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Compensation Committee Governance Quality, Chief Executive Officer Stock Option Grants, and Future Firm Performance

Jerry Sun
University of Windsor

Steven F. Cahan

David Emanuel

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Abstract

This paper examines whether the relationship between future firm performance and chief executive officer (CEO) stock option grants is affected by the quality of the compensation committee, the responsibilities of which include determining the CEO's compensation package. Compensation committee quality is measured using six committee characteristics – the proportion of directors appointed during the tenure of the incumbent CEO, the proportion of senior directors with at least ten years' board service, the proportion of directors who are CEOs of other companies, the aggregate shareholding of directors who are members of the compensation committee, the proportion of directors with three or more additional board seats (so-called "busy directors"), and compensation committee size. The study documents strong evidence that future earnings performance is positively associated with stock option grants as compensation committee quality increases.

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1. Introduction

Compensation committees have regularly attracted the attention of politicians and regulators because of their central role in establishing CEO compensation, and setting the parameters for the compensation of other senior executives. In 1993, Congress passed legislation requiring that compensation committees be composed of two or more outside directors for performance-based pay in excess of $1 million to be tax deductible (Internal Revenue Code Section 162 (m)) and in 2003, the Securities and Exchange Commission (SEC) approved new listing rules that require all listed firms to have compensation committees that consist solely of outside directors.[1] Although some studies (e.g., Anderson and Bizjak 2003, Newman and Mozes 1999, Vafeas 2003a) investigate compensation committees, there is substantially less published research on this committee than on audit committees (Klein 2003).

In this study, we investigate whether the relationship between CEO stock option grants and subsequent performance is affected by the quality of the compensation committee. The argument is that better corporate governance is reflected in higher quality compensation committees which are capable of designing and implementing remuneration arrangements that will lead to stronger incentives for subsequent performance, and reduce the capacity of CEOs to extract rents. A finding that the relationship between CEO option grants and future firm performance is increasing in compensation committee quality is consistent with this proposition.

[1] The relevant rules are NYSE Corporate Governance 303A.05, NASDAQ Rule 4350 (c), and AMEX Enhanced Corporate Governance Rules Sec 805.

We measure compensation committee quality using six metrics. They are the proportion of directors appointed during the tenure of the incumbent CEO, the proportion of senior directors with at least ten years' board service, the proportion of directors who are CEOs of other companies, the aggregate shareholding of directors, the proportion of directors with three or more additional board seats, and compensation committee size. We use these six measures as compensation committee quality is unlikely to depend on a single dimension and because similar measures have been used in the study of boards and audit committees.[2] These six metrics are combined in two ways – by factor analysis and by aggregating scores for the six measures. Thus, our measure of compensation committee quality is broader and more comprehensive than compensation committee independence (i.e., the proportion of outside directors on the committee) which has been used to measure compensation committee quality in much of the prior literature. Put differently, we expect that compensation committee quality can differ even when all compensation committees are independent.

Using a sample of 474 US listed companies all of which have independent compensation committees at a time when such independence was not required, we find evidence that the relationship between CEO stock option grants and subsequent one-, two- and three years ahead operating income increases as compensation committee quality increases. This result also holds where stock returns are used as the performance

[2] Core et al. (1999) find that the proportion of outside directors on the board appointed by the CEO and the proportion of outside directors on the board who serve on three or more other boards are positively associated with the level of CEO compensation. Bedard et al. (2004) use directors' board service time and the number of directors on the audit committee as a proxy for committee expertise and activity, respectively. Daily et al. (1998) suggest that directors who are CEOs of other firms may have lower governance quality. Klein (2002a) documents a negative association between earnings management and the proportion of blockholders on the audit committee.

metric. The results support the notion that a consequence of higher compensation committee quality is compensation contracts that result in superior future performance. Higher quality compensation committees appear to improve incentive alignment, and as a consequence, rent extraction is likely to be reduced.

We contribute to the existing but limited body of research on compensation committee effectiveness (Daily et. al. 1998, Conyon and Peck 1998, Newman and Mozes 1999, Anderson and Bizjak 2003, Vafeas 2003a, Conyon and He 2004) in several ways. First, we assess the effectiveness of compensation committees by examining the relationship between stock option grants and future firm performance. The relationship between option grants and performance is of interest in addressing issues of the effectiveness of compensation arrangements, and the role of the compensation committee in this process is important as this committee has the delegated responsibility of making the recommendation to the board on CEO pay, among other tasks. Second, we introduce a new and more comprehensive measure of compensation committee quality. Such a measure is needed because under the 2003 stock exchange listing rules (which require independent compensation committees), the old measure of compensation committee quality – compensation committee independence – can no longer be used. Third, our sample of 474 firms is significantly larger than that used in prior studies (the next largest is Vafeas 2003a, with a maximum of 267 firms). Fourth, our data which are from 2001 are more recent than data used in prior studies (e.g., Anderson and Bizjak's (2003) sample period goes to 1998).

The remainder of the paper is organized as follows. Section 2 reviews the related studies, develops the research design, and states the hypothesis. Section 3 explains the analysis. The results are reported in section 4 and section 5 concludes the paper.

2. Related Studies, Hypothesis Development and Research Design

2.1 General Motivation

There are a number of theoretical formulations that derive the result that incentive based compensation is a viable mechanism for aligning the interests of managers and shareholders (e.g., Ross 1973, Becker and Stigler 1974, Jensen and Meckling 1976, Lazear 1979, Holmstrom 1979, Demsetz and Lehn 1985). In these models, the way in which compensation is structured ex-ante motivates managers to act in the interests of principals. An ex-post outcome should be better performance, on average.

Prior empirical research documents evidence consistent with the view that compensation serves an incentive alignment role. For example, using long-term stock market performance as a measure of corporate performance, Masson (1971) finds that firms with executives whose financial rewards are more closely parallel to shareholders' interests outperform other firms over the post-war period. Abowd (1990) finds that increased performance sensitivity in compensation is positively associated with increased subsequent corporate performance measured by either gross economic return or stock market performance, and Conyon and Freeman (2002) provide evidence that shared compensation in the U.K. is positively associated with either productivity measured by

real sales growth or stock market performance. [3]

This study is closest in design to that of Hanlon et al. (2003). They examine whether increasing stock option grants are associated with higher future earnings performance. They document that one dollar of Black-Scholes value of stock option grant generates $3.71 of future operating income over the following five years. They conclude that the payoff is attributable to the economic determinants of option grants and not to "poor" governance quality. [4] In sum, their results are consistent with their incentive alignment hypothesis and not with what they call a "rent extraction" story.

On the other hand, recent studies (e.g., Bebchuk et al. 2002, Bebchuk and Fried 2003, 2004) have emphasized managerial power as a dominant influence in explaining the level and characteristics of executive pay. Managers with more power are able to extract more rent, defined as value in excess of what they would receive under optimal contracting. Therefore, the efficiency of compensation contracts would be discounted in some circumstances where compensation committees are less effective in fulfilling their duty or where it is easier for managers to shape their own pay arrangements. The discounting of contracting efficiency would lead to an agency cost that is larger than its optimal cost, and a shareholder value that is smaller than its optimal value. Thus, using incentive-based compensation contracts may not solve agency problems between executives and shareholders. Instead, the agency problems can lead to rent extraction. Bebchuk and Fried are particularly critical of what they call "conventional" stock option

[3] These are profit sharing, profit related pay schemes, Save As You Earn schemes, and stock option plans, all of which had tax advantages in the United Kingdom at differing times from 1987 onwards.

[4] Including the beginning of the year portfolio of executive options held, cash compensation, investment opportunities, current and prior year share performance, losses, leverage, and earnings volatility.

plans, e.g., plans based on at-the-money option grants, without indexing outcomes to benchmark performance, and where executives can sell their shares immediately after exercise.

Prior research also finds evidence consistent with this rent extraction or managerial power argument. Core et al. (1999) examine whether a weak corporate governance structure leads to excess compensation, and then poorer future firm performance. They find that the excess compensation paid to CEOs is negatively associated with subsequent firm performance. Further, DeFusco et al. (1991) find that firms that changed their stock option plans over the 1987 – 1982 period experienced earnings declines relative to industry levels and long-term declines in cumulative abnormal returns, which suggests that the changes were unsuccessful as a means of generating improved performance.

In addition, several previous studies find that stock option plans have dysfunctional effects. For instance, Yermack (1997) documents positive abnormal returns immediately after the granting of options, suggesting that CEOs receive stock options shortly before the announcement of good news. Aboody and Kasznik (2003) find evidence consistent with the proposition that managers delay good news announcements until after the date of scheduled option awards, and accelerate bad news before the date of option awards. Carpenter and Remmers (2001) find that insiders time the exercise of stock options based on private information and Lie (2005) finds that abnormal stock returns are negative before unscheduled awards and positive after, and this pattern has

become stronger over time. His results are consistent with the view that at least some award dates for the issue of executive options are set retrospectively.

In summary, the incentive alignment argument that executive compensation contracts align the interests of managers and those of shareholders and then enhance firm performance is supported by not only optimal contract theory but also evidence documented in several prior studies (e.g., Hanlon et al. 2003). On the other hand, the argument that managers use compensation contracts to extract rents is consistent with the managerial power/rent extraction approach. Some previous studies (e.g., Core et al. 1999) also provide evidence supporting this argument.

We expect that whether executive compensation is associated with incentive alignment will depend on the strength of corporate governance. Many studies find that high governance quality can constrain managerial opportunism (e.g., Klein 2002a, Carcello and Neal 2000, Carcello and Neal 2003).[5] Thus, executive compensation is more likely to be associated with incentive alignment if corporate governance quality is higher, whereas the association of rent extraction with executive compensation will be higher if corporate governance quality is lower. This suggests that the alignment of incentives by executive compensation contracts increases in corporate governance quality.

Since compensation committees are responsible for establishing, administering, overseeing, and advising on executive compensation plans, the corporate governance quality of these committees directly affects executive compensation. Committees with

[5] Klein (2002a) measures governance quality using board independence. Carcello and Neal (2000, 2003) use audit committee independence as a measure of governance quality.

high governance quality can mitigate agency problems, and thus enhance incentive alignment. Moreover, high corporate governance quality of compensation committees leads to better designed executive compensation contracts that can motivate managers to make superior decisions, resulting in better firm performance. The relationship between operating income and stock option grants is derived from Lev and Sougianis (1996). Their production function states that operating income is a function of tangible and intangible assets. The latter includes the incremental intellectual capital contributed through the option granting process. Thus, we expect that the association between stock option compensation and subsequent accounting performance will increase as compensation committee governance quality increases. The hypothesis is stated as follows:

H1 *As compensation committee governance quality increases, the strength of the relationship between CEO stock option grants and future firm performance increases.*

2.2 Comprehensive Measure of Compensation Committee Governance Quality

The central issue is therefore how we might measure "compensation committee governance quality". We use six characteristics.[6]

(1) The first measure is what we call "CEO appointed directors", which are directors appointed during the tenure of the incumbent CEO, and who are therefore likely to have a more amiable relationship with the CEO (e.g., Wade et al. 1990, Dailey et al. 1998, Larcker et al. 2007). Bebchuk and Fried (2004) state that there is a variety of

[6] We identified these six compensation committee characteristics based on two criteria: (1) they are supported by theoretical arguments and empirical evidence, and (2) the data are available in proxy statements.

social and psychological factors (collegiality, team spirit, a desire to avoid conflict, friendship and loyalty) that will lead to pay arrangements that reflect CEO power. As a result of the CEO's influence, all directors – but particularly CEO appointed directors – are likely to have an interdependent relationship with the CEO. Bebchuk and Fried (2004) assert that a nomination committee of the board is unlikely to nominate a candidate to become a director without approval of the CEO, and the process is likely to be that this committee will approve the candidate(s) that the CEO recommends. Thus, a compensation committee with more CEO appointed directors is likely to be less effective. We use the proportion of CEO appointed directors on the compensation committee multiplied by -1 (*APPOINT*) as one component of committee quality.

(2) Long-serving directors are likely to be more effective because of their greater experience (e.g., Vafeas 2003b). Arguably, long-serving directors will have greater firm-specific reputational capital at stake (Fama and Jensen 1983). Beasley (1996) finds that the likelihood of financial statement fraud decreases as outside director tenure on the board increases, suggesting that long-serving outside directors are more effective in constraining accounting frauds. On the other hand, Bebchuk and Fried (2004) argue that long-serving outside directors are likely to remain entrenched as it is difficult to dislodge them without a crisis. As we place emphasis on reputation and effectiveness being related to length of service, for our second measure of quality we use the proportion of directors on the committee with 10 or more years of board service time (*SENIOR*).[7]

[7] To the extent that "long-serving" equates to "old," our prediction is in the opposite direction to Larcker et al. (2007) who hypothesize that old (greater than seventy) directors are less effective, but they find no support for that hypothesis.

(3) Since CEOs are a relatively homogenous, cohesive collection of individuals (e.g., Useem 1984), the presence of CEOs from other firms on the compensation committee may result in a general propensity to support the CEO when deciding on pay issues (e.g., Lorsch and MacIver 1989, Daily et al. 1998). Thus, a committee with a higher proportion of CEO directors will have lower governance effectiveness under this view. Ezzamel and Watson (1997) refer to a "cosy collusion" between executive and non-executive directors who sit on each other's compensation committees. Fayere (2008) finds support for the view that CEOs are paid more and their compensation is less sensitive to firm performance when other CEOs serve on their boards, and that this excess pay is not explained by economic determinants associated with the riskiness of the job. On the other hand, Fahlenbrach et al. (2008) do not find any evidence that directors' incentives are distorted by having CEOs on the board in testing what they call "the buddy hypothesis". So other CEOs might be more effective members because of their expertise and reputation, but we are not aware of any research that supports this view in the specific context of compensation committees.[8] We use the proportion of the CEOs of other firms on the committee multiplied by -1 (*CEODIR*) as a third measure of compensation committee quality.

(4) Directors with high stock ownership should have interests more aligned with shareholders and may have stronger incentives to monitor the CEO (Shivdasani and Yermack 1999). Klein (2002b) finds that an outside block shareholder sitting on the

[8] With our data (referred to below), we find that the proportion of CEO directors is positively correlated with CEO stock option grants for our sample firms, suggesting that those directors may do the CEO a favor.

audit committee can constrain earnings management. Friday and Sirmans (1998) report a positive relationship between market-to-book ratios and dollar values of director ownership for real estate investment trusts, which they interpret as indicating that increased director stock ownership assists in aligning managerial incentives with those of the stockholders. Thus, we postulate that an independent committee with higher directors' shareholdings will have higher governance quality. We use the aggregate directors' shareholding deflated by the number of directors on the committee as a fourth measure of compensation committee quality (*SHARES*). Of course, extending Morck et al. (1988), excessive director shareholdings could lead to entrenchment, but in our sample, on average compensation committee directors hold only 0.23% of shares of the firm.

(5) Core et al. (1999) find that busier outside directors on the board are associated with greater CEO compensation, suggesting that corporate governance of those directors is weak. Again, Fich and Shivdasani (2006) provide evidence that firms with busy boards, those in which a majority of outside directors have three or more additional board seats, are associated with weak corporate governance. Larcker et al. (2007) classify busy directors as increasing in "bad" governance, although Ferris et al. (2003) do not find any evidence that busy directors shirk their responsibilities. We postulate that an independent compensation committee with a higher proportion of additional directorships will have lower governance quality. We use the proportion of directors with three or more additional board seats on the compensation committee multiplied by -1 (*BUSYDIR*) as a fifth measure of committee quality.

(6) Bushman et al. (2004) argue that larger boards have the advantage of more advisors and monitors of management, and Agrawal and Knoeber (1999) advocate larger size boards in firms where information is otherwise difficult to obtain. In the context of compensation, it is probably more difficult for CEOs to exert as much influence over a larger committee. More independent compensation committee membership gives more opportunity for challenge of CEO excesses. Thus, we argue that compensation committee quality is likely to be better when the number of directors on the committee (*CMSIZE*) is higher.[9]

To measure the overall governance quality of compensation committees, the study employs two comprehensive measures based on these six individual metrics. The first comprehensive measure, CCQ_1, is the factor score from a factor analysis of the six individual measures, adjusted by deducting the mean factor score in each two-digit SIC industry. Using a factor score is attractive because it extracts a component that is common to the six committee characteristics. The second comprehensive measure, CCQ_2, is constructed by aggregating the governance quality scores of the six individual measures. The quality score for an individual measure is coded 1 if the firm's value of that measure is greater than the median of that measure and 0 otherwise. CCQ_2 is the sum of the quality scores of the six individual measures for the firm, adjusted by deducting the mean aggregate quality score in each two-digit SIC industry and deflated by 6. Using an aggregate governance quality score has the advantage that it is better able

[9] Jensen (1993) argues that in the context of boards of directors, larger boards can be ineffective because of higher cooperation costs and more free riding. However, since less than one percent of the compensation committees in our sample have more that eight directors, this argument has less relevance for our study.

to capture the orthogonal effects between monitoring mechanisms represented by the six committee characteristics.

In summary, this study attempts to determine whether the relationship between stock option grants and future firm performance is affected by the quality of the compensation committee, where compensation committee quality is measured using a combination of the six dimensions discussed in this section. We now turn to the structure of the analysis to address this issue.

3. Regression Model

We use two measures of future performance in our analyses. Following Hanlon et al. (2003), we use future operating income as a measure of accounting performance. As a second measure we use stock market performance.[10] We use abnormal buy-and-hold returns for the period t+1 to t+3 (inclusive) in these tests.

In this section, we proceed in three steps. We first state the benchmark model, which is an expansion of the one used in Hanlon et al. (2003). We then add control variables in equation (2). To address issues of endogeneity, we use a two-stage regression approach, with instruments specified to model the determinants of stock option grants and compensation committee quality. These are given in equations (3) and (4).

The benchmark model captures the relationship between future operating income and current stock option grants. To test the hypothesis that future operating income is more positively associated with CEO stock option grants for firms with high

[10] However, Hanlon et al. (2003) argue that using a stock-based measure of future performance introduces a circular dependence in such tests.

compensation committee quality than for firms with low quality, the benchmark model is expanded by including the compensation committee governance quality variable and its interaction term with CEO stock option grants as follows:

$$(OI/S)_{i,t+k} = \gamma_0 + \gamma_1 CCQ_{i,t} + \gamma_2 (CSO/S)_{i,t+1} + \gamma_3 CCQ_{i,t} * (CSO/S)_{i,t+1} + \gamma_4 (TA/S)_{i,t} + industry\ fixed\ effects + e \quad (1)$$

where

OI/S = the annual operating income before R&D expenses after selling and general administrative expenses, deflated by the annual sales in year *t*+1, *t*+2, and *t*+3,

CCQ = compensation committee governance quality, i.e., (1) CCQ_1, which is based on the first factor score from the factor analysis of the six committee characteristics in year *t*, and (2) CCQ_2, which is based on the aggregate quality scores of the six characteristics in year *t*,

CSO/S = the value of new stock option grants to the CEO in year *t*+1, deflated by the annual sales in year *t*+1.[11] The value of new stock option grants is calculated using the Black-Scholes model similar to Rajgopal et al. (2006). Specifically, we collect the exercise price, stock price at the grant date, number of securities granted, and the time to maturity from the Execucomp database. We use the approximate average yield in the data year from a seven-year U.S. Treasury bond as the risk-free rate of interest. We measure expected stock return volatility by the annualized standard deviation of daily stock returns over the 120 trading days preceding the end of the fiscal year of the option grant,

TA/S = the total assets, deflated by the annual sales in year *t*.

We include total assets in our model since the operating income generated from corporate assets is a fundamental economic production function of these assets (Lev and

[11] Since prior research usually proposes that firm characteristics in year *t* affect the granting behavior of stock options in year *t*+1 (e.g., Core and Guay 1999), we include new stock option grants for the CEO in year *t*+1 in the model. A reason for using firm characteristics in year *t* is that a number of stock grants are made during year *t*+1 rather than at the end of year *t*+1.

Sougiannis 1996). Hanlon et al. (2003) also document evidence that total assets are positively associated with future operating income.

The main model for this analysis is shown in equation (2). We augment equation (1) with several control variables that may affect the performance consequences of stock option grants. We use *SALES* to control for size effects (e.g., Leone et al. 2006). *BM* is added to control for the effects of growth opportunities (e.g., Gaver and Gaver 1993).[12] *LEV* is included for mediating the risk effects (e.g., Smith and Watts 1992). John and John (1993) point out that the optimal management compensation package depends not only on the agency relationship between shareholders and management, but also on the contractual relationships that arise from having debt in the capital structure. They derive a negative relationship between pay-performance sensitivity and leverage, and Ryan and Wiggins (2002) demonstrate this empirically. *LOSS* is used in the model in that performance may be treated differently between loss firms and profit firms in setting compensation (Hayn 1995).

The model is:

$$
\begin{aligned}
(OI/S)_{i,t+k} = {} & \lambda_0 + \lambda_1 CCQ_{i,t} + \lambda_2 (CSO/S)_{i,t+1} + \lambda_3 CCQ_{i,t} * (CSO/S)_{i,t+1} + \lambda_4 (TA/S)_{i,t} \\
& + \lambda_5 SALES_{i,t} + \lambda_6 SALES_{i,t} * (CSO/S)_{i,t+1} + \lambda_7 BM_{i,t} + \lambda_8 BM_{i,t} * (CSO/S)_{i,t+1} \\
& + \lambda_9 LEV_{i,t} + \lambda_{10} LEV_{i,t} * (CSO/S)_{i,t+1} + \lambda_{11} LOSS_{i,t} + \lambda_{12} LOSS_{i,t} * (CSO/S)_{i,t+1} \\
& + \textit{industry fixed effects} + e \qquad (2)
\end{aligned}
$$

where

SALES = sales, measured by the log value of net sales in year *t*,

[12] Gaver and Gaver (1993) document that option granting is more common with growth companies.

BM = book-to-market value, measured by the book value of assets over the sum of book value of liabilities and market value of equity in year *t*,

LEV = leverage, measured by the debt-to-assets ratio in year *t,*

LOSS = a dichotomous variable that is coded 1 for a loss firm in year *t* and 0 otherwise.

Equation (2) is run for years *t*+1, *t*+2, and *t*+3, respectively, where year *t* is the year for which the data of compensation committee governance quality is available.[13] The model is also run by aggregating the three years' ahead operating incomes (i.e., $(OI/S)_{i,t+1} + (OI/S)_{i,t+2} + (OI/S)_{i,t+3}$). To control for fixed industry effects, we include dummy variables for each two-digit SIC industry from which there are at least 10 firms in the sample. If compensation committee governance quality has a positive impact on the performance consequences of CEO stock option grants, the coefficient γ_3 will be positive and significant.[14]

To address issues of endogeneity, we use a two-stage regression procedure similar to Frankel et al. (2006).[15] We rank firms by CEO stock options grants (i.e., *CSO/S*) and then categorize them into three equal-sized portfolios. The portfolio rank of *CSO/S* (i.e., *CSO/SRANK*) is measured by 0, 1 or 2 for firms in the lowest, middle or highest portfolio,

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[13] The continuous variables are winsorized at 1% and 99%.

[14] In contrast, other studies such as Core et al. (1999) and Hanlon et al. (2003) first estimate the portion of compensation that is related to governance factors and then examine the association between governance-based estimated compensation and future firm performance. A weakness of this approach is the potential measurement error in estimating governance-based compensation as a result of misspecification and omitted variables. Our approach – examining the interaction between stock option grants and governance quality – allows us to assess the importance of governance quality without having to estimate governance-based option grants.

[15] Issues of endogeneity are alleviated to the extent that it is *future* operating performance, up to three years out, that is being regressed on *current* stock option grants.

respectively. Similarly, the portfolio rank of compensation committee governance quality (i.e., *CCQRANK*) is measured by 0, 1 or 2 based on the firms' ranking of *CCQ*.[16]

Our first-stage regressions involve modelling the determinants of stock option grants and compensation committee governance quality. Based on prior research (e.g., Hanlon et al. 2003), the determinants of stock option grants are examined in the following model:

$$(CSO/S)_{i,t+1} = \delta_0 + \delta_1(R\&D/S)_{i,t} + \delta_2 SALES_{i,t} + \delta_3 BM_{i,t} + \delta_4 LEV_{i,t} + \delta_5 NOL_{i,t} + \delta_6 DC_{i,t} + \delta_7 CFS_{i,t} + \delta_8 (CSO/SRANK)_{i,t+1} + e \quad (3)$$

where

R&D/S = the annual research and development expense, deflated by the annual sales in year *t*,

NOL = net operating loss, measured by 1 if net operating loss carry-forwards exist in the years *t*-2 to *t* and zero otherwise,

DC = dividend constraint, measured by 1 if a firm experienced dividend constraints in years *t*-2 to *t* and zero otherwise. A firm is dividend constrained if the ratio of the sum of retained earnings and cash dividends and stock repurchases over the sum of the prior year's cash dividends and stock repurchases is less than 2 in any of years *t*-2 to *t*,

CFS = cash flow shortfall, measured by (common and preferred dividends +cash flow used in investing activities - cash flow from operations)/total assets, averaged over the years *t*-2 to *t*.

Further, we expect that the demand for high compensation committee governance quality will depend on the CEO's influence, substitute monitoring mechanisms, and the

[16] We add *CSO/SRANK* or *GQRANK* in the models because endogeneity is likely to affect the variation in *CSO/S* or *GQ* rather than the level of *CSO/S* or *GQ* (e.g., Greene 2000). Hentschel and Kothari (2001) note that a relatively crude measure of the endogenous variable can be used as an instrumental variable because it is likely to capture the level of the variable but not the endogenously determined variations around those levels.

firm's growth opportunities and size. Thus, we model the determinants of committee governance quality as follows:

$$CCQ_{i,t} = \mu_0 + \mu_1 CEOOWN_{i,t} + \mu_2 CEOTEN_{i.t} + \mu_3 INSHD_{i,t} + \mu_4 GROW_{i,t} + \mu_5 FSIZE_{i,t} + \mu_6 CCQRANK_{i,t} + e \quad (4)$$

where

CEOOWN = CEO ownership, measured by the percentage of shares owned by the CEO in year *t*,

CEOTEN = CEO tenure, measured by the number of years for which the incumbent CEO has been the CEO of the firm in year *t*,

INSHD = institutional shareholding, measured by the percentage of shares owned by institutional investors in year *t*,

GROW = growth opportunities, measured by the geometric growth rate in the market value of assets through years *t*-2 to *t*,

FSIZE = firm size, measured by the log of total assets in year *t*.

We include *CEOOWN* and *CEOTEN* because Bathala and Rao (1995), Baker and Gompers (2003), and Kieschnick and Moussawi (2004) provide evidence that board independence decreases with CEO influence. We include *INSHD* because institutional shareholdings may be a substitute monitoring mechanism (e.g., Brickley et al. 1988, Agrawal and Mandelker 1990, Rediker and Seth 1995). We include *GROW* because several studies find that board independence is negatively associated with growth opportunities (e.g., Bathala and Rao 1995, Lehn et al. 2003, Linck et al. 2005). Finally, we include *FSIZE* as Barclay and Smith (1995a, 1995b) argue that agency conflicts between managers and shareholders increase with firm size. After estimating equations

(3) and (4), a second stage regression (i.e., equation (2)) is run using the fitted value of *CSO/S* and *CCQ* from equations (3) and (4).

To consider the influence of the individual compensation committee quality factors, we also estimate equation (2) replacing *CCQ* with (i) each of the six measures individually (i.e., six separate models) and (ii) the six individual quality measures in a single model. The former examines whether each compensation committee measure by itself is related to future performance. The latter examines the relative influence of the six compensation committee quality measures.

We also test the hypothesis using stock market performance as a firm performance measure. Kedia and Mozumdar (2002) find that stock market performance is positively associated with the incentives generated by executive stock option grants. Based on Kedia and Mozumdar (2002), we estimate equation (5), which is similar to equation (1) but uses future abnormal buy-and-hold returns in place of operating income:

$$BHRET_{i,t3} = \gamma_0 + \gamma_1 CCQ_{i,t} + \gamma_2 (CSOINC)_{i,t+1} + \gamma_3 CCQ_{i,t}*(CSOINC)_{i,t+1} + industry\ fixed\ effects + e \quad (5)$$

where

BHRET = buy-and-hold abnormal return for years t+1 through t+3 compounded monthly, computed each year as $(1 + r_{i,1})$ x $(1 + r_{i,2})$...x $(1 + r_{i,12}) - (1 + r_{m,1})$ x $(1 + r_{m,2})$...x $(1 + r_{m12})$, where $r_{i,j}$ is the raw return and $r_{m,j}$ is the portfolio return (based on the market index) for month j,

CSOINC = incentives generated by CEO stock option grants, measured by the delta (i.e., the hedge ratio) of CEO stock option grants multiplied by the ratio of the number of CEO stock option grants to the total shares outstanding (Jensen and Murphy 1990, Yermack 1997).

In equation (5), a positive and significant γ_3 would support H1.

4. Empirical Results

4.1 Sample and Descriptive Statistics

The sample selection begins by searching the IRRC Directors' database for the U.S. companies with compensation committees consisting solely of independent directors in 2001.[17] We focus on independent compensation committees because we want to examine quality differences among independent compensation committees (since the 2003 listing rules require independent compensation committees). Based on the information of committee memberships and board affiliations provided by IRRC, we identify a raw sample of 1,225 firms with independent compensation committees from the population of 1,771 firms. IRRC also provides directors' information about employee positions, board service time, and shareholding that this study needs. We then intersect the IRRC sample firms with the Execucomp database to yield a reduced sample of firms that also have information about the CEO's service time and ownership. We also review the proxy statements of the reduced sample firms from EDGAR SEC online documentation to collect the information about the number of directors' additional board seats. This yields a sample of 925 firms with the data for each of the six committee characteristics. Finally, we reduce the sample by deleting the observations without the data used for the analyses from Execucomp, Compustat, and CRSP databases, respectively. This generates a final sample consisting of 474 firms with independent

[17] We use directors' information released in 2001 because 2001 was the latest data year in the IRRC Directors' database when sample selection was initiated at the beginning of 2005. Also, using the data for 2001 allows us to avoid the effects of the Sarbanes-Oxley Act on corporate governance.

compensation committees. We find that the manufacturing (51.9%), services (12.2%), transportation, communication, electric, gas, and sanitary services (10.8%), retail trade (8.2%), and finance, insurance, and real estate (7.4%) are the most widely represented industries in the sample.

Table 1, panel A reports the percentages of directors with certain characteristics on the compensation committee. 44.78% of 1,639 directors on the independent compensation committees of the 474 firms were appointed during the tenure of the incumbent CEO. 27.03% of the directors have at least 10 years' board service time. 23.06% of the directors are CEOs of the other firms. 97.96% of the directors on the compensation committee hold stock of the company. 35.69% of the directors have three or more additional board seats. On average, there are about 3.46 directors on the compensation committee. Table 1, panel B provides the descriptive statistics on the director characteristics. The mean tenure of a director is about nine years. The mean shareholding of individual directors is 0.23%, while the mean aggregate shareholding of a compensation committee is 0.80%. On average, each director holds two additional board seats.

Insert Table 1 about here

Table 2 presents the descriptive statistics of the variables in the main analyses. The means of *OI/S* for one-year, two-years, and three-years ahead are 0.212, 0.207, and 0.212, while their medians are 0.178, 0.173, and 0.177, respectively. The mean and median for CCQ_1 are 0.000 and -0.060, while the mean and median for CCQ_2 are both

0.000.[18] CCQ_1 is the first factor from the factor analysis of the six compensation committee measures, which has an eigenvalue of 1.358 and loadings of 0.534, 0.767, 0.247, 0.458, 0.463, and 0.067 on *APPOINT*, *SENIOR*, *CEODIR*, *SHARES*, *BUSYDIR*, and *CMSIZE*, respectively. CCQ_2 is the aggregate quality score of the six compensation committee measures among which the highest correlation coefficient is 0.243 between *APPOINT* and *SENIOR*. The mean CEO stock option grant (i.e., *CSO/S*) is 0.002, which compares with a mean of 0.005 for stock options granted to the top five executives in Hanlon et al. (2003).

Insert Table 2 about here

Table 3 reports the Pearson correlation coefficients among the main independent variables. The factor-based measure CCQ_1 has a high correlation with the aggregate measure CCQ_2 ($r = 0.70$). The correlation coefficient between *(TA/S)* and *SALES* is 0.89. The regression results are not changed substantially when either of the two variables is dropped from equation (2). In any event, our interest is in the sign and significance of γ_3.

Insert Table 3 about here

4.2 Main Results

Table 4 contains the results of regressions that examine the effect of compensation committee governance quality on the performance consequences of CEO stock option grants for CCQ_1. We find that the coefficients on the interaction term of CCQ_1 and CEO stock option grants are significant and positive for one-, two-, and three-

[18] CCQ_1 and CCQ_2 are industry adjusted.

years ahead operating income, and aggregate three-year ahead operating income (*t*-statistics = 3.28, 4.58, 3.81, and 4.25, respectively). These results support the hypothesis that future operating income is more positively associated with CEO stock option grants for firms with high compensation committee governance quality as measured by CCQ_1. In terms of our control variables, we find that the associations between future operating income and CEO stock option grants are significantly lower for firms with (i) small size, (ii) high book-to-market value, (iii) high leverage, and (iv) losses. This is consistent with the view that small firms, low growth firms, and firms with losses have problems that cannot be easily addressed through incentive compensation. The negative association between the leverage interaction terms and performance sensitivity is consistent with the prediction in John and John (1993).

Insert Table 4 about here

Table 5 reports that the coefficients on the interaction terms between CCQ_2 and CEO stock option grants are all positive and significant (*t*-statistics = 3.44, 4.67, 4.05, and 4.43, respectively), suggesting that the associations of CEO stock option grants with the one-, two-, three-year ahead operating income, and aggregate three-years ahead operating income are higher when firms have high compensation committee quality measured by CCQ_2. Again, we find that the performance consequences of CEO stock option grants are lower for small firms, low growth firms, highly levered firms, and firms with losses.

Insert Table 5 about here

Table 6, panel A presents the results from examining the effect of individual compensation committee quality on the performance consequences of CEO stock option grants for *APPOINT*, *SENIOR*, *CEODIR*, *SHARES*, *BUSYDIR*, and *CMSIZE*, respectively. First, the one-, and three-year ahead operating income, and the aggregate three-years ahead operating income are more positively associated with CEO stock option grants for firms when *APPOINT* is high, indicating that CEO stock option grants generate higher future operating income when the compensation committee contains fewer directors who were appointed during the tenure of the incumbent CEO. Second, we also find a positive association between future operating income and CEO stock option grants for firms with more senior directors on the compensation committee (i.e., high *SENIOR*). Third, the interaction between *CEODIR* and *CSO/S* is positive and significant in all four models in panel A. This indicates that CEO stock option grants generate higher future operating income when there are fewer directors on the compensation committee who are CEOs of other firms. Fourth, the associations of the three-year ahead operating income, and the aggregate three-years ahead operating income with CEO stock option grants are higher for firms with high *SHARES*. These results suggest that CEO stock option grants generate higher future operating income if directors who sit on the compensation committee hold more shares of that firm. Fifth, Table 6, panel A provides evidence that the associations of the one-, and two-year ahead operating income, and the aggregate three-years ahead operating income with CEO stock option grants are higher for firms with high *BUSYDIR*, which indicates that CEO stock option grants generate lower future operating income when the compensation committee has more busy directors. Sixth, the

two-year ahead operating income is more positively associated with CEO stock option grants for firms with large compensation committees. Overall, we also find support for H1 using individual compensation committee quality measures.

Insert Table 6 about here

Table 6, panel B reports the results of the regression including all the six individual compensation committee quality measures in the same model. We find that *SENIOR*(CSO/S)* is consistently and positively related to future income whether measured using the one-, two-, or three-years ahead operating incomes, or the aggregate three-years ahead operating income, suggesting that *SENIOR* is the dominant quality component on a relative basis. We also find significant coefficients for *APPOINT*(CSO/S)* and *BUSYDIR*(CSO/S)* in three of the four models and for *CEODIR*(CSO/S)* in two of the four models, which suggests these are more influential dimensions of quality of a relative basis. Finally, we find significant coefficients for *SHARES*(CSO/S)* and *CMSIZE*(CSO/S)* in only one of the four models. Overall, this suggests that the effects of *SENIOR*, *APPOINT*, *BUSYDIR*, and *CEODIR* dominate the effects of *SHARES* and *CMSIZE* on a relative basis.

Table 7 presents the results from testing the hypothesis where firm performance is measured by stock market performance. If H1 is supported, the coefficient on the interaction term between compensation committee quality and incentives provided by CEO stock option grants, i.e., γ_3 in equation (5) will be positive and significant. We find that the coefficient on the interaction of CCQ_1 and the incentives is positive and significant, consistent with H1. We also find that the coefficient on the interaction

between CCQ_2 and stock option incentives is positive and significant. Thus, we find support for H1 using a stock market measure of performance when compensation committee quality is measured by either CCQ_1 or CCQ_2.

Insert Table 7 about here

4.3 Robustness Tests

We also conduct additional analyses to test the robustness of the results. First, we use the discounted expected gain approach instead of the Black-Scholes model to value stock options. Hall and Murphy (2002) show that valuing stock options using the Black-Scholes model results in overvaluation as the option cannot be traded, or (normally) hedged, and when the employee is risk-averse and undiversified. Ittner et al. (2003) note that employees may use simple approaches rather than the complicated Black-Scholes model to value stock options. They propose the discounted expected gain approach to value stock options by assuming an annual stock price growth of 15%, a five-year holding period, and a risk-free rate of 5%. We find that the one-, two-, three-year ahead operating income, and aggregate three-years ahead operating income are also more positively associated with CEO stock option grants for firms with high CCQ_1 or CCQ_2 when the discounted expected gain approach is used (untabulated).

Second, we examine whether the results hold after adding non-CEO executives' stock option grants. Thus, we include the total of new stock option grants to all executives covered by the Execucomp database. Similar results (untabulated) are found for both CCQ_1 and CCQ_2.

Third, we replace stock option grants in year t+1 with option grants in year t in equation (2) to examine whether the results are sensitive to the presumption that grants in year t+1 reflect the governance quality in year t. The results (untabulated) hold for both CCQ_1 and CCQ_2.

Fourth, this study also examines whether the results hold after controlling for the non-linear relation between stock option grants and future operating income. Hanlon et al. (2003) document a concave relation between stock option grants and future operating income. Thus, we add the second power term of stock option grants in equation (2). Again, we document significant evidence for both CCQ_1 and CCQ_2 (untabulated).

Fifth, we test the robustness of the results by adding historical operating income in the model as Larcker (2003) argues that historical operating income is a natural benchmark for future operating income. Untabulated results show that one-, two-, and three-year ahead, and aggregate three-years ahead operating income are significantly positively associated with CEO stock option grants for firms with higher CCQ_1 or CCQ_2.

Sixth, we examine whether compensation committee quality is an additional characteristic, over a general measure of the quality of board governance. Following prior research (e.g., Klein 2002a), we measure board quality using board independence. After adding board independence and its interaction with stock option grants in equation (2), we still find that future operating income is more positively associated with CEO stock option grants for firms with high compensation committee quality than for firms with low compensation committee quality, whereas we find no evidence on the positive impact of board independence on the performance consequences of stock option grants.

These results suggest that compensation committees serve a particular monitoring mechanism, which is additional to the general monitoring mechanism of boards.

5. Conclusion

We extend the limited research on compensation committee effectiveness. While prior studies (e.g., Anderson and Bizjak 2003, Vafeas 2003) focus on compensation committee effectiveness and CEO pay, we focus on the effect of compensation committee quality on the relation between stock option grants and future firm performance. Additionally, because U.S. listing rules now require all compensation committees to be composed solely of independent directors, we develop a broad, multidimensional measure of compensation committee quality.

We find that CEO stock option grants for firms with high comprehensive compensation committee quality generate higher future operating income. In addition, we also find strong evidence that the relation between future performance and CEO stock option grants is significantly affected by the six individual compensation committee characteristics, i.e., the proportion of directors appointed during the tenure of the incumbent CEO, the proportion of senior directors with at least 10 years' board service, the proportion of directors who are CEOs of the other firms, the aggregate shareholding of directors, the proportion of directors with three or more board seats, and compensation committee size. Finally, the results hold after conducting various additional tests. Combined, our results support the view that higher compensation committee quality leads to greater incentive alignment in executive compensation contracts.

Like all studies, this study also has its own caveats. First, it is likely that there are significant differences between companies in the IRRC Directors' and the Execucomp databases, which were used to collect the sample, and other companies with regard to governance characteristics and structure of CEO stock options. Thus, using the firms from the IRRC Directors' and the Execucomp database may affect the generalizability of our results. Also, we limit our sample to firms that had independent compensation committees in 2001 and that survived from 2001-2004. Thus, our sample may be biased toward firms that had better governance and that were more successful. Future research may focus on expanding the sample to include firms not covered by these databases or using data from after 2003 when independent compensation committees became mandatory. Finally, although this study identifies six compensation committee characteristics based on the literature, the question of whether these six committee characteristics can reflect the overall picture of a compensation committee's governance quality is still open. Future research may refine the development of governance quality measures by adding other committee characteristics to those used in this study.

References

Aboody, D., and R. Kasznik. 2000. CEO stock option awards and the timing of corporate voluntary disclosures. *Journal of Accounting and Economics* 29: 73-100.

Abowd, J. M. 1990. Does performance-based managerial compensation affect corporate performance? *Industrial and Labor Relations Review* 43(3): 52-73.

Agrawal, A., and R. Knoeber. 1999. Outside directors, politics, and firm performance. Working paper. North Carolina State University.

Agrawal, A., and G. N. Mandelker. 1990. Large shareholders and the monitoring of managers: The case of antitakeover charter amendments. *Journal of Financial and Quantitative Analysis* 25 (2): 143-161.

Anderson, R. C., and J. M. Bizjak. 2003. An empirical examination of the role of the CEO and the compensation committee in structuring executive pay. *Journal of Banking and Finance* 27: 1323-1348.

Baker, M., and P. A. Gompers. 2003. The determinants of board structure at the initial public offering. *Journal of Law and Economics* 46: 569-598.

Barclay, M., and C. W. Smith. 1995a. The maturity structure of corporate debt. *Journal of Finance* 50: 609-632.

Barclay, M., and C. W. Smith. 1995b. The priority structure of corporate liabilities. *Journal of Finance* 50: 609-632.

Bathala, C. T., and R. P. Rao. 1995. The determinants of board composition: An agency theory perspective. *Managerial and Decision Economics* 16: 59-69.

Beasley, M. S. 1996. An empirical analysis of the relation between the board of director composition and financial statement fraud. *The Accounting Review* 71: 443-465

Bebchuk, L. A., and J. M. Fried. 2003. Executive compensation as an agency problem. *Journal of Economic Perspectives* 17: 71-92.

Bebchuk, L. A., and J. M. Fried. 2004. *Pay without performance: The unfilled promise of executive compensation*. Boston: Harvard University Press.

Bebchuk, L. A., J. M. Fried, and D. I. Walker. 2002. Managerial power and rent extraction in the design of executive compensation. *University of Chicago Law Review* 69: 751-846.

Becker, G. P., and J. S. Stigler.1974. Law enforcement, malfeasance, and compensation of enforcers. *Journal of Legal Studies* 3:1-18.

Bedard, J., S. M. Chtourou, and L. Courteau. 2004. The effect of audit committee expertise, independence, and activity on aggressive earnings management', *Auditing: A Journal of Practice & Theory* 23(2): 13-35.

Brickley, J. A., R. C. Lease, and C. W. Smith, Jr. 1988. Ownership structure and voting on antitakeover amendments. *Journal of Financial Economics* 20: 267-291.

Bushman, R., Q. Chen, E. Engel, and A. Smith. 2004. Financial accounting information, organizational complexity and corporate governance systems. *Journal of Accounting and Economics* 37: 167-201.

Carcello, J. V., and T. L. Neal. 2000. Audit committee composition and auditor reporting. *The Accounting Review* 75:453-467.

Carcello, J. V., and T. L. Neal. 2003. Audit committee characteristics and auditor dismissals following "new" going concern reports. *The Accounting Review* 78: 95-116.

Carpenter, J., and B. Remmers. 2001. Executive stock option exercises and insider information. *Journal of Business* 74: 513-534.

Conyon, M. J., and R. B. Freeman. 2002. Shared modes of compensation and firm performance: UK evidence. Working paper. London School of Economics.

Conyon, M. J., and L. He. 2004. CEO compensation, incentives, and governance in new enterprise firms. *Journal of Derivatives Accounting* 1: 47-60.
Conyon, M. J., and S. I. Peck. 1998. Board control, remuneration committees, and top management compensation. *Academy of Management Journal* 41: 146-157.
Core, J., and W. Guay.1999. The use of equity grants to manage optimal incentive levels. *Journal of Accounting and Economics* 28: 151-184.
Core, J., R. Holthausen, and D. Larcker. 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics* 51: 371-406.
Daily, C. M., J. L. Johnson, A. E. Ellstrand, and D. R. Dalton. 1998. Compensation committee composition as a determinants of CEO compensation. *Academy of Management Journal* 41 (2): 209-220.
DeFusco, R. A., T. S. Zorn, and R. R. Johnson. 1991. The Association between executive stock option plan changes and managerial decision making. *Financial Management* 20 (1): 36-43.
Demsetz, H., and K. Lehn. 1985. The structure of corporate ownership: causes and consequences. *Journal of Political Economy* 96: 1155-1177.
Ezzamel, M. and R. Watson. 1997. Wearing two hats:The conflicting control and management roles of non-executive directors. In K. Keasey, S. Thompson, and M. Wright (editors), *Corporate governance: Economic and financial issues*. Chichester: Oxford University Press: 61-92.
Fahlenbrach, R., A. Low, and R. M. Stulz. 2008. Why do firms appoint CEOs as outside directors? Working Paper, Fisher College of Business, The Ohio State University.
Faleye, O. 2008. CEO directors, executive incentives, and corporate strategic initiatives. Working Paper, College of Business Administration, Northeastern University.
Fama, E., and M. C. Jensen. 1983. Separation of ownership and control. *Journal of Law and Economics* 26: 301-326.
Ferris, S. P., M. Jagannathan, and A. C. Pritchard. 2003. Too busy to mind the business? Monitoring by directors with multiple board appointments. *Journal of Finance* 68: 1087-1111.
Fich, E. M., and A. Shivdasani. 2006. Are busy boards effective monitors? *Journal of Finance* 61: 689-724.
Frankel, R., S. P. Kothari, and J. Weber. 2006. Determinants of the informativeness of analyst research. *Journal of Accounting and Economics* 41: 29-54.
Friday, H. S., and G. S. Sirmans. 1998. Board of director monitoring and firm value in REITs. Journal of Real Estate Research 16 (3): 411-427.
Gaver, J. J., and K. M. Gaver. 1993. Additional evidence on the association between the investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Accounting and Economics* 16: 125-160.
Greene, W. 2000. *Econometric Analysis*, 4th ed. Prentice-Hall, Upper Saddle River, NJ
Hall, B. J., and K. Murphy. 2002. Stock options for undiversified executives. *Journal of Accounting and Economics* 33: 3-42.
Hanlon, M., S. Rajgopal, and T. Shevlin. 2003. Are executive stock options associated with future earnings? *Journal of Accounting and Economics* 36: 3-43.
Hayn, C. 1995. The information content of losses. *Journal of Accounting and Economics* 20: 125-153.
Hentschel, L., and S. P. Kothari. 2001. Are corporations reducing or taking risks with derivatives? *Journal of Financial and Quantitative Analysis* 36 (1): 93-118.
Holmstrom, B. 1979. Moral hazard and observability. *Bell Journal of Economics* 10: 74-91.

Ittner, C. D., R. A. Lambert, and D. F. Larker. 2003. The structure and performance consequences of equity grants to employees of new economy firms. *Journal of Accounting and Economics* 34: 89-127.

Jensen, M. C. 1993. The modern industrial revolution, exit, and the failure of internal control systems. *Journal of Finance* 48: 831-880.

Jensen, M. C., and W. Meckling 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3: 305-360.

Jensen, M. C., and K. J. Murphy. 1990. Performance pay and top-management incentives. *Journal of Political Economy* 98: 225-264.

John, T. A., and K. John. 1993. Top-management compensation and capital structure. *Journal of Finance* 48 (3): 949-974.

Kedia, S., and A. Mozumdar. 2002. Performance impact of employee stock options. Working paper, Rutgers University.

Kieschnick, R., and R. Moussawi. 2004. The board of directors: a bargaining perspective. Working paper. University of Texas at Dallas.

Klein, A. 2002a. Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics* 33: 375-400.

Klein, A. 2002b. Economic determinants of audit committee independence. *The Accounting Review* 77: 435-52.

Larcker, D. 2003. Discussion of "are executive stock options associated with future earnings?" *Journal of Accounting and Economics* 36: 91-103.

Larcker, D. F., S. A. Richardson, and A. I. Tuna. 2007. Corporate governance, accounting outcomes, and organizational performance. The Accounting Review 82: 963-1008.

Lazear, E. 1979. Why is there mandatory retirement? *Journal of Political Economy* 87: 1261-84.

Lehn, K., S. Patro, and M. Zhao. 2003. Determinants of the size and structure of corporate boards:1935-2000. Working paper. University of Pittsburgh.

Leone, A. J., J. S. Wu, and J. L. Zimmerman. 2006. Asymmetric sensitivity of CEO cash compensation to stock returns. *Journal of Accounting and Economics* 42: 167-192.

Lev, B., and T. Sougiannis. 1996. The capitalization, amortization, and value-relevance of R&D. *Journal of Accounting and Economics* 21: 107-138.

Lie, E. 2005. Operating performance following open market share repurchase announcements. *Journal of Accounting and Economics* 39: 411-436.

Linck, J. S., J. M. Netter, and T. Yang. 2005. The determinants of board structure. Working paper. University of Georgia.

Lorsch, J. W., and E. MacIver. 1989. *Pawns or potentates*: *The reality of America's corporate boards*. Boston: Harvard Business School Press.

Masson, R. T. 1971. Executive motivations, earnings and consequent equity performance. *Journal of Political Economy* 79: 1278-1292.

Morck, R., A. Shleifer, and R. W. Vishny. 1988. Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics* 20: 293-315.

Newman, H., and H. Mozes. 1999. Does composition of the compensation committee influence CEO compensation practices. *Financial Management* 28: 41-53.

Rajgopal, S., T. Shevlin, and V. Zamora. 2006. CEOs' outside employment opportunities and the lack of relative performance evaluation in compensation contracts. *Journal of Finance* 61: 1813-1844.

Rediker, K., and A. Seth. 1995. Boards of directors and substitution effects of alternative governance mechanisms. *Strategic Management Journal* 16: 85-99.

Ross, S. A.1973. The economic theory of agency: the principal's problem. *American Economic Review* 63: 135-39.
Ryan, H. E., and R. A Wiggins. 2002. The interactions between R&D investment decisions and compensation policy. *Financial Management* 31 (1): 5-29.
Shivdasani, A., and D. Yermack. 1999. CEO involvement in the selection of new board members: an empirical analysis. *Journal of Finance* 54: 1829-53.
Smith, C. W., and R. L Watts.1992. The investment opportunities set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics* 32: 263-292.
Useem, M. 1984. *The inner circle*. New York: Oxford University Press.
Vafeas, N. 2003a. Further evidence on compensation committee composition as a determinant of CEO compensation. *Financial Management* 32: 53-70.
Vafeas, N. 2003b. Length of board tenure and outside director independence. *Journal of Business Finance & Accounting* 30(7&8): 1043-64.
Wade, J., C. A. O'Reilly, and I. Chandratat.1990. Golden parachutes: CEOs and the exercise of social influence. *Administrative Science Quarterly* 35: 587-603.
Yermack, D. 1997. Good timing: CEO stock option awards and company news announcements. *Journal of Finance* 52: 449-477.

Table 1
Characteristics of compensation committees

Panel A. Percentages

Percent of compensation committee directors appointed during the tenure of incumbent CEOs	44.78%
Percent of compensation committee directors with at least 10 years' board service time	27.03%
Percent of compensation committee directors who are CEOs of other firms	23.06%
Percent of compensation committee directors who hold stock of the company	97.96%
Percent of compensation committee directors who have three or more additional board seats	35.69%

Panel B. Descriptive statistics

Characteristics	Mean	Median	Std Dev	Min	Max
Compensation committee size	3.430	3.000	1.880	2.000	10.000
Director tenure	9.163	8.000	6.347	1.000	45.000
Individual shareholdings	0.227%	0.024%	1.471%	0.000%	29.450%
Aggregate shareholdings	0.801%	0.133%	3.181%	0.000%	43.407%
Additional board seats	2.169	2.000	1.383	0.000	12.000

Table 2
Descriptive statistics of variables

Variables	N	Mean	Median	Std Dev	Q1	Q3
$(OI/S)_{t+1}$	474	0.212	0.178	0.153	0.102	0.272
$(OI/S)_{t+2}$	474	0.207	0.173	0.154	0.105	0.276
$(OI/S)_{t+3}$	474	0.212	0.177	0.155	0.107	0.274
CCQ_{1t}	474	0.000	-0.060	0.919	-0.581	0.505
CCQ_{2t}	474	0.000	0.000	0.197	-0.133	0.148
$(CSO/S)_{t+1}$	474	0.002	0.001	0.005	0.000	0.001
$(TA/S)_t$	474	1.601	1.078	1.907	0.750	1.700
$SALES_t$	474	7.477	7.438	1.489	6.390	8.480
BM_t	474	0.619	0.631	0.299	0.391	0.844
LEV_t	474	0.199	0.191	0.155	0.061	0.305
$LOSS_t$	474	0.129	0.000	0.335	0.000	0.000
$(R\&D/S)_t$	474	0.052	0.003	0.128	0.000	0.056
NOL_t	474	0.304	0.000	0.460	0.000	1.000
DC_t	474	0.321	0.000	0.467	0.000	1.000
CFS_t	474	-0.192	-0.182	0.124	-0.259	-0.115
$CEOOWN_t$	474	0.013	0.000	0.032	0.000	0.008
$CEOTEN_t$	474	7.426	6.000	6.032	3.000	10.000
$INSHD_t$	474	0.654	0.680	0.166	0.500	0.800
$GROW_t$	474	1.223	1.086	0.490	0.970	1.300
$FSIZE_t$	474	7.617	7.482	1.604	6.500	8.600

$(OI/S)_{t+1}$: one year-ahead operating income, measured by the annual operating income before R&D expenses after SGA, deflated by the annual sales in year t+1.
$(OI/S)_{t+2}$: two years-ahead operating income, measured by the annual operating income before R&D expenses after SGA, deflated by the annual sales in year t+2.
$(OI/S)_{t+3}$: three years-ahead operating income, measured by the annual operating income before R&D expenses after SGA, deflated by the annual sales in year t+3.
CCQ_{1t}: comprehensive measure of compensation committee governance quality based on the first factor score from the factor analysis of the six compensation committee characteristics in year t.
CCQ_{2t}: comprehensive measure of compensation committee governance quality based on the aggregate quality scores of the six compensation committee characteristics in year t.
$(CSO/S)_{t+1}$: the Black-Scholes value of new stock option grants for the CEO in a year, deflated by the annual sales in year t+1.
$(TA/S)_t$: the total assets, deflated by the annual sales in year t.
$SALES_t$: *sales*, measured by the log of net sales in year t.
BM_t : book-to-market value, measured by the book value of assets over the sum of book value of liabilities and market value of equity in year t.
LEV_t : leverage, measured by the debt-to-assets ratio in year t.
$LOSS_t$: loss firm in year t, measured by 1 for a loss firm and 0 otherwise.
$(R\&D/S)_t$: annual research and development expense, deflated by the annual sales in year t,
NOL_t: net operating loss, measured by 1 if net operating loss carry-forwards exist in the period of year t-2 to t and zero otherwise.
DC_t: dividend constraint, measured by 1 if a firm experienced dividend constraints in the period of year t-2 to t and zero otherwise. A firm is dividend constrained if the ratio of the sum of retained earnings and cash

dividends and stock repurchases over the sum of the prior year's cash dividends and stock repurchases is less than 2 in any of years t-2 to t.
CFS_t: Cash flow shortfall, measured by (common and preferred dividends +cash flow used in investing activities - cash flow from operations)/total assets, averaged over the period of years t-2 to t.
$CEOOWN_t$: CEO ownership, measured by the percentage of shares owned by the CEO in year t.
$CEOTEN_t$: CEO tenure, measured by the number of years for which the incumbent CEO has been the CEO of the firm in year t.
$INSHD_t$: institutional shareholding, measured by the percentage of shares owned by institutional investors in year t.
$GROW_t$: growth opportunities, measured by the geometric growth rate in the market value of assets through years t-2 to t.
$FSIZE_t$: firm size, measured by the log value of total assets in year t.

Table 3
Pearson correlations among independent variables
(n =474)

Variables	$CCQ2_t$	$(CSO/S)_{t+1}$	$(TA/S)_t$	$SALES_t$	BM_t	LEV_t	$LOSS_t$	$(R\&D/S)_t$	NOL_t	DC_t	CFS_t	$CEOOWN_t$	$CEOTEN_t$	$INSHD_t$	$GROW_t$	$FSIZE_t$
$CCQ1_t$	0.70***	-0.03	-0.04	-0.07	0.02	-0.05	0.03	-0.03	-0.06	-0.09*	0.03	-0.03	-0.18***	-0.11**	-0.10**	-0.08*
$CCQ2_t$		-0.01	-0.06	-0.16***	0.09*	-0.03	0.07	-0.03	0.01	-0.03	0.04	0.02	-0.14***	-0.07	-0.06	-0.17***
$(CSO/S)_{t+1}$			0.24***	-0.33***	-0.30***	-0.05	0.05	0.48***	0.06	0.21***	-0.13***	-0.01	0.02	0.04	0.45***	-0.20***
$(TA/S)_t$				-0.03	0.04	0.00	0.07	0.36***	-0.04	0.04	0.20***	-0.05	0.01	-0.00	0.23***	0.35***
$SALES_t$					0.09**	0.05	-0.19***	-0.35***	-0.02	-0.27***	0.12***	-0.13***	-0.13***	0.03	-0.23***	0.89***
BM_t						0.25***	0.15***	-0.34***	-0.07	-0.13***	0.43***	-0.01	-0.06	-0.17***	-0.46***	0.10**
LEV_t							0.01	-0.13***	0.03	0.09**	0.04	-0.10**	0.02	0.04	-0.11**	0.08
$LOSS_t$								0.33***	0.07	0.19***	0.24***	-0.04	-0.04	-0.13***	0.05	-0.14***
$(R\&D/S)_t$									0.15***	0.25***	0.03	-0.06	0.04	-0.00	0.43***	-0.17***
NOL_t										0.08*	-0.05	-0.07	-0.02	0.13***	0.04	-0.04
DC_t											-0.01	0.03	0.05	-0.00	0.25***	-0.22***
CFS_t												-0.12**	-0.12***	-0.14***	-0.23***	0.20***
$CEOOWN_t$													0.34***	-0.14***	0.07	-0.18***
$CEOTEN_t$														0.02	0.11**	-0.12**
$INSHD_t$															0.05	0.00
$GROW_t$																-0.09*

*, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels. Tests are two-tailed.

Table 4
Results for comprehensive compensation committee quality measure, CCQ_1

Variables	Predicted Sign	1-Year Ahead	2-Year Ahead	3-Year Ahead	Total
Intercept	?	0.124	0.040	0.039	0.203
		(2.67)***	(0.76)	(0.75)	(1.46)
CCQ_t	?	-0.013	-0.016	-0.013	-0.042
		(-1.89)*	(-2.03)*	(-1.63)	(-2.01)**
$(CSO/S)_{t+1}$	?	4.999	3.901	24.317	33.218
		(0.50)	(0.35)	(2.19)**	(1.12)
$CCQ_t*(CSO/S)_{t+1}$	+	7.771	12.218	10.010	30.000
		(3.28)***	(4.58)***	(3.81)***	(4.25)***
$(TA/S)_t$	+	0.043	0.035	0.036	0.114
		(13.61)***	(9.82)***	(10.37)***	(12.15)***
$SALES_t$	?	0.004	0.011	0.014	0.029
		(0.84)	(2.11)**	(2.64)***	(2.06)**
$SALES_t*(CSO/S)_{t+1}$	?	6.445	6.939	2.900	16.284
		(4.58)***	(4.37)***	(1.86)*	(3.88)***
BM_t	?	-0.121	-0.068	-0.110	-0.299
		(-4.90)***	(-2.46)**	(-4.04)***	(-4.08)***
$BM_t*(CSO/S)_{t+1}$	-	-29.155	-29.600	-13.737	-63.492
		(-3.61)***	(-2.26)**	(-1.53)	(-2.64)***
LEV_t	?	0.105	0.055	0.063	0.224
		(2.53)**	(1.17)	(1.37)	(1.80)*
$LEV_{it}*(CSO/S)_{t+1}$	-	-53.814	-29.947	-32.287	-116.048
		(-6.68)***	(-3.30)***	(-3.61)***	(-4.84)***
$LOSS_t$	?	0.012	0.021	0.046	0.079
		(0.66)	(1.06)	(2.30)**	(1.48)
$LOSS_t*(CSO/S)_{t+1}$	?	-21.011	-26.645	-26.089	-73.745
		(-4.36)***	(-4.91)***	(-4.88)***	(-5.14)***
Industry dummies		Included	Included	Included	Included
N		474	474	474	474
F-statistic		26.96***	18.16***	20.08***	24.85***
Adjusted R^2		58.80%	48.54%	51.19%	56.73%

The figures in parentheses are t-statistics.
The two-stage regression models are as follows:

$$(OI/S)_{i,t+k} = \lambda_0 + \lambda_1 CCQ_{i,t} + \lambda_2 (CSO/S)_{i,t+1} + \lambda_3 CCQ_{i,t}*(CSO/S)_{i,t+1} + \lambda_4 (TA/S)_{i,t} + \lambda_5 SALES_{i,t} + \lambda_6 SALES_{i,t}*(CSO/S)_{i,t+1} + \lambda_7 BM_{i,t} + \lambda_8 BM_{i,t}*(CSO/S)_{i,t+1} + \lambda_9 LEV_{i,t} + \lambda_{10} LEV_{i,t}*(CSO/S)_{i,t+1} + \lambda_{11} LOSS_{i,} + \lambda_{12} LOSS_{i,t}*(CSO/S)_{i,t+1} + \text{industry fixed effects} + e \quad (2)$$

$$(CSO/S)_{i,t+1} = \delta_0 + \delta_1 (R\&D/S)_{i,t} + \delta_2 SALES_{i,t} + \delta_3 BM_{i,t} + \delta_4 LEV_{i,t} + \delta_5 NOL_{i,t} + \delta_6 DC_{i,t} + \delta_7 CFS_{i,t} + \delta_8 (CSO/SRANK)_{i,t+1} + e \quad (3)$$

$$CCQ_{i,t} = \mu_0 + \mu_1 CEOOWN_{i,t} + \mu_2 CEOTEN_{i,t} + \mu_3 INSHD_{i,t} + \mu_4 GROW_{i,t} + \mu_5 FSIZE_{i,t} + \mu_6 CCQRANK_{i,t} + e \quad (4)$$

where
CSO/SRANK: 0, 1 or 2 based on portfolio rank when sorted by *CSO/S*.
CCQRANK: 0, 1 or 2 based on portfolio rank when sorted by *CCQ*.
The other variables are defined in Table 2.
Total indicates the sum of 1-year ahead, 2-year ahead, and 3-year ahead operating income.
*, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels. Tests are two-tailed.

Table 5
Results for comprehensive compensation committee quality measure, CCQ_2

Variables	Predicted Sign	1-Year Ahead	2-Year Ahead	3-Year Ahead	Total
Intercept	?	0.121	0.037	0.035	0.192
		(2.59)**	(0.69)	(0.67)	(1.38)
CCQ_t	?	-0.066	-0.100	-0.077	-0.237
		(-2.04)**	(-2.62)***	(-2.15)**	(-2.48)**
$(CSO/S)_{t+1}$	?	2.364	-0.565	20.539	22.339
		(0.24)	(-0.05)	(1.86)*	(0.75)
$CCQ_t*(CSO/S)_{t+1}$	+	35.272	53.933	46.008	135.213
		(3.44)***	(4.67)***	(4.05)***	(4.43)***
$(TA/S)_t$	+	0.043	0.035	0.036	0.114
		(13.67)***	(9.84)***	(10.42)***	(12.20)***
$SALES_t$	?	0.004	0.012	0.014	0.030
		(0.88)	(2.13)**	(2.67)***	(2.10)**
$SALES_t*(CSO/S)_{t+1}$	?	6.762	7.461	3.345	17.568
		(4.81)***	(4.70)***	(2.15)**	(4.20)***
BM_t	?	-0.115	-0.059	-0.103	-0.277
		(-4.66)***	(-2.14)**	(-3.77)***	(-3.78)***
$BM_t*(CSO/S)_{t+1}$	-	-30.006	-21.738	-14.695	-66.439
		(-3.72)***	(-2.39)**	(-1.64)	(-2.77)***
LEV_t	?	0.089	0.027	0.039	0.154
		(2.11)**	(0.56)	(0.85)	(1.24)
$LEV_{it}*(CSO/S)_{t+1}$	-	-47.531	-20.301	-23.947	-91.780
		(-5.69)***	(-2.16)**	(-2.59)**	(-3.69)***
$LOSS_t$	?	0.012	0.022	0.046	0.080
		(0.67)	(1.08)	(2.31)**	(1.50)
$LOSS_t*(CSO/S)_{t+1}$	?	-19.846	-24.690	-24.394	-68.930
		(-4.11)***	(-4.54)***	(-4.56)***	(-4.80)***
Industry dummies		Included	Included	Included	Included
N		474	474	474	474
F-statistic		27.07***	18.20***	20.21***	24.97***
Adjusted R^2		58.90%	48.59%	51.36%	56.86%

The figures in parentheses are t-statistics.
The two-stage regression models are as follows:

$$(OI/S)_{i,t+k} = \lambda_0 + \lambda_1 CCQ_{i,t} + \lambda_2 (CSO/S)_{i,t+1} + \lambda_3 CCQ_{i,t}*(CSO/S)_{i,t+1} + \lambda_4 (TA/S)_{i,t} + \lambda_5 SALES_{i,t} + \lambda_6 SALES_{i,t}*(CSO/S)_{i,t+1} + \lambda_7 BM_{i,t} + \lambda_8 BM_{i,t}*(CSO/S)_{i,t+1} + \lambda_9 LEV_{i,t} + \lambda_{10} LEV_{i,t}*(CSO/S)_{i,t+1} + \lambda_{11} LOSS_{i,} + \lambda_{12} LOSS_{i,t}*(CSO/S)_{i,t+1} + industry\ fixed\ effects + e \quad (2)$$

$$(CSO/S)_{i,t+1} = \delta_0 + \delta_1 (R\&D/S)_{i,t} + \delta_2 SALES_{i,t} + \delta_3 BM_{i,t} + \delta_4 LEV_{i,t} + \delta_5 NOL_{i,t} + \delta_6 DC_{i,t} + \delta_7 CFS_{i,t} + \delta_8 (CSO/SRANK)_{i,t+1} + e \quad (3)$$

$$CCQ_{i,t} = \mu_0 + \mu_1 CEOOWN_{i,t} + \mu_2 CEOTEN_{i,t} + \mu_3 INSHD_{i,t} + \mu_4 GROW_{i,t} + \mu_5 FSIZE_{i,t} + \mu_6 CCQRANK_{i,t} + e \quad (4)$$

where

CSO/SRANK: 0, 1 or 2 based on portfolio rank when sorted by *CSO/S*.
CCQRANK: 0, 1 or 2 based on portfolio rank when sorted by *CCQ*.
The other variables are defined in Table 2.
Total indicates the sum of 1-year ahead, 2-year ahead, and 3-year ahead operating income.
*, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels. Tests are two-tailed.

Table 6
Results for individual compensation committee quality measures

Variables	Predicted Sign	1-Year Ahead	2-Year Ahead	3-Year Ahead	Total
Panel A. Separate regression for each individual measure					
$APPOINT_{,t}*(CSO/S)_{t+1}$	+	10.913 (1.81)*	10.683 (1.55)	36.105 (4.65)***	52.228 (2.90)***
$SENIOR_{,t}*(CSO/S)_{t+1}$	+	23.175 (3.18)***	26.579 (3.20)***	24.318 (2.99)***	74.072 (3.39)***
$CEODIR_{,t}*(CSO/S)_{t+1}$	+	29.382 (3.35)***	40.703 (4.09)***	17.651 (1.79)*	87.736 (3.33)***
$SHARES_{,t}*(CSO/S)_{t+1}$	+	331.911 (0.39)	1117.841 (1.15)	3101.542 (3.30)***	4551.293 (1.78)*
$BUSYDIR_{,t}*(CSO/S)_{t+1}$	+	21.192 (3.12)***	37.352 (4.90)***	8.852 (1.16)	67.396 (3.31)***
$CMSIZE_{,t}*(CSO/S)_{t+1}$	+	1.910 (0.95)	4.438 (1.93)*	-1.627 (-0.73)	4.721 (0.78)
Panel B. Regression including all individual measures					
$APPOINT_{t}*(CSO/S)_{t+1}$	+	9.003 (1.40)	13.372 (1.83)*	17.858 (2.51)**	40.233 (2.09)**
$SENIOR_{t}*(CSO/S)_{t+1}$	+	16.766 (2.13)**	16.116 (1.81)*	19.592 (2.26)**	52.474 (2.24)**
$CEODIR_{t}*(CSO/S)_{t+1}$	+	12.678 (1.31)	20.521 (1.87)*	15.264 (1.43)	48.463 (1.67)**
$SHARES_{t}*(CSO/S)_{t+1}$	+	-176.476 (-0.20)	526.413 (0.52)	2902.243 (3.00)***	3242;179 (1.24)
$BUSYDIR_{,t}*(CSO/S)_{t+1}$	+	14.924 (1.75)*	23.319 (2.42)**	1.891 (0.20)	40.135 (1.57)*
$CMSIZE_{t}*(CSO/S)_{t+1}$	+	2.916 (1.42)	5.346 (2.30)**	-0.788 (-0.35)	7.474 (1.22)

The figures in parentheses are *t*-statistics.
The regression models for Panel A are as follows:

$$(OI/S)_{i,t+k} = \lambda_0 + \lambda_1 CCQ_{i,t} + \lambda_2 (CSO/S)_{i,t+1} + \lambda_3 CCQ_{i,t}*(CSO/S)_{i,t+1} + \lambda_4 (TA/S)_{i,t} + \lambda_5 SALES_{i,t} + \lambda_6 SALES_{i,t}*(CSO/S)_{i,t+1} + \lambda_7 BM_{i,t} + \lambda_8 BM_{i,t}*(CSO/S)_{i,t+1} + \lambda_9 LEV_{i,t} + \lambda_{10} LEV_{i,t}*(CSO/S)_{i,t+1} + \lambda_{11} LOSS_{i,} + \lambda_{12} LOSS_{i,t}*(CSO/S)_{i,t+1} + industry\ fixed\ effects + e \quad (2)$$

$$(CSO/S)_{i,t+1} = \delta_0 + \delta_1 (R\&D/S)_{i,t} + \delta_2 SALES_{i,t} + \delta_3 BM_{i,t} + \delta_4 LEV_{i,t} + \delta_5 NOL_{i,t} + \delta_6 DC_{i,t} + \delta_7 CFS_{i,t} + \delta_8 (CSO/SRANK)_{i,t+1} + e \quad (3)$$

$$CCQ_{i,t} = \mu_0 + \mu_1 CEOOWN_{i,t} + \mu_2 CEOTEN_{i,t} + \mu_3 INSHD_{i,t} + \mu_4 GROW_{i,t} + \mu_5 FSIZE_{i,t} + \mu_6 CCQRANK_{i,t} + e \quad (4)$$

where
CCQ is one of the six individual compensation committee quality measures, *APPOINT*, *SENIOR*, *CEODIR*, *SHARES*, *BUSYDIR*, and *CMSIZE*.
APPOINT: *CEO appointed directors*, measured by minus the proportion of directors on the compensation committee appointed during the tenure of the incumbent CEO.
SENIOR: *Senior directors*, measured by the proportion of senior directors with 10 or more years of board service time on the compensation committee.
CEODIR: *CEO directors*, measured by minus the proportion of the CEOs of other firms on the compensation committee.
SHARES: *Directors' shareholdings*, measured by the aggregate shareholdings of directors on the compensation committee, deflated by the number of directors on the compensation committee.
BUSYDIR: Busy directors, measured by minus the proportion of directors with three or more additional board seats on the compensation committee.
CMSIZE: *Committee size*, measured by the number of directors on the compensation committee.
CSO/SRANK: 0, 1 or 2 based on portfolio rank when sorted by *CSO/S*.
CCQRANK: 0, 1 or 2 based on portfolio rank when sorted by each individual measure..
In Panel A, equation (3) is estimated for each individual measure separately.
The regression models for Panel B are as follows:

$$(OI/S)_{i,t+k} = \psi_0 + \psi_1 (CSO/S)_{i,t+1} + \psi_2 APPOINT_{i,t} + \psi_3 APPOINT_{i,t}*(CSO/S)_{i,t+1} + \psi_4 SENIOR_{i,t} + \psi_5 SENIOR_{i,t}*(CSO/S)_{i,t+1} + \psi_6 CEODIR_{i,t} + \psi_7 CEODIR_{i,t}*(CSO/S)_{i,t+1} + \psi_8 SHARES_{i,t} + \psi_9 SHARES_{i,t}*(CSO/S)_{i,t+1} + \psi_{10} CMSIZE_{i,t} + \psi_{11} CMSIZE_{i,t}*(CSO/S)_{i,t+1} + \psi_{12} (TA/S)_{i,t} + \psi_{13} SALES_{i,t} + \psi_{14} SALES_{i,t}*(CSO/S)_{i,t+1} + \psi_{15} BM_{i,t} + \psi_{16} BM_{i,t}*(CSO/S)_{i,t+1} + \psi_{17} LEV_{i,t} + \psi_{18} LEV_{i,t}*(CSO/S)_{i,t+1} + \psi_{19} LOSS_{i,} + \psi_{20} LOSS_{i,t}*(CSO/S)_{i,t+} + industry\ fixed\ effects + e \quad (2')$$

$$(CSO/S)_{i,t+1} = \delta_0 + \delta_1 (R\&D/S)_{i,t} + \delta_2 SALES_{i,t} + \delta_3 BM_{i,t} + \delta_4 LEV_{i,t} + \delta_5 NOL_{i,t} + \delta_6 DC_{i,t} + \delta_7 CFS_{i,t} + \delta_8 (CSO/SRANK)_{i,t+1} + e \quad (3)$$

$$CCQ_{i,t} = \mu_0 + \mu_1 CEOOWN_{i,t} + \mu_2 CEOTEN_{i,t} + \mu_3 INSHD_{i,t} + \mu_4 GROW_{i,t} + \mu_5 FSIZE_{i,t} + \mu_6 CCQRANK_{i,t} + e \quad (4)$$

In Panel B, equation (3) is estimated for all six individual measures simultaneously.
The other variables are defined in Table 2.
Total indicates the sum of 1-year ahead, 2-year ahead, and 3-years ahead operating income.
*, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels. Tests are two-tailed.

Table 7
Results on stock market performance

Variables	Predicted sign	CCQ_1	CCQ_2
Intercept	?	0.567	0.548
		(6.66)***	(6.46)***
CCQ_t	?	-0.006	-0.079
		(-0.09)	(0.79)
$CSOINC_{t+1}$	?	13.524	15.226
		(2.92)***	(3.28)***
CCQ_t*$CSOINC_{t+1}$	+	9.324	58.440
		1.68*	(2.62)***
Industry dummies		Included	Included
N		474	474
F-statistic		1.96**	2.36***
Adjusted R^2		3.33%	4.65%

The figures in parentheses are *t*-statistics.
The regression model is as follows:
$BHRET_{i,t3} = \gamma_0 + \gamma_1 CCQ_{i,t} + \gamma_2 (CSOINC)_{i,t+1} + \gamma_3 CCQ_{i,t}*(CSOINC)_{i,t+1} + industry\ fixed\ effects + e$ (5)
where
BHRET: buy-and-hold abnormal return, for years *t*+1 through *t*+3 compounded monthly each year, computed as $(1 + r_{i,1})$ x $(1 + r_{i,2})$...x $(1 + r_{i,12}) - (1 + r_{m,1})$ x $(1 + r_{m,2})$...x $(1 + r_{m12})$, where $r_{i,j}$ is the raw return and $r_{m,j}$ is the portfolio return (based on the market index) for month *j*.
CCQ: compensation committee governance quality, i.e., two comprehensive measures, *CCQ1* and *CCQ2*.
CSOINC: Incentives generated by CEO stock option grants, measured by the delta (the hedge ratio) of CEO stock option grants multiplied by the ratio of the number of CEO stock option grants to the total shares outstanding.
The other variables are defined in Table 2.
*, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels. Tests are two-tailed.