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The Effect of Compensation Committee Quality on the Association between CEO Cash Compensation and Accounting Performance

ABSTRACT

Manuscript Type: Empirical
Research Question/Issue: We examine the effect of compensation committee quality on the association between CEO cash compensation and accounting earnings and the moderating effects of growth opportunities and earnings status.
Research Findings/Insights: Using a sample of 812 U.S. firms, we find that CEO cash compensation is more positively associated with accounting earnings when firms have high compensation committee quality. We also find that the positive effect of compensation committee quality on the association between CEO cash compensation and accounting earnings is less for high growth firms or loss-making firms.
Theoretical/Academic Implications: We contribute to the agency based research on CEO compensation by (1) directly examining the impact of compensation committee quality on the sensitivity of CEO cash compensation to accounting earnings, (2) examining whether the role of compensation committee quality varies across firms, and (3) developing a broader and richer measure of compensation committee quality.
Practitioner/Policy Implications: Our findings imply that shareholders and directors should be concerned about the composition of compensation committees as we find that compensation committee quality varies depending on compensation committee size and other characteristics of the committee members. Our findings also imply that for compensation committee members, there are greater challenges in monitoring CEO compensation contracts for firms with high growth or that incur losses. Further, our findings imply that even when all compensation committees are regulated to be fully independent, there are still quality differences among these independent compensation committees.

Keywords: Corporate governance, compensation committee, pay-performance sensitivity

Jerry Sun and Steven F. Cahan. 2009. ***Corporate Governance: An International Review*****, 17 (2), 193-207. Post-print**

INTRODUCTION

Several prior studies have examined the effect of compensation committee quality on the association between CEO pay and firm performance where compensation committee quality is measured by compensation committee independence (e.g., the proportion of independent directors on the compensation committee). However, the evidence has been mixed. For example, Anderson and Bizjak (2003) do not find that less independent compensation committees have a lower association between CEO pay and stock returns. On the other hand, Newman and Mozes (1999) find that the association between compensation and stock returns is significantly higher for firms with independent compensation committees when stock returns are negative. Vafeas (2003a) finds that the pay-performance sensitivity for firms with less independent compensation committees improved in the wake of two major regulatory reforms – i.e., the 1992 SEC compensation disclosure rules and the 1993 tax limits on certain executive compensation (i.e., Internal Revenue Code Section 162(m)).[1]

One explanation for the mixed findings is that the proportion of independent directors is an incomplete measure of compensation committee quality. First, we expect that compensation committee quality would be better measured using a broader and richer set of variables related to the structure and composition of the compensation committee. Second, as a practical matter, compensation committee independence is no longer a relevant measure of compensation committee quality because U.S. listing rules (i.e., NYSE Corporate Governance 303A.05, NASDAQ Rule 4350(c), AMEX Enhanced Corporate Governance Rules Sec. 805) now require that compensation committees be

composed entirely of independent directors. Thus, under the current listing rules, all compensation committees would be classified as independent, but we expect that there will be quality differences among these independent compensation committees.

The first purpose of this study is to examine whether CEO cash compensation and accounting performance are more closely aligned when compensation committee quality is high. If higher quality compensation committees are better at linking pay to accounting performance, we expect that the interaction between compensation committee quality and accounting performance will be positively related to CEO cash compensation. We focus on cash compensation because similar to Dechow, Huson, and Sloan (1994), Gaver and Gaver (1998), Adut, Cready, and Lopez (2003), Comprix and Mueller (2006), Leone, Wu, and Zimmerman (2006), and others, we are interested in the reward piece of total compensation. That is, the cash piece can be viewed as ex-post compensation that depends on past and current performance while the incentive component (stock price-based compensation) depends on future performance.

To test this hypothesis, we construct a multidimensional measure of compensation committee quality choosing from six potential, individual measures of compensation committee quality including the proportion of CEO appointed directors on the committee, the proportion of committee members with 20 or more years of board service time, the proportion of directors who are CEOs of other firms, the proportion of directors who serve on three or more boards, the percentage of shares held by directors on the compensation committee, and the size of the committee. Using a sample of 812 U.S. listed companies with fully independent compensation committees, we find evidence that

CEO cash compensation is more positively associated with accounting earnings for firms with high compensation committee governance quality than for firms with low compensation committee governance quality.

The second purpose of this study is to examine whether the extent to which the association between CEO cash compensation and accounting earnings reflects compensation committee quality is affected by growth opportunities and earnings status. We are interested in the moderating effect of growth opportunities because stock option grants play a more important role in incentivizing managers for high growth firms than for low growth firms. Also, since losses are less informative about future firm performance than profits, we also examine whether losses reduce the effect of compensation committee quality on the association between CEO cash compensation and accounting earnings. Consistent with our hypotheses, we document that the positive effect of compensation committee quality on the association between CEO cash compensation and accounting earnings is less for high growth firms and loss-making firms than for low growth firms and profit-making firms.

This study contributes to the literature in the following ways. First, our study extends the research on the effect of compensation committee quality on the relation between compensation and firm performance. A number of prior studies suggest that compensation committees have an important role in linking accounting performance to CEO cash compensation (e.g., Dechow, Huson, and Sloan, 1994; Gaver and Gaver, 1998; Comprix and Mueller, 2006), but none of these studies have examined the role of compensation committees directly, i.e., none of them include a measure of compensation

committee quality in their tests. In contrast, compensation committee quality is the central focus of our tests. Unlike extant studies that focus on compensation committee independence (e.g., Anderson and Bizjak, 2003; Newman and Mozes, 1999; Vafeas, 2003a), we use compensation committee characteristics other than committee independence to examine the effect of compensation committee quality on the association between compensation and firm performance.

Second, our study adds to the literature by examining whether the effect of compensation committee quality on the association between CEO cash compensation and accounting earnings is related to firm characteristics such as growth opportunities and earnings status. Our results suggest that the impact of compensation committee quality on the sensitivity of cash pay to accounting performance will differ cross-sectionally. Thus, improving compensation committee quality would not have the same effect for all firms, suggesting that regulating compensation committees could be difficult.

Third, we use a broad-based measure of compensation committee quality. Since compensation committee independence can no longer be used as a proxy for compensation committee quality when studying U.S. listed firms (because of the 2003 changes in U.S. listing rules), our measure could be used in future research. Thus, this study builds a platform for future research on effects of compensation committee quality.

BACKGROUND AND HYPOTHESIS

Association between CEO cash compensation and accounting earnings

There is a stream of research on the relation between CEO cash compensation and accounting earnings. The objective of these studies is to examine how sensitive CEO

cash compensation is to a change in accounting earnings. Other studies examine whether all components of accounting earnings are equally weighted in determining CEO cash compensation or whether certain components play a greater or lesser role.

Based on analytical agency models, Lambert and Larcker (1987) show that CEO cash compensation is a function of accounting earnings and stock returns.[2] They also find that the optimal compensation contract can be expressed as a linear relation between compensation and accounting and market measures of performance, which theoretically guides the empirical specifications of the compensation function. They document strong evidence that the change in CEO cash compensation exhibits a strong positive relation with both changes in return on equity and stock returns.

Sloan (1993) investigates the role of accounting earnings in compensation contracts. He finds that CEO cash compensation is more sensitive to earnings than stock returns when (1) stock returns have a higher association with market-wide movements in equity values, (2) earnings have a higher association with firm-specific change in values, and (3) earnings have a less positive (more negative) association with market-wide movements in equity values. These results suggest that earnings are more useful in executive compensation contracts than stock returns in terms of shielding compensation from market-wide fluctuations in equity values that are beyond managers' control.

Prior research also suggests that compensation committees may act in the interest of the CEO in using accounting performance to set cash compensation. Defeo, Lambert, and Larcker (1989) examine the relation between the earnings effects of equity-for-debt swaps and changes in executive compensation. They find that cash compensation

increases with an increase in accounting earnings generated by the swap transactions. An advantage of using swap transactions is that the stock market negatively reacts to these transactions although they increase earnings, indicating that these transactions would not signal good news about shareholders' wealth. Thus, their study suggests that it might be more likely that managers opportunistically use swap transactions to increase their pay and that compensation committees might act in the managers' interests.

Dechow, Huson, and Sloan (1994) examine whether compensation committees shield executive compensation from restructuring charges which increase share value but decrease reported earnings. They find that large (small) restructuring charges are associated with higher (lower) CEO cash compensation, which means that CEO's cash compensation is not penalized for large restructuring expenses. The results suggest that compensation committees actively intervene in setting compensation in a way which is in the interests of CEOs. Gaver and Gaver (1998) investigate the effect of above the line earnings (i.e., earnings before extraordinary items and the results of discontinued operations) and below the line earnings on CEO cash compensation. They find that CEO cash compensation is positively associated with above the line earnings as long as earnings are positive, but the significant association between compensation and above the line earnings is nullified when earnings are negative, suggesting that compensation committees are using accounting performance measures to favour CEOs.

In summary, prior theoretical and empirical research finds that CEO cash compensation is positively associated with accounting earnings, suggesting that accounting performance plays an important role in CEO cash compensation contracts.

Prior research also suggests that compensation committees may act in the interests of CEOs in using earnings performance to set cash compensation. However, while these studies assume that compensation committees play a central role in linking accounting numbers and CEO pay, none of them has examined the role of compensation committees directly or considered the impact of compensation committee quality.

Effect of corporate governance on the association between CEO compensation and firm performance

There are a number of extant studies that examine the effect of corporate governance quality on the association between CEO compensation and firm performance. However, those studies provide mixed evidence, suggesting that further investigation is warranted. For example, Newman and Mozes (1999) examine whether compensation committee composition affects CEO compensation practices. They find that the relation between compensation and stock returns is significantly lower for firms whose compensation committee has at least one insider (i.e., insider-influenced firms) than for firms whose compensation committee has no insiders (i.e., outsider-influenced firms) when stock returns are negative. However, they do not find similar evidence for firms that experience positive stock returns. Thus, their study provides only partial evidence on the effect of compensation committee composition on the relation between CEO compensation and stock returns.

Perry and Zenner (2001) investigate whether CEO compensation practices are affected by tax legislation enacted in 1993, the Internal Revenue Code Section 162(m), which may enhance the corporate governance quality of compensation committees. They

document a stronger relationship between compensation and stock returns post-1993, and find that this relation is more pronounced for firms that are more likely to be affected by the Internal Revenue Code Section 162(m). However, they find that the effect of the legislation on the relation between compensation and accounting earnings is not clear, in that the sensitivity of compensation to contemporaneous earnings decreases but the sensitivity of compensation to lagged earnings increases post-1993. Overall, their findings implicitly support the notion that high corporate governance quality increases the association between CEO compensation and firm performance.

Like Perry and Zenner (2001), Vafeas (2003a) examines the effect of the regulatory reforms such as the 1992 SEC compensation disclosure rules and the 1993 tax legislation (i.e., Internal Revenue Code Section 162(m)) on executive compensation practices. He shows that the pay-performance sensitivity for firms with inside committee members prior to the regulatory reforms improves after the reforms. Pay practices of those firms become more similar to pay practices of other firms after the reforms. These results suggest that the regulatory reforms may improve the governance quality of compensation committees, thus resulting in a higher sensitivity of CEO compensation to firm performance.[3]

Anderson and Bizjak (2003) examine whether compensation committee independence affects compensation practices. They find no evidence that the fraction of independent directors on the compensation committee is significantly related to the sensitivity of the value of new option grants or the full option portfolio to firm

performance, suggesting that higher compensation committee independence would not result in a larger magnitude of pay-performance sensitivity.

In summary, Newman and Mozes (1999), Perry and Zenner (2001), and Vafeas (2003a) find some evidence on the effect of compensation committee quality on the relation between CEO compensation and firm performance in certain cases. However, those studies are limited in the following ways. First, they do not elaborately measure compensation committee independence as Newman and Mozes (1999) only identify whether the compensation committee is fully independent or not, while Perry and Zenner (2001) and Vafeas (2003a) do not measure compensation committee independence directly. Perry and Zenner (2001) and Vafeas (2003a) focus on the change in compensation committee quality around 1993 when the Internal Revenue Code Section 162(m) was introduced. Their implicit measure of compensation committee independence is a dummy variable coded "1" for the post-1993 period and "0" for the pre-1993 period. Second, Newman and Mozes (1999) and Vafeas (2003a) do not use accounting earnings but only use stock returns as a performance measure. Third, Perry and Zenner (2001) find inconclusive evidence regarding the relation between accounting earnings and enhanced compensation committee quality arising from changes in tax legislation. Further, Anderson and Bizjak (2003) find no evidence that compensation committee independence affects the association between compensation and firm performance. Thus, whether compensation committee quality affects the role of accounting performance in CEO cash compensation remains an open question, and we contribute to the literature by examining this issue in greater depth.

Hypotheses

The principal-agent models predict that designing compensation contracts based on observable and enforceable performance measures including accounting numbers can align the incentives of the agent with those of the principal (Holmstrom, 1979). Based on agency theory, Lambert and Larcker (1987) analytically show the existence of a positive relationship between compensation and accounting performance.

Consistent with the theoretical prediction, empirical studies document strong evidence that accounting earnings are significantly associated with CEO cash compensation (e.g., Lambert and Larcker, 1987; Sloan, 1993). Sloan (1993) finds that CEO cash compensation is more positively related to accounting earnings than stock returns when stock returns are noisy when measuring managers' performance. As indicated above, this suggests that accounting earnings are more useful in compensation contracts than stock returns to shield compensation from market-wide fluctuations in equity values that are beyond managers' control. Based on prior research (e.g., Murphy, 1999), accounting earnings are more likely to be an explicit metric of performance in cash compensation contracts. If high quality compensation committees are more likely to set CEO cash compensation based on executives' performance, then the association between cash compensation and accounting performance will be higher for firms with high quality compensation committees.

A concern on using compensation contracts is that without appropriate corporate governance, CEOs would "appear to write their contracts with one hand and sign them with other" (Williamson, 1985). Managers can wield their significant influence over the

compensation committee for rent extraction (e.g., Bebchuk and Fried, 2003; Bebchuk, Fried, and Walker, 2002). Even if accounting-based performance measures are widely used in designing bonus plans, the compensation contracts themselves do not represent the final decisions on paying CEOs. When compensation committees are controlled by managers, provisions of compensation contracts that are less favourable to managers will be less likely to be enforced. In this case, compensation committees will not effectively fulfil their duties.

Prior research suggests that high corporate governance quality can enhance the monitoring effectiveness of audit committees. For instance, Klein (2002b) finds that high audit committee independence can constrain earnings management. Carcello and Neal (2000) document that low audit committee independence increases the likelihood of auditors not issuing a going-concern report to financially distressed clients.[4] Also, Carcello and Neal (2003) find that audit committees with greater independence and expertise more effectively protect auditors from dismissal after the issuance of new going-concern reports. Recently, Chan and Li (2008) find that audit committees with high governance quality are associated with higher firm value. Bedard, Coulombe, and Courteau (2008) find that audit committee governance quality is inversely related to the level of IPO underpricing. Similarly, if high corporate governance quality of compensation committees can improve the monitoring effectiveness of compensation committees, then executive compensation contracts will be designed and implemented to better align the incentives of agents with the interests of principals. Thus, the association between CEO cash compensation and accounting earnings would be higher for firms with

high compensation committee quality than for firms with low compensation committee quality. More formally, we hypothesize:

H1: CEO cash compensation is more positively associated with accounting earnings for firms with high compensation committee quality than for firms with low compensation committee quality.

The extent to which the association between CEO cash compensation and earnings performance reflects compensation committee quality may be affected by firm characteristics. CEO cash compensation may play a less important role in incentivizing managers for firms with high stock option grants. Stock option grants are more important for high growth firms to ensure managers' investment decisions maximize firm value. Prior research documents that firms with high growth opportunities award more stock options (e.g., Hanlon, Rajgopal, and Shevlin, 2003; Ittner, Lambert, and Larcker, 2003). Since a significant portion of CEO compensation is stock price-based compensation for high growth firms, it is likely that those firms' compensation committee quality cannot be measured by the association between CEO cash compensation and accounting performance. Thus, the positive effect of compensation committee quality on the association between CEO cash compensation and accounting performance would be affected by growth opportunities. We formulate the second hypothesis as follows:

H2: The positive effect of compensation committee quality on the association between CEO cash compensation and accounting earnings is weakened by growth opportunities confronting the firm.

The relationship between compensation committee quality and the association between CEO cash compensation and accounting earnings would be also affected by firms' earnings status. Hayn (1995) finds that return-earnings association is less for loss-making firms than for profit-making firms, suggesting that losses are less informative about future firm performance than profits. Thus, firms that are more likely to incur losses may rely on alternative performance measures in setting CEO cash compensation. If so, CEO cash compensation will be less associated with accounting earnings for those firms even when compensation committee quality is high. Thus, we develop the third hypothesis as follows:

H3: The positive effect of compensation committee quality on the association between CEO cash compensation and accounting earnings is weakened by loss-making situations confronting the firm.

RESEARCH DESIGN

Sample selection

We select the sample by first searching the IRRC Directors database for the U.S. companies with compensation committees consisting solely of independent directors in 2001.[5] This step yields a raw sample of 1,225 firms with independent compensation committees identified by the information of committee memberships and board affiliations provided by IRRC. We then merge this sample with the Execucomp database to generate a reduced sample of 925 firms that are covered by both databases. Next, we check the SEC's EDGAR database to obtain additional data about compensation committee members.[6] After this filter, we have a sample of 897 firms with data for the

six compensation committee characteristics discussed in the next section. Finally, we delete observations without the availability of CEO cash compensation, financial data and market data that this study needs in Execucomp, Compustat, and CRSP, leaving a final sample of 812 firms. The industries most widely represented in the final sample are: manufacturing (47.79%), services (14.41%), transportation, communication, electric, gas, and sanitary services (10.48%), finance, insurance, and real estate (9.98%), and retail trade (8.87%).[7]

Compensation committee characteristics

To develop a comprehensive measure of compensation committee quality, we survey the existing corporate governance literature and identify six committee characteristics that could be related to compensation committee quality or effectiveness.[8] However, as discussed below, the ex ante direction of the relations is not always obvious. Thus, as we describe later, we conduct preliminary analyses to establish the direction of the relations before constructing a comprehensive measure of compensation committee quality.

The six characteristics that we consider are as follows:

(1) CEO appointed directors – Wade, O'Reilly, and Chandratat (1990) and Daily, Johnson, Ellstrand, and Dalton (1998) suggest that independent directors who are appointed during the tenure of the incumbent CEO are more likely to have an interdependent relationship with the CEO. We define those directors as "CEO appointed directors". CEOs are likely to influence the nomination and appointment of independent directors since CEOs usually serve as chair of the board. As a result, CEO appointed directors may have closer ties with and be more loyal to the CEO. Thus, an independent

compensation committee may be less effective if it has more CEO appointed directors. We use the proportion of CEO appointed directors on the compensation committee as one measure of compensation committee quality.

(2) Senior directors – Directors with greater board experience are more likely to provide higher governance quality (e.g., Buchanan, 1974; Salancik, 1977; Vance, 1983; Vafeas, 2003b). First, senior directors have greater experience, expertise, and competence, which can enhance their governance quality (Vafeas, 2003b). Vance (1983) argues that forcing directors to retire can waste talent and experience. Second, directors' commitment and willingness in doing good jobs may increase in their tenure. Buchanan (1974) shows that extended tenure can enhance organizational commitment. Salancik (1977) argues that organizational commitment rises with tenure because seasoned employees are more likely to have developed confidence and competence in doing their job. However, Lipton and Lorsch (2002) suggest that directors are likely to usurp CEO's functions as tenure increases. Vafeas (2003b) argues that long director tenure may be detrimental to the interests of shareholders. Thus, senior directors could be less effective because they are more entrenched. Following Vafeas (2003b), we use the proportion of directors on the compensation committee with 20 or more years of board service time for the current company as another measure of compensation committee quality.

(3) CEO directors – Having CEOs of other firms on the compensation committee can lead to lower governance quality since they may be more likely to support the firm's CEO (e.g., Lorsch and MacIver, 1989; Daily, Johnson, Ellstrand, and Dalton, 1998). For example, CEOs might be sympathetic to each other and will bias their decisions in order

to assist a fellow CEO. On the other hand, CEO directors could improve governance quality as they may bring business leadership, experience, and expertise to compensation committees. As a third individual governance quality measure, we use the proportion of CEOs of other firms on the compensation committee.

(4) Director shareholdings – Directors' governance quality may be higher for directors with high shareholdings as the extent to which interests of directors can be aligned with those of shareholders is positively associated with directors' shareholdings (Shivdasani, 1993; Vafeas, 2003b). High stock ownership increases directors' incentives to monitor the CEO (e.g., Shivdasani and Yermack, 1999). Klein (2002a) finds that earnings management is less for firms with more directors with block shareholdings sitting on the audit committee. Analogously, a compensation committee with higher director shareholdings may be more effective in setting and monitoring CEO pay packages. Of course, it is also possible that directors with excessive shareholdings could be entrenched (Morck, Shleifer, and Vishny, 1988). Directors with excessive shareholdings may expropriate minority shareholders, resulting in lower monitoring quality of those directors. We use the percentage of shares held by directors on the compensation committee as our fourth measure of compensation committee quality.

(5) Additional directorships - Independent directors that have directorships with many companies may want to be seen as effective directors in order to maintain their reputational capital (e.g., Shivdasani and Yermack, 1999). Prior research (e.g., Fama, 1980; Fama and Jensen, 1983; Kaplan and Reishus, 1990; Shivdasani, 1993; Brickley, Linck, and Coles, 1999; Harford, 2003) provides evidence that directors with more

additional board appointments will be better monitors of managerial decisions. Alternatively, many additional directorships may indicate the director is too busy, which would reduce the effectiveness of their work (Core, Holthausen, and Larcker, 1999; Fich and Shivdasani, 2006). Thus, the fifth individual governance quality measure is measured as the proportion of directors with three or more additional board seats on the compensation committee (Shivdasani, 1993).

(6) Committee size – Smaller compensation committees may have a shortage of advisors and monitors of management (e.g., Bushman, Chen, Engel, and Smith, 2004). For example, Agrawal and Knoeber (1999) suggest that larger size boards may play a more important role in monitoring firms where information is otherwise difficult to obtain. Adams and Mehran (2002) document that banking firms with larger boards have better performance than banking firms with smaller boards. Large committees may also be less easily influenced by the CEO or other top managers in the firm. On the other hand, Yermack (1996) and Beasley (1996) document that smaller boards perform better than bigger boards. The higher effectiveness of small boards may result from lower cooperation costs and less free riding (Jensen, 1993). Thus, it is possible that small compensation committees could be more effective. We use the number of directors on the compensation committee as a sixth measure of compensation committee quality.

Composite measure of compensation committee quality

Since the individual compensation committee characteristics may reflect different aspects of governance quality, we employ a composite score to comprehensively measure the multiple dimensions of compensation committee quality. Specifically, aggregating the

individual quality scores can give us a richer representation of compensation committee quality than any of the individual measures alone. Thus, we compute a composite measure of compensation committee quality based on the individual measures discussed above.

However, since the direction of the relation between some individual measures and governance quality is not always clear (e.g., a large board could be effective or ineffective), we first estimate eq. (2) for each individual measure to establish its quality direction. For each individual measure, we define a quality score that is coded "1" if the firm's value of that measure is greater (less) than the median of that measure where the individual measure increases (decreases) in governance quality, and "0" otherwise. The composite measure is the sum of the quality scores of the individual measures for the firm where a higher (lower) sum indicates more effective (ineffective) compensation committees. We label the composite measure as CCQUAL.

Variables

Following Leone, Wu, and Zimmerman (2006), we use the total cash compensation, e.g., the sum of bonus and salary, as the measure of CEO cash compensation. The total cash compensation is a better proxy for CEO cash compensation than its component, i.e., either bonus or salary, because some companies may not have bonus plans but may adjust CEO salary to compensate the CEO. Like prior research (e.g., Lambert and Larcker, 1987), we take the log of cash compensation as the dependent variable. There are at least two advantages of taking a log transformation of cash compensation. First, it is more likely that the dependent variable has a normal distribution, which is assumed by the

regression analysis. Second, the log transformation can reduce the difference in the magnitude of compensation across firms. Thus, it may mitigate the effect of heteroscedascity which can be an econometric issue when the cross-sectional regression analysis is performed.

This study uses the following independent variables in the main tests. Return on equity (ROE) is measured by income before extraordinary items divided by the beginning-year shareholders' equity. Stock returns (RET) are measured by the buy-hold returns based on monthly returns for a fiscal year. CCQUAL is the composite measure of compensation committee quality as explained above. Growth opportunities (lnMB) are measured by the log of the sum of book value of liabilities and market value of common equity over book value of assets. Loss-making dummy (LOSS) is coded "1" for loss-making firms and "0" otherwise.

This study also uses the following variables in the additional analyses. Return on assets (ROA) is measured by income before extraordinary items divided by the beginning-year total assets. Sales (SALES) are measured by the log value of net sales. Leverage (LEV) is measured by the debt-to-assets ratio. Prior year's cash compensation ($\ln(COMP_{-1})$ is measured as the log value of prior year's CEO salary plus bonus. CEO ownership (CEOOWN) is measured by the percentage of shares owned by the CEO. CEO tenure (CEOTEN) is measured by the number of years for which the incumbent CEO has been the CEO of the firm. Institutional shareholding (INSHD) is measured by the percentage of shares owned by institutional investors. Firm size (FSIZE) is measured

by the log of total assets. CCQUALRANK is coded "0", "1" or "2" based on portfolio rank when sorted by CCQUAL.

Models

Based on the theoretical specification of the relation between compensation and performance measures developed by Lambert and Larcker (1987), this study first examines the association between CEO cash compensation and accounting earnings using the following model:

$$\Delta\ln(COMP) = \beta_0 + \beta_1\ \Delta ROE + \beta_2\ RET + \text{industry dummies} \qquad (1)$$

We also add the dummy variables for each two-digit SIC industry which has at least 10 firms in the sample to control for the fixed industry effects. Based on prior research, the coefficient β_1 and β_2 in model (1) are expected to be positive and significant.

To test H1, we include CCQUAL and the interaction of CCQUAL with ΔROE in model (1) to generate the following model:

$$\Delta\ln(COMP) = \gamma_0 + \gamma_1\ CCQUAL + \gamma_2\ \Delta ROE + \gamma_3 CCQUAL*\Delta ROE$$
$$+ \gamma_4\ RET + \text{industry dummies} \qquad (2)$$

If CEO cash compensation is more positively associated with accounting earnings for firms with high compensation committee governance quality than for firms with low compensation committee governance quality, then the coefficient γ_3 will be positive and significant.

To test H2 and H3, model (2) is expanded by including lnMB and LOSS and their interactions with ΔROE and RCQUAL*ΔROE as follows:

$$\Delta\ln(COMP) = \gamma_0 + \gamma_1\ CCQUAL + \gamma_2\ \Delta ROE + \gamma_3 CCQUAL*\Delta ROE$$

$$+ \gamma_4 \text{ RET} + \gamma_5 \text{ lnMB} + \gamma_6 \text{ lnMB*}\Delta\text{ROE} + \gamma_7 \text{ lnMB*CCQUAL*}\Delta\text{ROE}$$

$$+ \gamma_8 \text{ LOSS} + \gamma_9 \text{ LOSS*}\Delta\text{ROE} + \gamma_{10} \text{ LOSS*CCQUAL*}\Delta\text{ROE}$$

$$+ \text{industry dummies} \qquad (3)$$

If the effect of compensation committee quality on the association between CEO cash compensation and accounting earnings is less positive for high growth firms and loss-making firms than for low growth firms and profit-making firms, respectively, then the coefficients γ_7 and γ_{10} will be negative and significant.

EMPIRICAL RESULTS

Table 1 provides evidence on the role of accounting earnings in CEO cash compensation. We find that CEO cash compensation is significantly positively associated with accounting performance and market performance ($t = 6.69$, $p < .001$ and $t = 6.45$, $p < .001$, respectively), consistent with the findings in previous studies (e.g., Lambert and Larcker, 1987).

Take in Table 1

Table 2 presents the results on examining the effect of compensation committee governance quality on the association between CEO cash compensation and accounting earnings when governance quality is measured by each compensation committee characteristic, i.e., CEO appointed directors, senior directors, CEO directors, director shareholdings, additional directorships, and committee size. The results show that CEO cash compensation is more positively associated with accounting earnings for firms with a lower proportion of directors appointed during the tenure of the incumbent CEO sitting on compensation committees ($t = -1.57$, $p < .10$), suggesting that CEO appointed

directors may have lower governance quality. We also find strong evidence that CEO cash compensation is more positively associated with accounting earnings for firms with a higher proportion of senior directors sitting on compensation committees ($t = 3.28$, $p < .01$), suggesting that senior directors have higher governance quality.

Take in Table 2

We find the association between CEO cash compensation and accounting earnings is higher when firms have a high proportion of directors on the compensation committee who are CEOs of other firms ($t = 1.90$, $p < .05$), consistent with the argument that CEO directors may bring business leadership, experience and expertise to compensation committees, thus improving governance quality. However, Table 2 reports no significant effect of director shareholdings on the compensation committee on the association between CEO cash compensation and accounting earnings.

Moreover, we find that the association between CEO cash compensation and accounting earnings is significantly higher for firms with a higher proportion of directors with three or more additional directorships sitting on compensation committees ($t = 2.37$, $p < .01$), suggesting that directors with more additional directorships may have higher governance quality. We also find that the association between CEO cash compensation and accounting earnings is lower when firms have a larger compensation committee ($t = -1.40$, $p < .10$), consistent with the notion that committee governance quality is negatively associated with committee size although the evidence is marginally significant.

Table 3, panel A provides the descriptive statistics for the variables in the regression analysis. Based on the results in Table 2, we exclude director shareholdings from the six compensation committee characteristics as its effect on the association between CEO cash compensation and accounting earnings is insignificant. Next, we compute the overall quality measure (i.e., CCQUAL in Table 3) by aggregating the governance quality scores of the five individual measures. The individual measures of CEO appointed directors and committee size are multiplied by -1 so that these two measures are increasing in governance quality when they are used in constructing the composite measure. The mean and median for CCQUAL are 2.08 and 2.00. Thus, the average compensation committee would have high quality scores for about two of the five individual governance quality measures. Table 3, panel B presents the Pearson correlation coefficients between the independent variables. CCQUAL is not significantly correlated with ΔROE and is marginally negatively correlated with RET, while ΔROE is positively correlated with RET ($r = 0.31$, $p < .001$).

Take in Table 3

Table 4 presents evidence on the effect of overall compensation committee quality on the association between CEO cash compensation and accounting earnings and the moderating effects of growth opportunities and earnings status. Table 4, columns 3 and 4 report that the coefficient on the interaction term CCQUAL*ΔROE is positive and significant ($t = 3.84$, $p < .001$). This supports H1 and provides evidence that CEO cash compensation is more closely aligned to accounting earnings when compensation committee quality is high. Table 4, columns 5 and 6 report that the coefficients on the

interaction terms lnMB*CCQUAL*ΔROE and LOSS*CCQUAL*ΔROE are negative and significant (t = -1.77, p < .05 and t = -1.52, p < .10, respectively), consistent with H2 and H3. These results suggest that the effect of compensation committee quality on the association between CEO cash compensation and accounting earnings is less positive for high growth firms and loss-making firms than for low growth firms and profit-making firms. Our findings also suggest that the effectiveness of compensation committees would be lower for high growth firms, consistent with the argument that those firms may have lower corporate governance quality (Bathala and Rao, 1995; Linck, Netter, Yang, 2008).

Take in Table 4

We conduct several additional analyses to examine whether the results on the effect of overall compensation committee quality on the association between CEO cash compensation and accounting performance and the moderating effects of growth opportunities and earnings status are robust. First, we examine whether the results are sensitive to using an alternative measure of accounting earnings. Table 5 provides the results when ROE is replaced with ROA. The coefficient on the interaction term CCQUAL*ΔROA is positive and significant (t = 3.28, p < .001), which is again consistent with H1. The coefficients on the interaction terms lnMB*CCQUAL*ΔROA and LOSS*CCQUAL*ΔROA are negative and significant (t = -1.95, p < .05 and t = -1.88, p < .05, respectively), which also supports H2 and H3.

Take in Table 5

Second, we examine whether the results are robust after including several control variables in the regression model. Based on Leone, Wu, and Zimmerman (2006), models (2) and (3) are expanded as follows:

$$\Delta\ln(COMP) = \delta_0 + \delta_1\ CCQUAL + \delta_2\ \Delta ROE + \delta_3\ CCQUAL*\Delta ROE + \delta_4\ RET + \delta_5\ lnMB + \delta_6\ lnMB*\Delta ROE + \delta_7\ SALES + \delta_8\ SALES^2 + \delta_9\ LEV + \delta_{10} LEV*\Delta ROE + \delta_{11}\ \ln(COMP_{-1}) + \text{industry dummies} \quad (4)$$

$$\Delta\ln(COMP) = \delta_0 + \delta_1\ CCQUAL + \delta_2\ \Delta ROE + \delta_3\ CCQUAL*\Delta ROE + \delta_4\ RET + \delta_5\ lnMB + \delta_6\ lnMB*\Delta ROE + \delta_7\ lnMB*CCQUAL*\Delta ROE + \delta_8\ LOSS + \delta_9\ LOSS*\Delta ROE + \delta_{10}\ LOSS*CCQUAL*\Delta ROE + \delta_{11}\ SALES + \delta_{12}\ SALES^2 + \delta_{13}\ LEV + \delta_{14} LEV*\Delta ROE + \delta_{15}\ \ln(COMP_{-1}) + \text{industry dummies} \quad (5)$$

Following Leone, Wu, and Zimmerman (2006), we include SALES and $SALES^2$ to control for potential non-linear size effects. We also add lnMB, LEV, and the interaction terms lnMB*ΔROE and LEV*ΔROE in model (4) as control variables because they may affect the pay-performance sensitivity (Leone, Wu, and Zimmerman, 2006). In addition, we include the prior year's cash compensation in the models as we use change in cash compensation as the dependent variable.

Table 6 provides the results of the regression that examines the effect of overall compensation committee quality on the association between CEO cash compensation and accounting earnings and the moderating effects of growth opportunities and earnings status after including the control variables. We find that after controlling for these variables, the coefficient on the interaction term CCQUAL*ΔROE remains positive and

significant (t = 4.05, p < .001), consistent with H1. The coefficients on the interaction terms lnMB*CCQUAL*ΔROE and LOSS*CCQUAL*ΔROE also remain negative and significant (t = -1.87, p < .05 and t = -1.67, p < .05, respectively), consistent with H2 and H3.

Take in Table 6

Third, the governance quality of the compensation committee may not be an exogenous variable. The compensation committee characteristics may be affected by CEO compensation and its association with firm performance. To control for this potential endogeneity, we use a two-stage regression procedure similar to a procedure used by Frankel, Kothari, and Weber (2006). We expect that the demand for high compensation committee governance quality will depend on the CEO's influence, substitute monitoring mechanisms, and the firm's growth opportunities and size. Thus, the first stage regression model is as follows:

$$\text{CCQUAL} = \rho_0 + \rho_1\text{CEOOWN} + \rho_2\text{CEOTEN} + \rho_3\text{INSHD} + \rho_4\text{lnMB} + \rho_5\text{FSIZE} + \rho_6\text{CCQUALRANK} \quad (6)$$

CEOOWN and CEOTEN are included because prior research suggests that board governance quality is lower for firms with high CEO influence (Bathala and Rao, 1995; Baker and Gompers, 2003; Kieschnick and Moussawi, 2004). Since there could be a substitute relation between institutional shareholdings and other monitoring mechanisms (Brickley, Lease, and Smith, 1988; Agrawal and Mandelker, 1990; Rediker and Seth, 1995), we include INSHD. We include lnMB because prior studies find that high growth firms have low board governance quality (Bathala and Rao, 1995; Linck, Netter, Yang,

2008). FSIZE is also included as prior research argues that large firms have more agency conflicts between managers and shareholders, resulting in a high demand for corporate governance quality (Barclay and Smith, 1995a; 1995b).

CCQUAL in the second stage regressions (i.e., models (2) and (3)) is the fitted value from the first stage regression (i.e., model (6)).[9] Table 7 provides the results on testing the hypotheses after allowing for the potential endogeneity of corporate governance quality. The results of the second stage regressions show that the coefficient on the interaction term CCQUAL*ΔROE is still positive and significant (t = 4.01, p < .001), and that the coefficients on the interaction terms lnMB*CCQUAL*ΔROE and LOSS*CCQUAL*ΔROE are still negative and significant (t = -2.39, p < .01 and t = -1.87, p < .05, respectively), which supports H1, H2, and H3 after controlling for the endogeneity issue.

Take in Table 7

CONCLUSION

This study investigates the effect of compensation committee quality on the role of accounting performance in CEO cash compensation contracts. Specifically, we examine whether compensation committee quality affects the association between CEO cash compensation and earnings performance and whether the effect of compensation committee quality on the association between CEO cash compensation and earnings performance varies among firms. Unlike prior research that focuses on compensation committee independence, we identify the five compensation committee characteristics –

other than committee independence – to comprehensively measure compensation committee quality.

Using a sample of 812 U.S. listed companies with fully independent compensation committees, we document that CEO cash compensation is more positively associated with accounting earnings for firms with high compensation committee governance quality than for firms with low compensation committee governance quality. We also find that the positive effect of compensation committee quality on the association between CEO cash compensation and earnings performance is weakened by growth opportunities and loss-making. Our results are robust to using an alternative earnings measure, adding control variables, and allowing for the endogeneity of governance quality.

Like any study, we recognize that our study has certain limitations. First, our study is limited to the U.S. data. It is unclear whether our results can be generalized to other countries' contexts. Future research may examine the effect of compensation committee quality on CEO compensation using international data. Second, it is possible that other compensation committee characteristics – in addition, to the ones considered here – might also affect compensation committee quality. Future research may develop composite measures of compensation committee quality by adding other committee characteristics to those used in this study.

Nonetheless, this study has theoretical and practical implications. For example, we add to the agency theory based literature on CEO compensation in several ways. First, while prior studies find that CEO cash compensation is positively associated with

accounting earnings (e.g., Lambert and Larcker, 1987; Sloan, 2003), we extend this line of research by directly examining whether the governance quality of the compensation committee has an impact on this relation. Second, we also consider whether the impact of compensation committee quality on CEO cash compensation contracts varies in cross-section. We find the impact of compensation committee quality on the CEO cash compensation-performance relation is weaker for high growth firms or loss-making firms. Third, in contrast to prior studies in this area (e.g., Anderson and Bizjak, 2003; Newman and Mozes, 1999; Vafeas, 2003a), we use a comprehensive measure of compensation committee quality. Thus, our research contributes to the prior agency theory based literature by providing a richer understanding of the role of compensation committees in writing effective compensation contracts for CEOs.

From the perspective of practice, our findings have implications at several levels. As an example, our results suggest that shareholders and directors should be concerned about the overall quality of compensation committees. Specifically, we find that compensation committee quality depends on compensation committee size and whether the committee includes CEO-appointed directors, senior directors, experienced directors (i.e., directors with additional directorships), and the CEO. For compensation committee members, our results imply that there are greater challenges in monitoring compensation contracts for firms with high growth or that incur losses. In such cases, committee members need to improve their monitoring or design contracts that rely less on cash compensation (e.g., stock based compensation). For policymakers, our findings indicate that even when all compensation committees are regulated to be fully independent (i.e.,

all compensation committee members are outside directors), there are still quality differences among these independent compensation committees. Thus, if policymakers continue to have concerns about the effectiveness of compensation committees, they may need to introduce specific requirements related to the overall quality of these committees (e.g., requiring that members have multiple directorships).

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REFERENCES

Adams, R. and Mehran, H. (2002) Board structure and banking firm performance, Working paper, Federal Reserve Bank of New York.

Adut, D., Cready, W. H. and Lopez, T. J. (2003) Restructuring charges and CEO cash compensation: A re-examination, *The Accounting Review,* 78 (1): 169-193.

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

Agrawal, A. and Mandelker, G. N. (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 Bizjak, J. M. (2003) Am empirical examination of the role of the CEO and the compensation committee in structuring executive pay, *Journal of Banking and Finance,* 27 (7): 1323-1348.

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

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

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

Bathala, C. T. and Rao, R. P. (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 Fried, J. M. (2003) Executive compensation as an agency problem, *Journal of Economic Perspectives,* 17: 71-92.

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

Bedard, J., Coulombe, D. and Courteau, L. (2008) Audit committee, underpricing of IPOs, and accuracy of management earnings forecasts, *Corporate Governance: An International Review*, 16 (6): 510-535.

Bender, R. (2007) Onwards and Upwards: why companies change their executive remuneration schemes, and why this leads to increases in pay, *Corporate Governance: An International Review*, 15 (5): 709-723.

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

Brickley, J., Linck, J. and Coles, J. (1999) What happens to CEOs after they retire? New evidence on career concerns, horizon problems, and CEO incentives, *Journal of Financial Economics,* 52: 341-377.

Buchanan, B. (1974) Building organizational commitment: the socialization of managers in work organizations, *Administrative Science Quarterly,* 19: 533-546.

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

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

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

Chan, K. C. and Li, J. (2008) Audit committee and firm value: evidence on outside top executives as expert-independent directors, *Corporate Governance: An International Review*, 16 (1): 16-31.

Comprix, J. and Mueller, K. A. (2006) Asymmetric treatment of reported pension expense and income amounts in CEO cash compensation, *Journal of Accounting and Economics,* 42 (3): 385-416.

Daily, C. M., Johnson, J. L., Ellstrand, A. E. and Dalton, D. R. (1998) Compensation composition as a determinants of CEO compensation, *Academy of Management Journal,* 41 (2): 209-220.

Dechow, P. M., Huson, M. R. and Sloan, R G. (1994) The effect of restructuring charges on executives' cash compensation, *The Accounting Review,* 69 (1): 138-156.

Defeo, V., Lambert, R. and Larcker, D. (1989) Executive compensation effects of equity-for-debt swaps, *The Accounting Review,* 64: 201-228.

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

Fama, E. and Jensen, M. (1983) The separation of ownership and control. *Journal of Law and Economics,* 26: 301-325.

Frankel, R., Kothari, S. P. and Weber, J. (2006) Determinants of the informativeness of analyst research, *Journal of Accounting and Economics,* 41: 29-54.

Gaver, J. J. and Gaver, K. M. (1998) The relation between nonrecurring accounting transactions and CEO cash compensation, *The Accounting Review,* 73 (April): 235-253.

Hanlon, M., Rajgopal, S. and Shevlin, T. (2003) Are executive stock options associated with future earnings? *Journal of Accounting and Economics*, 36: 3-43.

Harford, J. (2003) Takeover bids and target directors' incentives: The impact on directors wealth and board seats, *Journal of Financial Economics,* 69: 51-83.

Hayn, C. (1995) The information content of losses, *Journal of Accounting and Economics*, 20: 125-153,

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

Ittner, C. D., Lambert, R. A, and Larcker, D. F. (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.

Kaplan, S. and Reishus, D. (1990) Outside directorships and corporate performance, *Journal of Financial Economics,* 27: 389-410.

Klein, A. (2002a) Economic determinants of audit committee independence, *The Accounting Review,* 77: 435-452.

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

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

Lambert, R. and Larcker, D. (1987) An analysis of the use of accounting and market measures of performance in executive compensation contracts, *Journal of Accounting Research,* 25: 85-129.

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

Lipton, M. and Lorsch, J. (1992) A modest proposal for improved corporate governance, *Business Lawyer*, 48: 59-77.

Linck, J. S., Netter and Yang, T. (2008) The determinants of board structure, *Journal of Financial Economics*, 87: 308-328.
Lorsch, J. W. and MacIver, E. (1989) *Pawns or potentates*: *The reality of America's corporate boards*. Boston: Harvard Business School Press.
Morck, R., Shleifer, A. and Vishny, R. W. (1988) Management ownership and market valuation: An empirical analysis, *Journal of Financial Economics,* 20: 293-315.
Murphy, K. (1999).Executive compensation, Working paper, University of Southern California.
Newman, H. A. and Mozes, H. A. (1999) Does the composition of the compensation committee influence CEO compensation practices? *Financial Management,* 28 (Autumn): 41-53.
Perry, T. and Zenner, M. (2001) Pay for performance? Government regulation and the structure of compensation contracts, *Journal of Financial Economics* 62(3): 453-488.
Rediker, K. and Seth, A. (1995) Boards of directors and substitution effects of alternative governance mechanisms, *Strategic Management Journal*, 16: 85-99.
Salancik, G. (1977) *Commitment and control of organizational behaviour and belief*. New Directions in Organizational Behaviour, St Claire Press, Chicago.
Shivdasani, A. (1993) Board composition, ownership structure, and hostile takeovers, *Journal of Accounting and Economics,*16:167-198.
Shivdasani, A. and Yermack, D. (1999) CEO involvement in the selection of new board members: an empirical analysis, *Journal of Finance,* 54: 1829-1853.
Sloan, R. G. (1993) Accounting earnings and top executive compensation, *Journal of Accounting and Economics*, 16: 55-100
Vafeas, N. (2003a) Further evidence on compensation committee composition as a determinant of CEO compensation, *Financial Management,* 32 (Summer): 53-70.
Vafeas, N. (2003b) Length of board tenure and outside director independence, *Journal of Business Finance & Accounting,* 30(7&8): 1043-1064.
Vance, S. (1983) *Corporate Leadership: Boards, Directors, Strategy*. McGraw Hill, New York.
Wade, J., O'Reilly, C. A. and Chandratat, I. (1990) Golden parachutes: CEOs and the exercise of social influence, *Administrative Science Quarterly,* 35: 587-603.
Williamson, O. (1985) *The economic institutions of capitalism*. New York: New York Free Press.
Yermack, D. (1996) Higher market valuation of companies with a small board of directors, *Journal of Financial Economics,* 40 (2): 185-211.

Table 1
The Association between CEO Cash Compensation and Accounting Earnings

Variable	Predicted Sign	Coefficient	t-statistic
Intercept		0.03	0.69
ΔROE	+	0.46	6.69***
RET	+	0.18	6.45***
Industry dummies			Included
N			812
F-statistic			6.30***
Adjusted R^2			15.00%

Model :
$\Delta \ln(COMP) = \beta_0 + \beta_1 \Delta ROE + \beta_2 RET$ + industry dummies
ΔROE: Change in ROE, ROE is measured by income before extraordinary items divided by the beginning-year shareholders' equity.
RET: Stock returns, measured by the buy-hold returns based on monthly returns for a fiscal year.
*** $p < .001$ (one-tailed).

Table 2
The Effect of Compensation Committee Characteristics on the Association between CEO Cash Compensation and Accounting Earnings

Panel A

		CEO Appointed Directors		Senior Directors		CEO Directors	
Variable	Predicted Sign	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept		0.02	0.54	0.04	1.11	0.05	1.22
CCQUAL_measure		0.01	0.18	-0.14	-1.41†	-0.07	-1.16
ΔROE		0.59	5.55***	0.40	5.62***	0.36	4.29***
CCQUAL_measure*ΔROE		-0.29	-1.57†	1.73	3.28***	0.55	1.90*
RET	+	0.18	6.46***	0.18	6.52***	0.18	6.42***
Industry dummies			Included		Included		Included
N			812		812		812
F-statistic			5.96***		6.50***		6.07***
Adjusted R^2			15.06%		16.43%		15.36%

Panel B

		Director Shareholdings		Additional Directorships		Committee Size	
Variable	Predicted Sign	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
Intercept		0.03	0.70	0.04	0.92	0.08	1.45†
CCQUAL_measure		-0.09	0.46	-0.03	-0.63	-0.02	-1.38†
ΔROE		0.45	6.01***	0.31	3.33***	0.74	3.47***
CCQUAL_measure*ΔROE		0.62	0.46	0.47	2.37**	-0.08	-1.40†
RET	+	0.18	6.46***	0.18	6.27***	0.18	6.45***
Industry dummies			Included		Included		Included

N	812	812	812
F-statistic	5.86***	6.11***	5.99***
Adjusted R^2	14.81%	15.46%	15.06%

Model:

$$\Delta\ln(COMP) = \gamma_0 + \gamma_1 CCQUAL_measure + \gamma_2\ \Delta ROE + \gamma_3 CCQUAL_measure*\Delta ROE + \gamma_4\ RET + \text{industry dummies} \quad (2)$$

where CCQUAL_measure is an individual compensation committee governance quality measure. The other variables are defined in Table 1.

† $p < .10$ (one-tailed).
* $p < .05$ (one-tailed).
** $p < .01$ (one-tailed).
*** $p < .001$ (one-tailed).

Table 3
Descriptive Statistics and Pearson Correlations

Panel A: Descriptive statistics

Variable	N	Mean	Median	Std Dev	Q1	Q3
CCQUAL	812	2.08	2.00	1.13	1.00	3.00
Δln(COMP)	812	0.05	0.07	0.44	-0.17	0.24
ΔROE	812	-0.01	-0.01	0.22	-0.07	0.04
RET	812	0.28	0.23	0.58	-0.11	0.56
lnMB	812	0.51	0.38	0.51	0.12	0.85
LOSS	812	0.14	0.00	0.34	0.00	0.00

Panel B: Pearson correlations

	CCQUAL	ΔROE	RET	lnMB	LOSS
CCQUAL	1.00	-0.01	-0.07†	-0.04	-0.00
ΔROE		1.00	0.30***	0.10**	-0.24***
RET			1.00	0.28***	-0.22***
lnMB				1.00	-0.14***
LOSS					1.00

CCQUAL: Composite measure of compensation committee governance quality based on the aggregate quality scores of the five compensation committee characteristics.
lnMB: Growth opportunities measured the log of the sum of book value of liabilities and market value of common equity over book value of assets.
LOSS: Loss-making dummy coded "1" for loss-making firms and "0" otherwise.
The other variables are defined in Table 1.
† $p < .10$ (two-tailed).
** $p < .01$ (two-tailed).
*** $p < .001$ (two-tailed).

Table 4
The Effect of Overall Compensation Committee Quality on the Association between CEO Cash Compensation and Accounting Earnings

		Model (2)		Model (3)	
Variable	Predicted Sign	Coefficient	t-statistic	Coefficient	t-statistic
Intercept		0.07	1.49†	0.07	1.42†
CCQUAL		-0.01	-1.09	-0.01	-1.01
ΔROE		0.05	0.39	0.02	0.10
CCQUAL*ΔROE	+	0.23	3.84***	0.43	4.24***
RET	+	0.18	6.37***	0.18	6.05***
lnMB				-0.02	-0.57
lnMB*ΔROE				0.11	0.55
lnMB*CCQUAL*ΔROE	-			-0.18	-1.77*
LOSS				-0.04	-0.79
LOSS*ΔROE				-0.12	-0.48
LOSS*CCQUAL*ΔROE	-			-0.20	-1.52†
Industry dummies			Included		Included
N			812		812
F-statistic			6.54***		6.01***
Adjusted R^2			16.54%		17.77%

Models:

$\Delta ln(COMP) = \gamma_0 + \gamma_1$ CCQUAL $+ \gamma_2$ ΔROE $+ \gamma_3$CCQUAL*ΔROE $+ \gamma_4$ RET + industry dummies (2)

$\Delta ln(COMP) = \gamma_0 + \gamma_1$ CCQUAL $+ \gamma_2$ ΔROE $+ \gamma_3$CCQUAL*ΔROE $+ \gamma_4$ RET $+ \gamma_5$ lnMB
$+ \gamma_6$ lnMB*ΔROE$+ \gamma_7$ lnMB*CCQUAL*ΔROE $+ \gamma_8$ LOSS $+ \gamma_9$ LOSS*ΔROE
$+ \gamma_{10}$ LOSS*CCQUAL*ΔROE + industry dummies (3)

The variables are defined in Tables 1 and 3.

† $p < .10$ (one-tailed).
* $p < .05$ (one-tailed).
*** $p < .001$ (one-tailed).

Table 5
The Effect of Overall Compensation Committee Quality on the Association between CEO Cash Compensation and Accounting Earnings Measured by ROA

		Model (2)		Model (3)	
Variable	Predicted Sign	Coefficient	t-statistic	Coefficient	t-statistic
Intercept		0.07	1.47†	0.08	1.82*
CCQUAL		-0.01	-0.97	-0.01	-0.55
ΔROA		0.08	0.25	0.20	0.19
CCQUAL*ΔROA	+	0.51	3.28***	1.80	3.78***
RET	+	0.18	6.34***	0.17	5.41***
lnMB				-0.02	-0.65
lnMB*ΔROA				0.53	0.52
lnMB*CCQUAL*ΔROA	-			-0.93	-1.95*
LOSS				-0.01	-0.09
LOSS*ΔROA				0.49	0.41
LOSS*CCQUAL*ΔROA	-			-1.01	-1.88*
Industry dummies			Included		Included
N			812		812
F-statistic			5.91***		5.98***
Adjusted R^2			14.93%		17.70%

Models:

$\Delta ln(COMP) = \gamma_0 + \gamma_1$ CCQUAL $+ \gamma_2$ ΔROA $+ \gamma_3$CCQUAL*ΔROA $+ \gamma_4$ RET + industry dummies (2)

$\Delta ln(COMP) = \gamma_0 + \gamma_1$ CCQUAL $+ \gamma_2$ ΔROA $+ \gamma_3$CCQUAL*ΔROA $+ \gamma_4$ RET $+ \gamma_5$ lnMB
$+ \gamma_6$ lnMB*ΔROA$+ \gamma_7$ lnMB*CCQUAL*ΔROEA$+ \gamma_8$ LOSS $+ \gamma_9$ LOSS*ΔROA
$+ \gamma_{10}$ LOSS*CCQUAL*ΔROA + industry dummies (3)

The variables are defined in Tables 1 and 2.

† $p < .10$ (one-tailed).
* $p < .05$ (one-tailed).
*** $p < .001$ (one-tailed).

Table 6
The Effect of Overall Compensation Committee Quality on the Association between CEO Cash Compensation and Accounting Earnings after Adding Several Control Variables

		Model (2)		Model (3)	
Variable	Predicted Sign	Coefficient	t-statistic	Coefficient	t-statistic
Intercept		0.41	1.23	0.47	1.41†
CCQUAL		-0.01	-0.91	-0.01	-0.82
ΔROE		0.20	1.33†	0.11	0.57
CCQUAL*ΔROE	+	0.25	4.05***	0.45	4.35***
RET	+	0.18	6.12***	0.18	5.92***
lnMB		-0.02	-0.51	-0.01	-0.38
lnMB*ΔROE		-0.16	-1.43†	0.13	0.65
lnMB*CCQUAL*ΔROE	-			-0.19	-1.87*
LOSS				-0.06	-1.25
LOSS*ΔROE				-0.14	-0.52
LOSS*CCQUAL*ΔROE	-			-0.22	-1.67*
SALES		0.04	0.46	0.02	0.27
$SALES^2$		-0.00	-0.34	-0.00	-0.17
LEV		-0.06	-0.55	-0.06	-0.55
LEV*ΔROE		-0.25	-0.80	-0.473	-1.50†
$\ln(COMP_{-1})$		-0.07	-4.56***	-0.076	-4.74***
Industry dummies			Included		Included
N			812		812
F-statistic			6.15***		6.09***
Adjusted R^2			18.60%		20.06%

Models:

$$\Delta\ln(COMP) = \delta_0 + \delta_1\ CCQUAL + \delta_2\ \Delta ROE + \delta_3\ CCQUAL*\Delta ROE + \delta_4\ RET + \delta_5\ lnMB + \delta_6\ lnMB*\Delta ROE + \delta_7\ SALES + \delta_8\ SALES^2 + \delta_9\ LEV + \delta_{10} LEV*\Delta ROE + \delta_{11}\ \ln(COMP_{-1}) + \text{industry dummies} \quad (4)$$

$$\Delta\ln(COMP) = \delta_0 + \delta_1\ CCQUAL + \delta_2\ \Delta ROE + \delta_3\ CCQUAL*\Delta ROE + \delta_4\ RET + \delta_5\ lnMB + \delta_6\ lnMB*\Delta ROE + \delta_7\ lnMB*CCQUAL*\Delta ROE + \delta_8\ LOSS + \delta_9\ LOSS*\Delta ROE + \delta_{10}\ LOSS*CCQUAL*\Delta ROE + \delta_{11}\ SALES + \delta_{12}\ SALES^2 + \delta_{13}\ LEV + \delta_{14} LEV*\Delta ROE + \delta_{15}\ \ln(COMP_{-1}) + \text{industry dummies} \quad (5)$$

SALES: Sales, measured by the log value of net sales.
LEV: Leverage, measured by the debt-to-assets ratio.
$\ln(COMP_{-1})$: Prior year's cash compensation, the log value of prior year's CEO salary plus bonus.
The other variables are defined in Tables 1 and 3.

† $p < .10$ (one-tailed).
* $p < .05$ (one-tailed).
*** $p < .001$ (one-tailed).

Table 7
Two-Stage Regressions for the Effect of Overall Compensation Committee Quality on the Association between CEO Cash Compensation and Accounting Earnings

		Model (2)		Model (3)	
Variable	Predicted Sign	Coefficient	t-statistic	Coefficient	t-statistic
Intercept		0.04	0.87	0.04	0.91
CCQUAL		-0.01	-0.35	-0.01	-0.40
ΔROE		-0.01	-0.05	-0.19	-0.86
CCQUAL*ΔROE	+	0.26	4.01***	0.54	4.48***
RET	+	0.19	6.51***	0.19	6.20***
lnMB				-0.03	-0.79
lnMB*ΔROE				0.31	1.34†
lnMB*CCQUAL*ΔROE	-			-0.29	-2.39**
LOSS				-0.05	-1.05
LOSS*ΔROE				-0.03	-0.09
LOSS*CCQUAL*ΔROE	-			-0.27	-1.87*
Industry dummies			Included		Included
N			774		774
F-statistic			6.15***		5.69***
Adjusted R^2			16.18%		17.53%

Model (first-stage):

$$CCQUAL = \rho_0 + \rho_1 CEOOWN + \rho_2 CEOTEN + \rho_3 INSHD + \rho_4 lnMB + \rho_5 FSIZE + \rho_6 CCQUALRANK \quad (6)$$

CEOOWN: CEO ownership, measured by the percentage of shares owned by the CEO,
CEOTEN: CEO tenure, measured by the number of years for which the incumbent CEO has been the CEO of the firm.
INSHD: Institutional shareholding, measured by the percentage of shares owned by institutional investors.
FSIZE: Firm size, measured by the log of total assets.
CCQUALRANK: 0, 1 or 2 based on portfolio rank when sorted by CCQUAL.
Models (second-stage):

$$\Delta ln(COMP) = \gamma_0 + \gamma_1 CCQUAL + \gamma_2 \Delta ROE + \gamma_3 CCQUAL*\Delta ROE + \gamma_4 RET + \text{industry dummies} \quad (2)$$

$$\Delta ln(COMP) = \gamma_0 + \gamma_1 CCQUAL + \gamma_2 \Delta ROE + \gamma_3 RCQUAL*\Delta ROE + \gamma_4 RET + \gamma_5 lnMB$$

$+ \gamma_6 \text{lnMB}*\Delta\text{ROE} + \gamma_7 \text{lnMB}*\text{CCQUAL}*\Delta\text{ROE} + \gamma_8 \text{LOSS} + \gamma_9 \text{LOSS}*\Delta\text{ROE}$
$+ \gamma_{10} \text{LOSS}*\text{CCQUAL}*\Delta\text{ROE} + \text{industry dummies}$ (3)

The other variables are defined in Tables 1 and 3.

† $p < .10$ (one-tailed).
* $p < .05$ (one-tailed).
** $p < .01$ (one-tailed).
*** $p < .001$ (one-tailed).

[1] The 1992 SEC compensation disclosure rules (i.e., Executive Compensation Disclosure, Release No. 33-6962) stipulated that U.S. listed companies must disclose a summary table including all forms of compensation, a comparison of pay and stock performance, and an explanation for incentive compensation by the compensation committee. The requirement of enhancing compensation disclosure encouraged more independent directors to sit on the compensation committee to signal adequate quality of compensation committees. Internal Revenue Code Section 162(m) stipulated that compensation expense over a million dollars for any of the five highest-paid executives is not tax deductible unless compensation is performance-based. One of the conditions on which compensation is treated as performance-based is that "the performance goals are determined by a compensation committee of the board of directors of the taxpayer which is comprised solely of 2 or more outside directors". Vafeas (2003a) assumes that compensation committee independence was enhanced by these regulatory changes.

[2] While we adopt an agency theory approach, as Bender (2007) suggests, expectancy theory is an alternative theoretical lens that can be used to examine executive compensation schemes.

[3] Anderson and Bizjak (2003) document that inside directors held 13.0% of the seats on the compensation committee in the pre-regulation period (1985-1993) and 4.8% in the post-regulation (1994-1998).

[4] A going-concern report is an auditor report that the client will not be able to continuously operate in the foreseeable future.

[5] We use 2001 data to avoid the confounding effects of the Sarbanes-Oxley Act 2002 (SOX). Specifically, SOX introduced significant changes to the corporate governance environment in the US. Thus, if we rely on data from the post-SOX period, it would be hard to untangle the SOX effects from the effects due solely to compensation committee quality.

[6] Since other directorships in IRRC Directors are only limited to the universe of IRRC firms, we review proxy statements to collect directors' other directorships in all companies.

[7] Similar results are obtained if finance firms are excluded from the full sample.

[8] These six compensation committee characteristics are identified by two criteria: (1) Theoretical arguments and empirical evidence suggest that they could be governance quality measures, and (2) related data are included in proxy statements.

[9] We add CCQUALRANK in the first stage model because this crude measure can capture the level of CCQUAL but not the variation in CCQUAL, and thus can be used as an instrumental variable (e.g., Greene, 2000; Hentschel and Kothari, 2001).