms relying more on objective performance measures are more likely to incorporate peer performance when evaluating CEO performance.

For completeness, I estimate Equation (3) using total compensation as the dependent variable with results presented in Panel B. I find that firm performance is not significantly

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associated with the total compensation and peer performance is significantly negative (p=0.01). As discussed before, this could be due to the difficulty of measuring the use of discretionary bonuses in total compensation or due to the sample period analyzed.

In summary, I replicate the prior RPE result that peer performance is negatively associated with compensation. I extend this well-established finding by incorporating the use of subjectivity in performance evaluation. I find that firms relying more on objective performance measures are more likely to incorporate past peer performance in setting compensation. In other words, firms relying more on objective performance measures set performance targets utilizing past peer performance. This result is consistent with theoretical arguments that firms use past peer performance when setting targets to alleviate adverse incentive effects of target ratcheting.

Chapter 5

CONCLUSION

This study empirically examines the use of RPE and the use of discretionary bonuses in executive bonus contracts. Specifically, I find a stronger association between the use of RPE and that of objective performance measures utilizing information disclosed in proxy statements from 2007 to 2009. The result suggests the extent to which firms rely on subjective evaluations should also be considered when examining the use of RPE.

This paper contributes to the RPE literature by providing a possible explanation for the mixed empirical results on the use of RPE. The results of this study suggest the decision about RPE is not independent of other incentive design decisions. The RPE decision is one of the dimensions considered in setting compensation along with other elements, such as the choice of performance measures and the choice of performance targets. Hence, the use of RPE should not be examined in isolation and the results may be stronger if other incentive choices are taken into consideration.

Additionally, this study adds to the literature on target setting. It provides evidence that both firm performance and peer performance are used in the target setting process. Instead of using subjectivity at the end of a period to incorporate peer performance, firms can use past peer performance in the target setting process. Incorporating peer performance into targets minimizes the extent of subjective or discretionary compensation adjustments that firms need to make at the end of period to take into account peer performance.

This paper also contributes to the literature on the use of discretionary bonuses by providing detailed large-sample empirical evidence on the use of discretionary bonuses in annual bonus contracts. Due to data limitations, prior studies in this area can only measure discretionary bonuses in performance evaluation as an indicator variable. I collect data on all performance measures in annual bonus contracts and corresponding incentive weights placed on each measure. Relying on this more detailed data, I show that the reliance on discretionary bonuses is higher when a firm faces greater growth opportunities and when its financial measures are noisy. Additionally, I find that financially distressed firms are more likely to use discretionary bonuses when determining their CEO's annual bonus. This may suggest that future research can examine the relation between the use of discretionary bonuses and the degree of a firm's financial distress.

This study has several limitations. First, I focus on only one component of total compensation because it is difficult to measure the use of discretionary bonuses for other compensation components. Second, my sample period overlaps with a global recession which may partly confound my findings. Future research can examine whether my findings regarding the relation between the use of discretionary bonuses and RPE extend to other periods.

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APPENDIX A

CODING CRITERIA AND EXAMPLES OF PROXY DISCLOSURES

Below are excerpts from the CD&A reports in the proxy statements filed for the fiscal year of 2009. The first company places 100% of annual bonus for its CEO based on objective and financial measures. The second company places some weight on non-financial measures with objective targets. The third and the fourth company place some weight on objective measures and some weights on subjective measures. The fifth company does not have formula-based annual bonus compensation. Information about the nature and the weight of performance measures are in bold.

I. *Example of DiscretionaryBonus = 0% and DiscretionaryBonus2 = 0%*

Annual Cash Incentive Awards

The corporate financial goal for 2009, which was a fully diluted EPS target described in detail below, represented 100% of the total award for the Corporate Leadership Council members and 60% of the total award for presidents of principal operating subsidiaries, including the President of PPL Electric Utilities Corporation.

Annual Cash Incentive Weightings Applied to Financial and Operational Results

Category	CEO; COO; CFO; SVP(1)	PPL Electric Utilities President
Financial Results	**100%**	60%
Operational Results		
PPL Electric Utilities Corporation	—	20%
Individual Performance	—	20%

II. *Example of DiscretionaryBonus = 0% and DiscretionaryBonus2 = 0%*

Under the 2009 annual incentive compensation design, 80% weighting was given to generating free cash flow, which is defined as cash from operations less capital expenditures, and 20% weighting was given to nonfinancial factors. Of the 20% weighting for nonfinancial factors, 10% was applied to safety—reducing the total recordable incident rate and 10% was applied to diversity—increasing the representation of women and U.S. minorities in professional and managerial positions. There was an opportunity to earn an additional 5% if free cash flow was positive in any quarter. The corporate plan target for free cash flow was ($1,283) million and the result was $322 million, earning a 160% payout. The result for free cash flow was calculated on an after-tax basis and currency rates and the price of aluminum, which is traded as a commodity on the London Metal Exchange (LME), were kept constant at the LME price and currency assumptions used when the target was established. In addition, the actual result for free cash flow was reduced by the amount of capital expenditures that were deferred in 2009, amounting to $158 million. Free cash flow was positive in the fourth quarter, which resulted in an additional 5% payout under the plan design. The safety goal of a 1.360 total recordable incident rate was exceeded by achieving a lower total recordable incident rate of 1.277, resulting in a 14.2% payout, however the Compensation and Benefits Committee reduced the payout for this factor to 7.1% due to the existence of fatalities during the year. The diversity targets ranged from 13.9% to 23.3% representation of women and U.S. minorities in various job grades and the results ranged from 13.3% to 22.8%, resulting in a payout of 6.8%, as compared with a target for diversity of 10%. The total calculated amount for the corporate annual incentive compensation plan was 178.8%.

III. *Example of DiscretionaryBonus = 20% and DiscretionaryBonus2 = 20%*

Starting in 2006, the MIP consists of two measurements: the Company Balanced Business Performance weighted 80%; and **Individual Performance, at the discretion of the Board, weighted 20% for each of the officers**. The MIP performance measures are described below.

Company Balanced Business Performance. Includes a set of corporate performance measures that appropriately balances performance and risks across the following four categories:

 customer (progress toward meeting and exceeding our customer service and reliability standards as set by the Vermont Public Service Board; our customers' level of satisfaction relative to all other electric utilities in the East Region as measured annually by J.D. Power & Associates; and Vermont leaders' opinions of the Company on key issues as measured in even numbered years by David Schaefer & Associates or by large commercial and industrial customers' satisfaction as measured by Metrix Matrix in odd numbered years);

☐ financial (earnings and reducing gap between earned return on equity (ROE) and allowed ROE);

☐ process improvement (a measure of key process improvement initiatives appropriate for the year); and

☐ employee measures (key questions from our employee survey and safety measures).

Individual Performance. Based on the advice and recommendation of the CEO for officers reporting to him, the Committee and the Board evaluate individual officer performance compared to performance objectives set early in the year, and also evaluate the performance of the CEO versus his performance objectives. Key performance objectives from the Company's Strategic Plan and of each officer's teams are incorporated into the officer's performance objectives. These objectives are organized to cover the following areas: accountability, empowerment, strategy, personal leadership, and teamwork. Specific sub-objectives and weightings for each of the objectives are set for each officer at the beginning of the year. **The rating for each officer's individual performance is at the full discretion of the Board.**

IV. *Example of* **DiscretionaryBonus** *= 20% and* **DiscretionaryBonus***2 = 25%*

Objective	Weighting	50% Payout Level	100% Payout Level	200% Payout Level	Actual Performance Result	Payout Percentage
Earnings per share	40%	$1.00	$1.17	$1.40	$1.14	36.5%
System Average Interruption Duration Index	5%	94.45 minutes	87.7 minutes	80.97 minutes	65.05 minutes	10.0%
% equivalent availability—coal and nuclear	10%	77.7%	80.7%	81.7%	79.8%	8.5%
OSHA incident rate	10%	4.2	3.7	3.2	2.9	20.0%
J.D. Power Customer Satisfaction Index—residential	5%	Bottom Half of Tier II	Top Half of Tier II	Tier 1	Tier 1	10.0%
Cumulative Synergy Savings (due to GMO acquisition)	5%	$149.0M	$186.2M	$223.4M	$212.4M	8.5%
Comprehensive Energy Plan Progress	**5%**	**Qualitative measure; judgment made on collective work progress**			125%	6.3%
Individual performance	**20%**	**Qualitative measure**				

V. *Example of* **DiscretionaryBonus***= 100% and* **DiscretionaryBonus***2 = 100%*

We pay an annual cash bonus in order to link a significant portion of the executive's Total Cash Compensation to specific annual Company results and to reflect individual contributions to Company performance. **We do not establish a target performance**

formula for any of our executives, including the Named Executive Officers. Although specific business objectives (focusing on safety, service, and financial performance) are communicated to the Company as a whole based on the operating plan developed by management and presented to the Board, these business objectives do not exclusively drive executive bonuses. Instead, the Committee uses these business objectives to determine a funding level without using any formulas or assigning specific weight to any one objective. The funding level is a percentage of competitive compensation (i.e., generally the median to the seventy-fifth percentile of Total Cash Compensation less current salaries) depending upon our success in achieving our business objectives and other qualitative factors the Committee considers in awarding annual cash bonuses. **Then the individual bonus awards for each Named Executive Officer are determined on a discretionary basis.** The Committee believes this is an effective way to reinforce our pay-for-performance philosophy, as annual bonuses are based upon (i) in large part, the Company's performance, and (ii) the review by the CEO and/or the Committee of the individual executive's performance during the period. This discretionary process results in the annual cash bonus being highly variable, ranging in recent years from zero for all Named Executive Officers to an amount that may significantly exceed the executive's base salary.

APPENDIX B

VARIABLE DEFINITIONS

Annual Cash Bonus: The logarithm of the real bonus compensation disclosed in the proxy statement (using constant 1992 dollar).

Bankruptcy: A dummy variable takes value of one if the Altman Z-score is less than three.

CEO tenure: The natural logarithm of CEO tenure. It is calculated as the difference between the year and month in which the CEO assumed office and the year and month of the end of the current fiscal year.

DiscretionaryBonuses: Total weights placed on performance measures defined to be subjective. A measure is defined to be subjective if a performance measure is stated to be subjective, discretionary, and individual (without mentioning any specific performance criteria). The minimum value this variable can have is 0 and the maximum value this variable can have is 100.

DiscretionaryBonuses2: Total weights on non-financial measures with no pre-determined targets (threshold level, target level and upper limit level) associated with the performance measures for each firm-year. The minimum value this variable can have is 0 and the maximum value this variable can have is 100.

Duality: A dummy equals to one if the CEO is also the board chair and zero otherwise.

EMP / Sales: The ratio between number of employees and sales in percentage.

Firm return: Measured as continuously compounded gross real rate of return to shareholders assuming dividends are reinvested.

Firm Size (sales): Measured as the natural logarithm of sales using constant 1992 dollars. The beginning of year values is sued for firm size (and for Growth).

Growth: The beginning-of-the-year ratio of market value of the firm to the book value of assets. Market value of the equity is calculated as number of Common Shares Outstanding (CSHO) multiplied by the close price of the fiscal year (prcc_f). The market value of the firm is calculated by the value of total assets (AT) minus total book common equity (CEQ) plus the market value of the equity (CSHO × prcc_f).

Institutional Ownership Ratio: Measured as the ratio between Institutional Common Stock Holdings and total Shares outstanding.

Neglag1: A dummy variable takes the value of one if Net Income of prior year is negative and zero otherwise.

Neglag2: A dummy variable takes the value of one if Net Income two years prior to current fiscal year is negative and zero otherwise.

Ownership: A dummy variable takes the value of one is the CEO share ownership is greater than the median for the year across CEOs in Execucomp and zero otherwise. CEO share ownership is calculated as the number of shares owned by CEO (Shares Owned - Options Excluded) divided by the number of common shares outstanding at the end of the fiscal year (CSHO).

Peer return: It is calculated based on equal-weighted stock return portfolio if the peer firms in the same two-digit SIC code and size quartile, excluding the own-firm return.

Relative Variance: Measured as the difference between the variance firm-specific stock return and that of the industry over prior 36 months.

RD / Sales: The ratio between research and development expense of employees and sales.

Regulation Dummy: Regulated industry dummy takes value of one for firms in the gas, electric and telecommunication industries with SIC codes from 4810 to 4820 or 4900 to 4939 and zero otherwise.

ROAnoise: Measured as the standard deviation of median annual return on assets for companies in the firm's 3-digit SIC classification over prior five years.

ROEnoise: Measured as the standard deviation of median annual return on equity for companies in the firm's 3-digit SIC classification over prior five years.

ROSnoise: Measured as the standard deviation of median annual return on sales for companies in the firm's 3-digit SIC classification over prior five years.

Total compensation: The logarithm of the real total annual compensation (using constant 1992 dollar). Total annual compensation is calculated as the sum of salary, bonus, other annual compensation, restricted stock grants, long-term incentive payouts, all other compensation and value of option grants (TDC1).

Table 1

Sample summary Statics

	N	Mean	Standard Deviation	Lower Quartile	Median	Upper Quartile
Panel A. Compensation Data						
Total compensation (in thousands)	1,088	4318.00	4423.75	1539.31	3030.80	5615.84
Ln of total compensation	1,088	7.96	0.95	7.34	8.02	8.63
Annual cash bonus (in thousands)	1,088	813.03	1291.33	124.43	540.22	1094.33
Ln of annual cash bonus	1,088	5.13	2.79	4.83	6.29	7.00
Panel B. Performance measures						
Firm return	1,088	0.03	0.38	-0.19	0.00	0.18
Peer return (industry-size)	1,088	0.02	0.24	-0.18	0.03	0.18
DiscretionaryBonus (%)	1,088	13.45	24.90	0.00	0.00	20.00
DiscretionaryBonus2 (%)	1,088	17.53	27.86	0.00	0.00	30.00
Panel C. Firm and CEO characteristics						
Bankruptcy	1,088	0.64	0.48	0.00	1.00	1.00
EMP / Sales	1,088	0.38	0.77	0.16	0.29	0.42
Firm size (sales)	1,088	65.78	138.88	9.04	23.11	65.90
Growth	1,088	1.57	0.78	1.09	1.32	1.79
Institutional Ownership Ratio	1,088	0.77	0.17	0.67	0.79	0.89
RD / Sales	1,088	0.05	0.55	0.00	0.00	0.02
Regulation Dummy	1,088	0.13	0.34	0.00	0.00	1.00
Relative Variance	1,088	0.02	0.03	0.01	0.02	0.03
ROAnoise	1,088	0.01	0.01	0.00	0.01	0.02
ROEnoise	1,088	0.03	0.17	0.01	0.02	0.03
ROSnoise	1,088	0.03	0.07	0.01	0.01	0.02
CEO tenure	1,088	8.31	7.87	3.11	5.25	10.14
ln CEO tenure	1,088	1.72	0.87	1.10	1.72	2.29
Duality	1,088	0.44	0.50	0.00	0.00	1.00
Ownership	1,088	0.38	0.48	0.00	0.00	1.00

Statistics for 1,088 CEO-firm observations for 394 (451) firms (CEO) for the fiscal years 2007, 2008 and 2009. The primary data sets are the performance measures collected proxy statements of each company and ExecuComp released by Standard and Poor's.

Financial data are obtained from Compustat, stock return data are obtained from the CRSP monthly stock files, and the inflation data are obtained from the website of Federal Reserve Bank at St. Louis. All dollar values are in thousands (compensation) or millions (firm characteristics). All variables are defined in Appendix B.

Table 2
Correlation Matrix between Firm and CEO Characteristics

	Bankruptcy	EMP / Sales	Firm size (sales)	Growth	Institutional Ownership Ratio	RD / Sales	Regulation	Relative Variance	ROAnoise	ROEnoise	ROSnoise	CEO tenure	Duality	Ownership
Bankruptcy	1													
EMP / Sales	-0.1237*	1												
Firm size (sales)	0.0786*	-0.0751*	1											
Growth	-0.4594*	0.0716*	-0.0479	1										
Institutional Ownership Ratio	-0.1261*	0.1006*	-0.1652*	0.0431	1									
RD / Sales	0.0072	0.0742*	-0.0254	0.2959*	0.0383	1								
Regulation	0.2874*	-0.1268*	-0.0053	-0.1674*	-0.2731*	-0.0343	1							
Relative Variance	-0.1413*	-0.0067	0.045	0.0519	0.0326	-0.01	-0.2041*	1						
ROAnoise	-0.1864*	0.044	0.0101	0.2443*	0.0974*	0.1300*	-0.3216*	0.2433*	1					
ROEnoise	0.0373	0.0051	-0.0005	-0.0215	0.0336	0.0047	-0.0576	0.0043	0.1367*	1				
ROSnoise	-0.1010*	-0.0208	0.0149	0.2675*	0.0128	0.2490*	-0.1266*	0.3340*	0.6352*	0.0366	1			
CEO tenure	-0.0660*	0.0212	-0.0337	0.1193*	-0.0029	0.0038	-0.0992*	-0.0055	0.0104	-0.0262	0.0011	1		
Duality	0.056	-0.037	0.0833*	0.1412*	0.0082	-0.0466	0.02	-0.2158*	-0.0639*	0.0072	-0.0292	0.1589*	1	
Ownership	-0.0997*	0.1647*	-0.2092	-0.0005	0.0624*	0.0518	-0.217	-0.0806*	0.0234	0.019	-0.0566	0.3896*	0.0354	1

This table presents Pearson product-moment correlations between firm and CEO characteristics in Panel C. The sample consists of 1,088 observations covering the period from 2007 to 2009.

Variables are defined in Appendix B.

*indicates significance at the 5% level.

Table 3

Tobit Models on the use of Discretionary Bonuses

	Panel A		Panel B	
	DiscretionaryBonus		DiscretionaryBonus2	
	coefficient	p-value	coefficient	p-value
Intercept	**-48.97**	**0.08**	-22.10	0.16
Firm size (sales)	-0.03	0.26	-3.71	0.55
Growth	**10.10**	**0.04**	**9.42**	**0.00**
Regulation Dummy	-13.53	0.23	**15.63**	0.46
Bankruptcy	**20.93**	**0.01**	**48.12**	**0.00**
RD / Sales	-5.19	0.30	26.72	0.33
EMP / Sales	**-30.27**	**0.08**	**-32.21**	**0.03**
Neglag1	-1.26	0.85	7.87	0.45
Neglag2	1.63	0.85	19.16	0.64
ROAnoise	-376.20	0.35	-36.36	0.95
ROSnoise	**138.30**	**0.02**	**173.13**	**0.04**
ROEnoise	**13.41**	**0.00**	-3.28	0.65
Institutional Ownership Ratio	13.36	0.56	10.11	0.77
CEO tenure	2.50	0.55	6.07	0.30
Duality	-2.63	0.73	**-20.76**	**0.08**
Ownership	-0.16	0.98	-3.14	0.77
Year Dummies	Yes		Yes	
Firm fixed effect	Yes		Yes	
Sample size	1,088		1,088	
Pseudo R^2	1.24%		1.70%	

This table estimates the equation $DiscretionaryBonus_{it} = C_0 + \alpha_1 Firm\ Size_{it} + \alpha_2 Growth_{it} + \alpha_3 ROA\ Noise_{it} + \alpha_4 ROE\ Noise_{it} + \alpha_5 ROS\ Noise_{it} + \alpha_6 Bankruptcy_{it} + \alpha_7 Prior\ Financial_{it} + \alpha_8 RD\ Sales\ Ratio_{it} + \alpha_9 Employees\ Sales\ Ratio_{it} + \alpha_{10} Institutioanl\ Ownership\ Ratio_{it} + \alpha_{11} CEO\ Tenure_{it} + \alpha_{12} CEO\ Ownership_{it} + \alpha_{13} CEO\ Chairman\ Duality_{it} + \varepsilon_{it}$.

Panel A presents the result from regressing the *DiscretionaryBonus* on its determinants.

Panel B presents the result from regressing the *DiscretionaryBonus2* on its determinants.

All variables are defined in Appendix B.

Bold coefficients are significant at least at the 10% significance level.

The standard errors are heteroskedasticity-consistent using the Huber-White correction and are clustered by firm.

Table 4

Regressions Estimating the sensitivity of CEO compensation to RPE using stock returns performance measures

	Total Compensation 1992 - 2005		Total Compensation 1992 - 2009	
	(level regression)		(level regression)	
	Coefficient	p-value	Coefficient	p-value
	(1)	(2)	(3)	(4)
Intercept	**5.36**	**0.00**	**6.56**	**0.00**
Firm return	**0.23**	**0.00**	**0.25**	**0.00**
Peer return	**-0.13**	**0.00**	**-0.11**	**0.00**
Firm size (sales)	**0.23**	**0.00**	**0.07**	**0.00**
Growth	**0.06**	**0.00**	**0.17**	**0.00**
CEO tenure	**0.18**	**0.00**	**0.07**	**0.00**
Regulation	**1.94**	**0.00**	**0.01**	**0.00**
Relative Variance	**0.37**	**0.06**	**0.09**	**0.00**
Duality	0.01	0.95	-	-
Number of meetings	0.00	0.88	-	-
Ownership	0.01	0.80	**0.06**	**0.00**
Interlock	0.08	0.18	0.02	0.44
CEO-fixed effects	Yes		Yes	
Year Dummies	Yes		Yes	
Industry dummies	Yes		Yes	
Sample size	16,087		22,804	
R^2	78.09%		72.74%	

This table estimates the equation $CEOPay_{it} = C_0 + \alpha_1 FirmPerf_{it} + \alpha_2 PeerPerf_{it} + \alpha_3 ControlVariables_{it} + \varepsilon_{it}$.
Column 3 and 4 presents the result from using the natural log of total annual compensation as the dependent variable.

All variables are defined in Appendix B.

Bold coefficients are significant at least at the 10% significance level.

The standard errors are heteroskedasticity-consistent using the Huber-White correction and are clustered by firm.

Table 5

Regressions Estimating the sensitivity of CEO compensation to RPE using stock returns performance measures

	Panel A		Panel B	
	Annual Cash Bonus		Total Compensation	
	2007 - 2009		2007 - 2009	
	(level regression)		(level regression)	
	Coefficient	p-value	Coefficient	p-value
Intercept	**4.91**	**0.00**	**7.81**	**0.00**
Firm return	**1.95**	**0.00**	0.04	0.52
Peer return	**-2.75**	**0.00**	**-0.33**	**0.01**
Firm size (sales)	**-0.87**	**0.06**	**0.51**	**0.00**
Growth	0.42	0.12	-0.01	0.91
CEO tenure	0.46	0.46	-0.08	0.53
Relative Variance	4.58	0.29	0.67	0.53
Duality	-0.30	0.36	0.08	0.22
Ownership	**1.07**	**0.01**	-0.03	0.69
CEO-fixed effects	Yes		Yes	
Year Dummies	Yes		Yes	
Industry dummies	No		No	
Sample size	1,088		1,088	
R^2	43.02%		78.72%	

This table estimates the equation $CEOPay_{it} = C_0 + \alpha_1 FirmPerf_{it} + \alpha_2 PeerPerf_{it} + \alpha_3 ControlVariables_{it} + \varepsilon_{it}$.
The dependent variable in Panel A is the natural log of annual cash bonus and the dependent variable in Panel B is the natural log of total annual compensation.
All variables are defined in Appendix B.
Bold coefficients are significant at least at the 10% significance level.

Table 6
Regressions Estimating the sensitivity of CEO compensation to RPE using stock returns performance measures and the use of Discretionary Bonuses

	Panel A Annual Cash Bonus 2007 - 2009		Panel B Total Compensation 2007 - 2009	
	(level regression)		(level regression)	
	Coefficient	p-value	Coefficient	p-value
Intercept	**4.63**	**0.00**	**7.76**	**0.00**
Firm return	**1.92**	**0.00**	0.03	0.62
Peer return	**-3.14**	**0.00**	**-0.31**	**0.02**
DiscretionaryBonus	0.01	0.12	**0.01**	**0.08**
Peer return x DiscretionaryBonus	**0.03**	**0.02**	-0.00	0.51
Firm size (sales)	**-0.92**	**0.04**	**0.51**	**0.00**
Growth	**0.46**	**0.09**	-0.01	0.89
CEO tenure	0.57	0.35	-0.06	0.61
Relative Variance	4.58	0.29	0.66	0.44
Duality	-0.36	-0.26	0.08	0.22
Ownership	**1.01**	**0.02**	-0.03	0.69
CEO-fixed effects	Yes		Yes	
Year Dummies	Yes		Yes	
Industry dummies	No		No	
Sample size	1,088		1,088	
R^2	43.53%		78.77%	

This table estimates the equation $CEOPay_{it} = C_0 + \alpha_1 FirmPerf_{it} + \alpha_2 PeerPerf_{it} + \alpha_3 DiscretionaryBonus_{it} + \alpha_4 DiscretionaryBonus_{it} \times PeerPerf_{it} + \alpha_5 ControlVariables_{it} + \varepsilon_{it}$.
The dependent variable in Panel A is the natural log of annual cash bonus and the dependent variable in Panel B is the natural log of total annual compensation.
All variables are defined in Appendix B.
Bold coefficients are significant at least at the 10% significance level.

Figure 1
How Information on Peer Performance is Incorporated in Performance Evaluation