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Abstract

Purpose – The purpose of this paper is to investigate the economic determinants of compensation committee quality.

Design/methodology/approach – Sample firms were selected from the IRRC Directors' database. Compensation committee quality is measured as the factor score from a principal component analysis of six compensation committee characteristics. Regression analyses are conducted to test the hypotheses.

Findings – It was found that firms with lower CEO influence, less institutional shareholders, fewer growth opportunities, and that are smaller in size are more likely to have high quality compensation committees.

Practical implications – The results imply that even in the presence of a requirement to have only independent directors on the compensation committee, the quality of compensation committees can vary cross-sectionally depending on the firm's economic circumstances. Thus, a one-size fits all solution for compensation committee quality might not be optimal as different firms have different incentives in composing their compensation committees.

Originality/value – This paper adds to the limited literature on compensation committees by using a new measure of compensation committee quality to examine the economic factors that affect the governance quality of independent compensation committees. This paper also complements the board and audit committee research by examining whether the same factors that affect board and audit committee quality might also affect compensation committee quality.

Keywords Economic determinants, Compensation committee, Corporate governance.

Paper type Research paper

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1. Introduction

While boards of directors and audit committees have attracted widespread interest from academic researchers, the research on compensation committees is limited (e.g., Klein, 2003). This is surprising since the literature on executive compensation is vast (e.g., Balsam and Miharjo, 2007; Harford and Lai, 2007; Ortiz-Molina, 2007; Sundaram and Yermack, 2007). We help address this void by considering the economic characteristics of firms that have high quality compensation committees.

Compensation committees play a central role in setting, implementing, and monitoring the company's compensation policy and programs. Their duties include "(1) overseeing the company's compensation policy, programs, and practices for executive officers and directors, (2) reviewing the performance of and setting compensation levels for executive officers, (3) overseeing and evaluating the company's management development and succession planning, (4) establishing annual incentive programs for executive officers, (5) administering the company's equity-based and other long-term incentive compensation programs, and (6) advising the full board of significant issues and actions" (Tauber and Silverman, 2003). Although the compensation committee might make recommendations to the full board of directors for final approval, the compensation committee has the sole authority to determine the compensation for all executive officers in the company, including the CEO. High quality compensation committees set more efficient executive compensation to enhance the alignment of the interests of managers and shareholders and thus maximize firm value.

Since the Sarbanes-Oxley Act was enacted in 2002, compensation committees have become one of the targets for corporate governance regulation. One concern of regulating compensation committee composition is that the benefits and costs of the regulation could vary across firms. Thus, it is important to examine how firms differ in their demand for compensation committee governance. Research on the economic determinants of compensation committee quality can have implications for regulators and their policies.

Although prior studies examine economic factors that are associated with the quality of the board (e.g., Rediker and Seth, 1995; Bathala and Rao, 1995; Baker and Gompers, 2003; Boone *et al.*, 2007) or audit committee (e.g., Klein, 2002; Feldmann and Schwarzkopf, 2003), it is not clear whether we can infer the economic determinants of compensation committee quality from these studies. The role of the compensation committee is different from the roles of boards and audit committees. Boards have a central role in stewardship and the monitoring of management, while audit committees oversee the financial reporting process. Thus, it is important to consider the characteristics of firms that demand high quality compensation committees.

We are aware of only one prior study that uses U.S. data to examine the economic factors associated with compensation committee independence. Newman (2000) focuses on the impact of ownership structure on compensation committee independence (a proxy for compensation committee quality) where compensation committee independence is measured by the proportion of independent directors on the board. However, in 2003, the major stock exchanges in the U.S. changed their listing rules to require that compensation committees are composed of only independent directors (see NYSE Corporate Governance 303A.05, NASDAQ Rule 4350(c), and AMEX Enhanced Corporate Governance Rules Sec. 805). As a result, Newman's (2000) measure of compensation committee quality (i.e., independence) is no longer valid since, under the 2003 listing rules, the variation in compensation committee independence across firms is zero.[1] Thus, we contribute to the literature by examining the relation between firm

characteristics and a different measure of compensation committee quality that does not depend on the independence of compensation committee members.

Recently, Sun *et al.* (2009) develop a more comprehensive and richer measure of compensation committee quality using six measures related to the committee's composition – the proportion of compensation committee members who were not appointed by the incumbent CEO (Daily *et al.*, 1998), the proportion of committee members who are senior directors (Vafeas, 2003), the proportion of committee members who are CEOs of the other firms (Daily *et al.*, 1998), the proportion of committee members who have large block shareholdings in the firm (Shivdasani and Yermack, 1999), the proportion of committee members who are directors in fewer than three other firms (Coles and Hoi, 2003), and compensation committee size (Agrawal and Knoeber, 1999) – to measure compensation committee quality. As none of the six measures is likely to capture compensation committee quality by itself, they conduct a principal components analysis (PCA) to reduce the six measures into a single factor representing compensation committee quality.[2] They then examine whether the compensation committee quality factor affects the relation between stock option grants and future firm performance – measured by future operating performance or future stock returns. They find a positive effect. Sun *et al.* (2009) interpret their findings as evidence that high quality compensation committees write superior compensation contracts that improve incentive alignment. From our standpoint, these findings validate their factor as a measure of compensation committee quality.

We compute a measure of compensation committee quality conducting a PCA on the same six compensation committee characteristics used by Sun *et al*. (2009).[3] We then examine the firm characteristics that are associated with higher quality compensation committees. We expect that CEO influence, institutional ownership, growth opportunities, and firm size are likely to be related to compensation committee quality. We find all four factors are significantly related to our compensation committee quality factor – specifically, firms with lower CEO influence, less institutional shareholders, fewer growth opportunities, and that are smaller in size are more likely to have high quality compensation committees. Our findings suggest that a one-size fits all solution for compensation committee quality might not be optimal since different firms have different incentives in composing their compensation committees.

We contribute to the literature in the following ways. First, while there has been limited research on compensation committee quality, the setting of executive compensation continues to attract public interest. For example, in 2007, the U.S. House Committee on Oversight and Government Reform issued a report that found that conflicts of interests involving the use of compensation consultants could result in higher levels of executive compensation (Waxman, 2007). Likewise, in 2006, the SEC added a requirement that companies provide a "Compensation Disclosure and Analysis" section to their annual proxy statement (SEC, 2006). Our research addresses the paucity of empirical research on compensation committee quality. At the same time, we provide insights that may assist regulators and investors in understanding the make-up of compensation committees.

Second, we contribute to the literature on corporate governance more generally. Our study is similar in spirit to prior studies that examine factors affecting board and audit committee quality (e.g., Klein, 2002; Baker and Gompers, 2003). That is, we examine firm characteristics that are likely to affect the demand for high quality compensation committees. Thus, we complement the board and audit committee research by examining whether the same factors that affect board and audit committee quality might also affect compensation committee quality.

The remainder of this study is organized as follows. The second section reviews the literature. The third section develops the hypotheses. The fourth section discusses the research design. The fifth section presents the empirical results, and the last section concludes.

2. Literature review

Prior research into the economic determinants of board or committee quality focuses on board or audit committee independence. Hermalin and Weisbach (1988) find that board independence decreases as the CEO nears retirement but increases after a firm performs poorly and when a firm discontinues a business. Rediker and Seth (1995) document evidence that board independence is negatively associated with block shareholdings, managerial shareholdings, and stock ownership of inside directors. Bathala and Rao (1995) find that board independence is negatively related to managerial ownership, dividend payout, debt leverage, growth, volatility, and CEO tenure, and is positively related to institutional holdings. Baker and Gompers (2003) find that board independence decreases with the power of the CEO, and that board independence is higher when firms are backed by venture capital.

Boone *et al.* (2007) find that board independence is positively associated with the complexity of the firm's operations, outside director ownership, and negatively associated with CEO influence, and the costs of monitoring. Linck *et al.* (2008) find that high growth opportunities, high R&D expenditure, and high stock return volatility are associated with less board independence. They also find that high managerial ownership is associated with less board independence, but boards are more independent when insiders' opportunity for extracting private benefits is high. Lehn *et al.* (2009) find that firm size and growth opportunities explain a large amount of the cross-sectional and temporal variation in board independence which increases in firm size and decreases in growth opportunities.

Klein (2002) finds that audit committee independence is positively associated with board size and board independence, and negatively associated with growth opportunities, the incidence of losses, the presence of block shareholders on audit committees, and firm size. Feldmann and Schwarzkopf (2003) find that audit committee independence increases as institutional holdings increase for firms with institutional ownership of less than 15%. Piot (2004) finds that audit committee independence is negatively related to inside ownership, the quality of financial reporting and is positively related to leverage. Ruiz-Barbadillo *et al.* (2007) find that audit committee independence is negative associated with CEO duality and managerial ownership.

Since compensation committees play a different role than boards or audit committees, the results on boards or audit committees may not hold for compensation committees. Nevertheless, there is limited research on the economic determinants of compensation committee quality. Using data for 158 U.S. firms in 1992, Newman (2000) finds that the presence of insiders is positively associated with CEO ownership, but is negatively associated with non-executive employees' ownership, sales, and board independence. Cotter and Silvester (2003) use Australian data to examine whether compensation committee independence is associated with non-independent directors' equity, dividend payout, leverage, number of directors representing a substantial shareholder, firm diversification, growth options, financial performance, and firm size. They do not find any significant relationships between compensation committee independence and these firm characteristics. Unlike Newman (2000) and Cotter and Silvester (2003), Vafeas (2000) investigates the economic determinants of being a compensation

committee member. He finds that the likelihood of compensation committee membership is related to director type, board tenure, and the number of other directorships held.

3. Hypotheses

Hermalin and Weisbach (1998) develop a model in which board composition is the outcome of a negotiation between the CEO and outside directors. They argue that the proportion of outside directors on the board decreases with the CEO influence over outside directors. CEOs use their influence to extract rents by placing insiders and affiliated outsiders in board positions. Consistent with Hermalin and Weisbach's argument, Bathala and Rao (1995), Baker and Gompers (2003), and Kieschnick and Moussawi (2004) document evidence that board independence decreases with CEO influence. Also, Boone *et al.* (2007) find that board independence is negatively associated with CEO influence, suggesting that CEOs wield their influence over board formation. Lorsch and MacIver (1989) provide survey evidence that CEOs wield major influence in selecting new board members, while Tejada (1997) provides anecdotal evidence of an outside director of one prominent company who was not nominated for re-election after criticizing management.

Managerial entrenchment occurs when managers become difficult to remove or replace which can leave them with excessive power (e.g., Weisbach, 1988). CEOs are likely to be more involved in selecting directors on the compensation committee if they have greater power. Fahlenbrach (2009) documents that CEOs receive higher total compensation and a higher annual increase in compensation if the balance of power between shareholders and managers is slanted towards managers, suggesting that high managerial power leads to excess compensation. Therefore, we expect that compensation committee governance quality will be negatively associated with CEO influence. Our first hypothesis is as follows:

H1. Compensation committee quality is negatively associated with CEO influence.

Because of the higher costs of pursuing the 'exit' mechanism for big portfolios (i.e., selling shares), existing institutional owners who are dissatisfied with management can have incentives to maintain their shareholdings and increase their monitoring of management (e.g., Bathala and Rao, 1995). Anecdotal evidence shows that large institutional investors persuaded Champion International to add more outside directors on the board (Pulliam, 1993). Bathala and Rao (1995) document that the proportion of outside directors on the board is positively associated with the proportion of institutional holdings. Feldman and Schwarzkopf (2003) find that both board independence and audit committee independence increase with institutional holdings. These results suggest that institutional investors can improve corporate governance quality by enhancing board or audit committee quality. In other words, institutional shareholding can be complementary to other governance mechanisms.

In contrast, other research suggests that institutional investors actively play a monitoring role (e.g., Demsetz, 1983; Shleifer and Vishny, 1986; Jarrell and Poulsen, 1987; Brickley *et al.*, 1988; Agrawal and Mandelker, 1990), which means that they can directly monitor management themselves through their control rights. In this case, institutional investors can monitor management even if other monitoring mechanisms are weak. Thus, institutional investors could serve as substitutes for other monitoring mechanisms. Consistent with this argument, Rediker and Seth (1995) find that board independence is negatively associated with block shareholder

equity stakes, suggesting that block shareholders can substitute for the monitoring roles played by outside directors.

Recently, Fahlenbrach (2009) finds that institutional ownership concentration is negatively associated with pay-for-performance. This suggests that institutional investors can substitute for CEO pay-for-performance sensitivity, i.e., institutional investors can also improve incentive alignment. Since CEO pay-for-performance is a function of compensation committee quality, Fahlenbrach's (2009) results suggest that the governance quality of compensation committees could be negatively associated with institutional holdings.

Thus, as either a positive or negative association between governance quality of compensation committees and institutional ownership may exist, we examine the following non-directional hypothesis:

H2. Compensation committee quality is associated with institutional ownership.

Myers (1977) decomposes firm value into two parts: 1) real assets or assets-in-place, and 2) real or growth options which are assets yet to be acquired. As Alchian and Woodward (1988) contend, growth options involve discretionary decisions on the part of managers. Gaver and Gaver (1993) note that these decisions can be hard to monitor because lacking the inside information and specialized knowledge of managers, outside shareholders cannot ascertain the "menu" of growth options that are available to the firm. Since managers of firms with more growth options must make and implement more investment decisions, it is important for these firms to properly incentivize their managers in order to ensure their investment decisions maximize firm value.

Because traditional accounting numbers are less likely to accurately reflect the future performance implications of managerial decisions made today for firms with more growth options, Ittner *et al.* (2003) argue that these firms should rely more heavily on equity-based compensation since stock prices are forward-looking and based on a longer-time horizon. Their empirical evidence supports this prediction. Since high growth firms rely more on equity-based incentives to align managers' and shareholders' interest, these firms may rely less on traditional corporate governance mechanisms. For example, Bathala and Rao (1995), Lehn *et al.* (2009), and Linck *et al.* (2008) find that board governance quality is negatively associated with growth opportunities, while Klein (2002) finds that audit committee governance quality is also negatively associated with growth opportunities. Thus, these studies support a substitution effect between equity-based compensation and other corporate governance mechanisms for high growth option firms. Similarly, high growth option firms may be able to place less emphasis on having a high quality compensation committee. We formulate the following hypothesis:

H3. Compensation committee quality is negatively associated with growth opportunities.

Barclay and Smith (1995a; 1995b) argue that agency conflicts between managers and shareholders increase with firm size. For example, top managers of larger firms may hold a lower percentage of equity than their counterparts of smaller firms which can increase agency costs. Also, larger firms may have larger free cash flows leading to greater managerial discretion over investments, and Boone *et al.* (2007) argue that larger firms are more diversified and have a wider scope of operations. This means that specific knowledge is more likely to reside at lower levels in the corporate hierarchy which can increase information asymmetry and make monitoring more difficult. Thus, the demand for monitoring managers may increase with firm size. Prior research provides some evidence supporting a relation between the proportion of

outside directors on the board and firm size. For example, Lehn *et al.* (2009) and Boone et al. (2007) find board independence is positively associated with firm size.

Other studies (e.g., Hossain *et al.*, 2000; Prevost *et al.*, 2002) find that board independence is negatively associated with firm size. A negative association between board independence and firm size could be explained by Rosenstein and Wyatt's (1990) view that large firms may have more alternative monitoring mechanisms such as institutional investors and stock analysts, and therefore have a lower demand for outside directors sitting on the board. In addition, Klein (2002) argues that larger firms have stronger internal control systems that could be used as an alternative monitoring mechanism to audit committee independence. Consistent with her argument, she finds that audit committee independence is negatively associated with firm size.

Thus, the association between compensation committee governance quality and firm size may be positive or negative. The fourth hypothesis is as follows:

H4. Compensation committee quality is associated with firm size.

4. Research design

4.1 Sample selection

The sample selection starts with searching the IRRC Directors' database for the U.S. companies with compensation committees consisting solely of independent directors in 2001.[4] This procedure yields a raw sample of 1,225 firms. The IRRC Directors' database provides the data of directors' characteristics including their ages, employee positions, board service time, committee memberships, board affiliations, and shareholdings for about 1,500 U.S. firms (primarily drawn from S&P 500, and other large corporations) mainly derived from proxy statements. The distribution of the 1,225 firms is 45.76% in manufacturing industry, 16.68% in services industry, 12.20% finance, insurance, and real estate industry, 10.02% in transportation, communication, electric, gas, and sanitary services industry, 7.29% in retail trade industry, and 8.05% in other industries. For the population of all firms in the Compustat database, the distribution is 37.31% in manufacturing industry, 20.17% in services industry, 19.02% in finance, insurance, and real estate industry, 8.26% in transportation, communication, electric, gas, and sanitary services industry, 5.02% in retail trade industry, and 10.25% in other industries. We find no statistical difference in the proportion of firms in each industry between these two samples, suggesting that the industries in our initial sample of 1,225 firms are representative of the total population.

Next, we merged that dataset with the Execucomp database, generating a reduced sample of 925 firms that both have the director data and the CEO data such as CEO service time and CEO ownership. The Execucomp database provides the data of executive compensation and executive information for about 2,698 U.S. firms. Then, we reviewed the proxy statements of these 925 firms using the SEC's EDGAR database to collect the data that is not available in both the IRRC and the Execucomp databases, including the number of directors' additional board seats and the largest ownership.[5] Thus, the sample is reduced to 897 firms with the data for each of the six compensation committee characteristics.

To examine whether the 897 firms differ in any significant way from the 1,255 firms, we compare firm size (i.e., total assets), earnings performance (i.e., ROE), and book-to-market value between the two samples. The *t*-statistics are 0.24, 0.17, and 0.03 for firm size, earnings

performance, and book-to-market value, respectively, and all are insignificant, suggesting that the 897 firms do not significantly differ from the 1,255 firms. Finally, by excluding the observations without financial statement data required for this study in Compustat, the final sample is generated, which consists of 844 firms with independent compensation committees. The distribution by industry for this sample is manufacturing industry (48.51%), services industry (14.38%), transportation, communication, electric, gas, and sanitary services industry (11.02%), finance, insurance, and real estate industry (9.34%), and retail trade industry (8.76%) are the most widely represented in the sample.[6] Our sample is significantly larger than the sample used by Sun *et al*. (2009).

4.2 Model

To test the four hypotheses, we conduct the main analysis based on the following cross-sectional regression model:[7]

$$CCQ = \beta_0 + \beta_1\, CEOOWN + \beta_2\, CEOTEN + \beta_3\, INSHD + \beta_4\, GROW + \beta_5\, FSIZE + industry\ fixed\ effects + \varepsilon \quad (1)$$

where *CCQ* is compensation committee quality; *CEOOWN* is CEO ownership, measured by the percentage of shares owned by the CEO; *CEOTEN* is CEO tenure, measured by the number of years for which the incumbent CEO has been the CEO of the firm; *INSHD* is institutional shareholdings, measured by the percentage of shares owned by institutional investors; *GROW* is growth opportunities, measured by the geometric growth rate in the market value of assets through the previous three years,[8] and *FSIZE* is firm size, measured by the log of total assets.

Based on Sun *et al.* (2009), compensation committee quality is measured as the factor score (i.e., factor 1) from a PCA of six compensation committee characteristics – *CAPDIR*, *SNRDIR*, *CEODIR*, *BSHDIR*, *ADDDIR*, and *CMSIZE*.[9] By definition, factor 1 accounts for the highest percentage of the total variance. Thus, this factor score extracts a component that is mostly common to the six committee characteristics. *CAPDIR* is CEO appointed directors, measured as the proportion of directors on the compensation committee appointed during the tenure of the incumbent CEO multiplied by -1. *SNRDIR* is senior directors, measured as the proportion of senior directors with 20 or more years of board service time on the compensation committee. *CEODIR* is CEO directors, measured as the proportion of the CEOs of other firms on the compensation committee multiplied by -1. *BSHDIR* is block shareholding directors, measured as the proportion of the directors with block shareholding on the compensation committee. *ADDDIR* is additional directorships, measured as the proportion of directors who have additional three or more board seats on the compensation committee multiplied by -1. *CMSIZE* is committee size, measured as the number of directors on the compensation committee. In computing *CAPDIR*, *CEODIR*, and *ADDDIR*, we multiply by -1 so that higher values indicate higher quality (see Sun *et al*., 2009, 1509-1510).

Following Boone *et al*. (2007), we use CEO ownership and CEO tenure as proxies for CEO influence. CEO ownership is used as a proxy for CEO influence because CEOs with high ownership can execute their rights as block shareholders, thus weakening the monitoring role of other shareholders. CEO tenure is used as proxy for CEO influence because CEOs with long tenure are likely to be entrenched.

In eq. (1), we control for industry fixed effects using the dummy variables for two-digit SIC industries from which there are at least 10 firms in the sample. We expect that β_1 and β_2 will be significantly negative if CEO influence impairs the governance quality of compensation

committees. We also expect that the coefficient β_4 will be significantly negative given that firms with high growth opportunities can use equity-based pay to reduce agency costs, limiting the need for other high quality governance mechanisms including high quality compensation committees. As discussed above, we do not predict signs for β_3 or β_5.

5. Empirical results

Table I, panel A provides the descriptive statistics for the six compensation committee characteristics. *CAPDIR*, *CEODIR* and *ADDDIR* have negative means as these measures were inverted. Overall, 43.6% of compensation committee members were appointed by the current CEO. Approximately 6% have more than 20 years of experience. CEO directors account for 21% of compensation committee members, and one-third of members serve on three or more boards. Block shareholding directors make up 2.7% of compensation committee members, and the mean size of the compensation committee is 3.5 members. Table I, panel B reports that the eigenvalue for the first factor from our PCA is 1.28. Table I, panel C shows the factor loadings. All six compensation committee characteristics have positive signs. While resulting factor is a statistical artifact of PCA, we draw on Sun *et al*. (2009) to interpret the meaning of this factor. They provide evidence that the first factor from a PCA of the same six compensation committee characteristics has a positive effect on the relation between stock option grants and future firm performance. Thus, the first factor is associated with pay packages that better incentivize CEOs, an outcome that reflects higher compensation committee quality. Based on their evidence, we use this factor score as a measure of compensation committee quality and labelled it *CCQ* in the remaining tests.

Table II reports the descriptive statistics for the variables in eq. (1). By construction, the mean for *CCQ* is zero while the median is -0.275. Table III provides Pearson correlation coefficients between the independent variables. CEO ownership and CEO tenure exhibit the highest pairwise correlation as is expected since these variables are both measuring CEO influence (r = 0.358). CEO ownership is negatively correlated with institutional holdings (r = -0.150). Also, firm size is negatively correlated with CEO ownership (r = -0.152), suggesting that CEOs hold more shares of equity in smaller firms. Institutional ownership is positively associated with growth as the correlation coefficient between institutional holdings and growth opportunities is 0.119. Further, institutional holdings are not significantly correlated with firm size. More generally, there are no extreme correlations variables among the independent variables, suggesting that multicollinearity is unlikely to be severe in our regressions.

Table IV contains the results for the main regression. The coefficient on CEO tenure is -0.023 and is significantly negative (t-statistic = -4.29), consistent with H1. However, the coefficient on CEO ownership is not significantly negative (t-statistic = -0.01) so H1 is not supported using *CEOOWN* as a measure of CEO influence. The coefficient on institutional holdings is -0.977 and is significant (t-statistic = -4.85), suggesting that compensation committee quality is lower for firms with higher institutional ownership (a substitute corporate governance mechanism) in line with H2. Also, the coefficient on growth opportunities is -0.126 and is significant at the 5% level (t-statistic = -1.65, one-tailed test), providing some support for H3. This suggests that high growth firms place less emphasis on having a high quality compensation committee. Finally, the coefficient on firm size is significant (t-statistic = -2.78) consistent with H4. The negative association between *CCQ* and firm size is consistent with the view that large

firms have more alternative governance mechanisms that may substitute for compensation committees.

Table I. Descriptive statistics and principal component analysis of six compensation committee characteristics

Panel A. Descriptive statistics on six compensation committee characteristics (N=844)

Variable	Mean	Median	Std Dev	Q1	Q3
CAPDIR	-0.436	-0.333	0.385	-0.750	0.000
SNRDIR	0.061	0.000	0.152	0.000	0.000
CEODIR	-0.217	-0.200	0.243	-0.333	0.000
BSHDIR	0.027	0.000	0.104	0.000	0.000
ADDDIR	-0.333	-0.333	-0.303	0.000	-0.500
CMSIZE	3.472	3.000	1.217	3.000	4.000

Panel B. Total variance explained

Component	Eigenvalue	% of Variance	Cumulative %
Factor 1	1.282	21.373	21.373
Factor 2	1.138	18.964	40.337
Factor 3	1.001	16.685	57.022

Panel C. Factor loadings

Variable	Factor 1
-*CAPDIR*	0.432
SNRDIR	0.756
-*CEODIR*	0.288
BSHDIR	0.575
-*ADDDIR*	0.316
CMSIZE	0.100

Notes: *CAPDIR* is *CEO appointed directors*, measured as the proportion of directors on the compensation committee appointed during the tenure of the incumbent CEO. *SNRDIR* is *senior directors*, measured as the proportion of senior directors with 20 or more years of board service time on the compensation committee. *CEODIR* is *CEO directors*, measured as the proportion of the CEOs of other firms on the compensation committee. *BSHDIR* is *block shareholding directors*, measured as the proportion of the directors with block shareholding on the compensation committee. *ADDDIR* is *additional directorships*, measured as the proportion of directors who have additional three or more board seats on the compensation committee. *CMSIZE* is *committee size*, measured as the number of directors on the compensation committee.

To investigate H1 further, we conduct two additional analyses. First, because *CEOOWN* and *CEOTEN* are both measures of CEO influence and because they are significantly correlated, we combine these measures into a single measure of CEO influence by factor analyzing the two variables. Thus, we use the factor scores from the first factor as an overall measure of CEO influence, *CEOINF*. We re-estimate eq. (1) using *CEOINF* in place of *CEOOWN* and *CEOTEN*.

Table V, columns 3 and 4 present the results for this regression. The coefficient on CEO influence is significantly negative (*t*-statistic = -3.82), suggesting that the overall CEO influence measured jointly by CEO ownership and CEO tenure is negatively related to compensation committee quality which supports H1.

Table II. Descriptive statistics on variables

Variable	Mean	Median	Std Dev	Q1	Q3
CCQ	0.000	-0.275	1.000	-0.628	0.329
CEOOWN	0.019	0.000	0.049	0.000	0.012
CEOTEN	7.645	6.000	6.748	3.000	11.000
INSHD	0.624	0.650	0.179	0.501	0.751
GROW	1.190	1.067	0.467	0.956	1.274
FSIZE	7.543	7.318	1.676	6.340	8.580

Notes: *CCQ* is *compensation committee quality*, measured as the factor score (i.e., factor1) from the factor analysis of six compensation committee characteristics. *CEOOWN* is *CEO ownership*, measured as the percentage of shares owned by the CEO. *CEOTEN* is *CEO tenure*, measured as the number of years for which the incumbent CEO has been the CEO of the firm. *INSHD* is *institutional shareholding*, measured as the percentage of shares owned by institutional investors. *GROW* is *growth opportunities*, measured as the geometric growth rate in the market value of assets through the previous three years. *FSIZE* is *firm size*, measured as the log of total assets.

Table III. Pearson correlations between independent variables

	CEOTEN	*INSHD*	*GROW*	*FSIZE*
CEOOWN	0.358***	-0.150***	-0.004	-0.152***
CEOTEN		-0.010	0.072**	-0.042
INSHD			0.119***	-0.012
GROW				-0.020

Notes: ***, ** denotes significance at the 1% and 5% levels, respectively (two-tailed).

Second, we examine whether the results for CEO influence still hold if CEO tenure is excluded from eq. (1). This concern is due to the mechanical relationship between CEO tenure and *CAPDIR*.[10] Table V, columns 5 and 6 show these results. We find that CEO ownership becomes negatively associated with *CCQ* and that its coefficient is significant (*t*-statistic = -1.64, one-tailed test), consistent with H1. This suggests that in our main results, *CEOTEN* dominates *CEOOWN*, and once *CEOTEN* is removed, *CEOOWN* becomes significant. We also use CEO duality, which is coded "1" if the CEO is the chairman and "0" otherwise, to measure CEO influence in eq. (1). We find that CEO duality is significant and negatively signed which supports H1 (untabulated *t*-statistic = -1.46, one-tailed test).

We conduct additional tests to examine the robustness of our results. First, we add several control variables to eq. (1). The control variables include industry concentration, leverage, firm performance, CEO retirement, and largest shareholdings. Industry concentration is measured by the sum of sales for the largest four firms in the two-digit industry divided by the sum of sales

for all firms in the industry. Leverage is the debt-to-assets ratio. Firm performance is return on equity. CEO retirement is an indicator coded "1" if the CEO is at least 63 years old and 0 otherwise. Largest shareholding is measured as the maximum percentage of common shares owned by a party. Industry concentration and CEO retirement are related to managers' ability to seek private benefits which may affect managers' incentives to influence the formation of compensation committees. Largest shareholding is included in the model as it may affect managerial influence and have substitute monitoring mechanisms. Since a firm's financing policy and performance may relate to its corporate governance structure, we also add leverage and firm performance as control variables. The results are similar to those reported earlier. Specifically, we find support for H1 with *CEOTEN*, and H2, H3, and H4 are supported (untabulated *t*-statistics = -4.38, -4.76, -1.59 (one-tailed test for H3), and -2.96, respectively). On the other hand, none of the control variables is significantly related to compensation committee quality.

Table IV. Relations between compensation committee quality and firm characteristics

Variable	Predicted sign	Coefficient	t-statistic
Constant	+/-	1.434	6.09***
CEOOWN	-	-0.008	-0.01
CEOTEN	-	-0.023	-4.29***
INSHD	+/-	-0.977	-4.85***
GROW	-	-0.126	-1.65**
FSIZE	+/-	-0.064	-2.78***
Industry dummies			Included
N			844
F-statistic			3.56***
Adjusted R^2			8.36%

Notes: The regression model is as follows:
$CCQ = \beta_0 + \beta_1\ CEOOWN + \beta_2\ CEOTEN + \beta_3\ INSHD + \beta_4\ GROW + \beta_5\ FSIZE + industry\ fixed\ effects + \varepsilon$
***, ** denotes significance at the level 1% and 5% levels, respectively. Tests are one-tailed where a sign is predicted and two-tailed otherwise

Second, we examine whether the earlier results still hold after allowing for the endogenous relationship between corporate governance and CEO influence. To control for this endogenous relationship, we use a two-stage regression procedure similar to a procedure used by Frankel *et al.* (2006). We first rank firms by CEO ownership (i.e., *CEOOWN*) and then categorize them into three equal-sized portfolios. The portfolio rank of *CEOOWN* (i.e., *CEOOWNRANK*) is measured by 0, 1 or 2 for firms in the lowest, middle or highest portfolio, respectively. Similarly, the portfolio rank of CEO tenure (i.e., *CEOTENRANK*) is measured by 0, 1 or 2 based on the firms' ranking of CEO tenure. We add *CEOOWNRANK* or *CEOTENRANK* in the models because endogeneity is likely to affect the variation in *CEOOWN* or *CEOTEN* rather than the level of *CEOOWN* or *CEOTEN* (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.

Table V. Relations between compensation committee quality and firm characteristics with overall measure of CEO influence and with CEO tenure omitted

Variable	Predicted sign	Coefficient	t-statistic	Coefficient	t-statistic
Constant	+/-	1.330	5.77***	1.312	5.56***
CEOINF	-	-0.131	-3.82***		
INSHD	+/-	-1.051	-5.26***	-1.023	-5.03***
GROW	-	-0.131	-1.78**	-0.144	-1.86**
FSIZE	+/-	-0.067	-2.91***	-0.064	-2.73***
CEOOWN	-			-1.175	-1.64*
Industry dummies			Included		Included
N			844		844
F-statistic			3.44***		2.99***
Adjusted R^2			7.74%		6.40%

Notes: The regression model (columns 3 and 4) is as follows:
$CCQ = \alpha_0 + \alpha_1$ *CEOINF* $+ \alpha_2$ *INSHD* $+ \alpha_3$ *GROW* $+ \alpha_4$ *FSIZE* + *industry fixed effects* $+ \varepsilon$
where *CEOINF* is the factor score from the factor analysis of *CEOOWN* and *CEOTEN*.
The regression model (columns 5 and 6) is as follows:
$CCQ = \gamma_0 + \gamma_1$ *CEOOWN* $+ \gamma_2$ *INSHD* $+ \gamma_3$ *GROW* $+ \gamma_4$ *FSIZE* + *industry fixed effects* $+ \varepsilon$
***, **, and *denotes significance at the level 1%, 5% and 10% levels, respectively. Tests are one-tailed where a sign is predicted and two-tailed otherwise

Thus, our first stage regression models are as follows:

$$CEOOWN = \omega_0 + \omega_1 INSHD + \omega_2 GROW + \omega_3 FSIZE + \omega_4 CEOOWNRANK + \varepsilon \quad (2)$$

$$CEOTEN = \upsilon_0 + \upsilon_1 INSHD + \upsilon_2 GROW + \upsilon_3 FSIZE + \upsilon_4 CEOTENRANK + \varepsilon \quad (3)$$

CEOOWN and *CEOTEN* in the second stage regression (i.e., eq. (1)) are the fitted values from the first stage regressions. The untabulated statistics for H1 with *CEOTEN*, and H2, H3, and H4 are -6.05. -4.62, -1.46 (one-tailed test for H3), and -2.69, respectively. Thus, the results for our second stage regression are substantially unchanged after allowing for the endogeneity.

Third, we re-estimate eq. (1) using an aggregate measure of corporate governance quality. Specifically, we aggregate the scores on the six compensation committee quality dimensions by first creating an indicator variable for each dimension where values greater than the median are coded 1. This approach assumes that each dimension is separate and equally important in determining the overall quality of the compensation committee. We repeat all our analyses, including the sensitivity analyses, using the aggregate score in place of *CCQ*. The untabulated statistics for H1 with *CEOTEN*, and H2, and H4 are -6.87, -2.33, and -2.67, respectively. The results are qualitatively similar to the reported results except that *GROW* becomes insignificant.

Thus, we do not find support for H3 when an aggregate, composite measure of compensation committee quality is used.

6. Conclusion

This study investigates the economic determinants of corporate governance quality of U.S. listed companies' compensation committees that are composed solely of independent directors. Drawing on Sun et al. (2009), we use six compensation committee composition measures to measure compensation committee quality. Similar to Larcker *et al*. (2007) and Sun *et al*. (2009), we use PCA to create a composite measure of compensation committee quality from these six composition measures. In the spirit of earlier studies that examine whether economic factors are related to board or audit committee quality (e.g., Klein, 2002; Baker and Gompers, 2003), we then examine four economic factors that are likely to affect the supply of or demand for high quality compensation committees.

We find that compensation committee governance quality measured is negatively associated with CEO tenure, consistent with the conjecture that compensation committee governance quality is lower for firms with high CEO influence. Also, we find that compensation committee quality is negatively associated with institutional holdings, suggesting that institutional investors actively play a monitoring role, thus reducing the demand for compensation committees' monitoring mechanisms. Additionally, we document some evidence that compensation committee governance quality is significantly lower for firms with high growth opportunities. Finally, we find a negative relation between compensation committee quality and firm size, which supports the view that larger firms have alternative governance mechanisms that can substitute for a strong compensation committee.

We contribute to the literature by showing that even in the presence of a requirement to have only independent directors on the compensation committee, the quality of compensation committees can vary cross-sectionally depending on the firm's characteristics. Further, we find evidence of substitutive effects between compensation committees and three firm factors – institutional shareholders, growth opportunities, and firm size – which suggests that compensation committee quality should not be considered in isolation. Jointly, these results suggest that a one-size fits all solution for compensation committee quality might not be optimal as different firms face different incentives in composing their compensation committees.

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References

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,* Vol. 25, pp. 143-161.

Alchian, A. A. and Woodward, S. (1988), "The firm is dead; long live the firm: a review of Oliver E. Williamson's 'The economic institutions of capitalism'", *Journal of Economic Literature,* Vol. 26, pp. 65-71.

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

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

Balsam, S. and Miharjo, S. (2007), "The effect of equity compensation on voluntary executive turnover", *Journal of Accounting and Economics,* Vol. 43, pp. 95-119.

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

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

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

Boone, A. L, Field, L. C., Karpoff, J. M and Raheja, C. G. (2007), "The determinants of corporate board size and composition: an empirical analysis", *Journal of Financial Economics,* Vol. 85, pp. 66-101.

Brickley, J. A., Lease, R. C. and Smith, C. W. (1988), "Ownership structure and voting on antitakeover amendments", *Journal of Financial Economics*, Vol. 20, pp. 267-291.

Coles, J. and Hoi, C. (2003), "New evidence on the market for directors: Board membership and Pennsylvania Senate Bill 1310", *Journal of Finance*, Vol. 58, pp. 197-230.

Conyon, M. J. and Peck, S. I. (1998), "Board control, remuneration committees, and top management compensation", *Academy of Management Journal,* Vol. 41, pp.146-157.

Cotter, J. and Silvester, M. (2003), "Board and monitoring committee independence", *Abacus,* Vol. 39, pp. 211-232.

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,* Vol. 41, pp. 209-220.

Demsetz, H. (1983), "The structure of ownership and the theory of the firm", *Journal of Law and Economics,* Vol. 26, pp. 375-390.

Fahlenbrach, R. (2009), "Shareholder rights, boards, and CEO compensation", *Review of Finance*, Vol. 13, pp. 81-113.

Feldmann, D. A. and Schwarzkopf, D. L. (2003), "The effect of institutional ownership on board and audit committee composition". *Review of Accounting & Finance,* Vol. 2, pp. 87-109.

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

Gaver, J. J. and Gaver, K. M. (1993), "Additional evidence on the association between the investment opportunity set and corporate financing, dividend, and compensation policies", *Journal of Accounting and Economics,* Vol. 16, pp. 125-160.

Greene, W. (2000), Econometric Analysis, 4th ed. Prentice-Hall, Upper Saddle River, NJ.

Harford, J. and Lai, K. (2007), "Decoupling CEO wealth and firm performance: The case of acquiring CEOs", *Journal of Finance,* Vol. 62, pp. 917-949.

Hentschel, L. and Kothari, S. P. (2001), "Are corporations reducing or taking risks with derivatives?", *Journal of Financial and Quantitative Analysis,* Vol. 36, pp. 93-118.

Hermalin, B. E. and Weisbach, M. S. (1998), "Endogenously chosen boards of directors and their monitoring of the CEO", *American Economic Review,* Vol. 88, pp. 96-118.

Hossain, M., Cahan, S. F. and Adams, M. (2000), "The investment opportunity set and the voluntary use of outside directors: New Zealand Evidence", *Accounting and Business Research,* Vol. 30, pp. 263-270.

Ittner, C. D., Lamert, 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*, Vol. 34, pp. 89-127.

Jarrell, G. and Poulsen, A. (1987), "Shark repellents and stock prices: The effects of antitakeover amendment since 1980", *Journal of Financial Economics,* Vol. 19, pp. 127-168.

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

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

Klein, A. (2003), "Likely effects of stock exchange governance proposals and Sarbanes-Oxley on corporate boards and financial reporting", *Accounting Horizons,* Vol. 17, pp. 343-355.

Larcker, D. F., Richardson, S.A. and I. Tuna (2007), "Corporate governance, accounting outcomes, and organizational performance", *The Accounting Review*, Vol. 82, pp. 963-1008.

Lehn, K., Patro, S. and Zhao, M. (2009), "Determinants of the size and structure of corporate boards:1935-2000", *Financial Management*, Vol.38, pp.

Linck, J. S., Netter, J. M and Yang, T. (2008), "The determinants of board structure", *Journal of Financial Economics,* Vol. 87, pp. 308-328.

Lorsch, J. W. and MacIver, E. (1989), Pawns or Potentates: The Reality of America's Corporate Boards, Boston: Harvard Business School Press.

Myers, S. C. (1977), "Determinants of corporate borrowing", *Journal of Financial Economics,* Vol. 5, pp. 141-175.

Newman, H. A. (2000), "The impact of ownership structure on the structure of compensation committees", *Journal of Business Finance & Accounting,* Vol. 27, pp. 653-678.

Newman, H. A. and Mozes, H. A. (1999), "Does the composition of the compensation committee influence CEO compensation practices?", *Financial Management,* Vol. 28, pp. 41-53.

Ortiz-Molina, H. (2007), "Executive compensation and capital structure: The effects of convertible debt and straight debt on CEO pay", *Journal of Accounting and Economics,* Vol. 43, pp. 69-93.

Piot, C. (2004), "The existence and independence of audit committees in France", *Accounting and Business Research,* Vol. 34, pp. 223-246.

Prevost, A. K., Rao, R. P. and Hossain, M. (2002), "Board composition in New Zealand: An agency perspective", *Journal of Business Finance and Accounting,* Vol. 29, pp. 731-760.

Pulliam, S. (1993), "Paper company initiates meeting with big holders", *The Wall Street Journal*, February 18.

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

Rosenstein, S. and Wyatt, J. G. (1990), "Outside directors, board independence, and shareholder wealth", *Journal of Financial Economics,* Vol. 26, pp. 175-192.

Ruiz-Barbadillo E., Biedma López, E. and Gómez Aguilar, N. (2007), "Managerial dominance and audit Committee independence in Spanish corporate governance", *Journal of Management and Governance,* Vol.11, pp. 311-352.

Securities and Exchange Commission (SEC) (2006), Executive Compensation and Related Person Disclosure, Releases No. 33-8732A, 34-54302A.

Shivdasani, A. and Yermack, D. (1999), "CEO involvement in the selection of new board members: an empirical analysis", *Journal of Finance*, Vol. 54, pp. 1829-1853.

Shleifer, A. and Vishny, R. W. (1986), "Large shareholders and corporate control", *Journal of Political Economy,* Vol. 94, pp. 461-488.

Sundaram, R. K. and Yermack, D. L. (2007), "Pay me later: Inside debt and its role in managerial compensation", *Journal of Finance,* Vol. 62, pp. 1551-1558.

Sun, J., Cahan, S. F and Emanuel, D. (2009), "Compensation committee governance quality, chief executive officer stock option grants, and future firm performance", *Journal of Banking and Finance,* Vol. 33, pp. 1507-1519

Tauber, Y. D. and Silverman. C. S. (2003), "Transparency and accountability: the changing role of the compensation committee", Independent Compensation Committee Advisor, LLC, http: //www.independentcca.com/ccaArticle.htm.

Tejada, C. (1997), "Longtime tandy director quits board, says he was punished for faulting CEO", *Wall Street Journal*, January 16.

Vafeas, N. (2000), "The determinants of compensation committee membership", *Corporate Governance: An International Review*, Vol. 8, pp. 356-366.

Vafeas, N. (2003), "Length of board tenure and outside director independence", *Journal of Business Finance & Accounting*, Vol. 30, pp. 1043-1064.

Waxman, H. A. (2007), Executive Pay: Conflicts of Interest Among Compensation Consultants, Washington, DC: U.S. House of Representatives Committee on Oversight and Government Reform.

Weisbach, M. S. (1988), "Outside directors and CEO turnover", *Journal of Financial Economics,* Vol. 20, pp. 431-460.

Notes

[1] Compensation committee independence has also been used as a measure of compensation committee quality in studies examining compensation committee effectiveness (e.g., Conyon and Peck, 1998; Newman and Mozes, 1999; Anderson and Bizjak, 2003).

[2] Larcker *et al*. (2007), using similar logic, apply PCA to a broader set of corporate governance variables.

[3] While we use the same six compensation committee characteristics as Sun *et al*. (2009), our sample size is 78% larger than their sample (844 firms in our sample vs. 474 firms in their sample) because they require data on stock options.

[4] We focus on firms with solely independent directors since this requirement became mandatory for listed firms after 2003. While these firms voluntarily selected independent compensation committees in 2001, since most large U.S. listed firms had independent compensation committees in 2001 (and since the IRRC database focuses on large firms), self-selection bias is unlikely to be a major issue. Using data for 2001 also allows us to avoid the effects of the Sarbanes-Oxley Act on corporate governance.

[5] Other directorships in the IRRC Directors database are only limited to the universe of IRRC firms, which means this IRRC data item counts other directorships less than it should. Thus, we review proxy statements to collect more precise data of other directorships.

[6] Similar results are found if the 9.34% of firms in finance, insurance, and real estate industry are excluded from the sample.

[7] The continuous variables in the regression are winsorized at 1% and 99%.

[8] The market value of assets is measured by the sum of the market value of shareholders' equity and the book value of liabilities. The geometric growth rate in the market value of assets may be a more explicit and accurate proxy for growth opportunities than other proxies such as the market-to-book ratio or R&D intensity because the market-to-book ratio also reflects accounting conservatism and R&D intensity is less appropriate for non-high tech firms.

[9] This compensation committee quality measure is determined based on its correlation with the pay-for-performance (Sun *et al*., 2009). This may lead to a bit of bias as the measure may ignore other aspects of compensation committee effectiveness. Since the main duty of compensation committees is to set compensation with high pay-for-performance, this is not a major problem.

[10] The mechanical relationship leads to an extremely high *t*-statistic for CEO tenure and adjusted R^2 when *CAPDIR* is the dependent variable in the regression model (i.e., -25.39 and 47.86%, respectively).