CEO Horizon Problem and Characteristics of Board of Directors and Compensation Committee

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ABSTRACT

Extant research finds inconclusive evidence about the CEO horizon problem. One possible explanation is that board of directors, especially compensation committees, intervene to mitigate the CEO horizon problem. In this study, we examine whether the characteristics of board of directors and compensation committee affect their effectiveness in mitigating the CEO horizon problem. We find that retiring CEOs are more likely to reduce R&D expenditures when CEOs have more power, and director tenure is longer; retiring CEOs in firms with large board of directors and compensation committee are less likely to manage accruals.

Keywords: CEO Horizon Problem, Board of Directors, Compensation Committee

1. Introduction

CEOs face horizon problem. That is, CEOs with earnings-based compensation may focus on boosting firms' short-term performance at the expense of shareholders' long-term interests. Extant research has found inconclusive evidence about the CEO horizon problem. One possible explanation for the mixed findings is that compensation committees design CEO compensation in such way that discourages retiring CEOs from opportunistic earnings management (Cheng, 2004) and R&D reduction (Huson et al., 2012). Board of Directors (hence the Board), especially the Compensation Committee, is responsible to adjust CEO compensation package to alleviate this agency problem with myopic horizon. However, not all directors are equally effective. This study examines whether certain characteristics of the Board and Compensation Committee can affect the ability to mitigate CEO horizon problem.

To effectively mitigate CEO horizon problem, the Board and the Compensation Committee need to act independently and to align the interests of CEOs with those of shareholders. The board and the Compensation Committee should be aware of CEOs' horizon problem and adjust their compensation packages accordingly.

Using a sample of 13,606 firm-year observations for S&P 1500 firms from 1998 to 2011, we find that both CEO power and director tenure increase the likelihood of R&D curtailment when CEOs approach retirement. We also find that the size of the Board and the compensation committee decreases the likelihood of accruals management when companies face a CEO horizon problem.

This study contributes to the literature twofold. First, we provide further empirical evidence to echo the debate over CEO horizon problem. Previous studies (Dechow and Sloan, 1991; Murphy and Zimmerman, 1993; Gibbons and Murphy, 1992; Cazier, 2011; Kalyta, 2009;

Pourciau, 1993) provide mixed evidence of the horizon problem because they do not consider the role of Board and more specifically the role of the compensation committee in determining CEO compensation package. Moreover, the study adds to the literature on corporate governance, revealing that Board of Director and Compensation Committees characteristics affect the effectiveness of mitigating an organization's CEO horizon problem.

The remainder of this study is organized as follows. Section 2 presents a literature review; Section 3 discusses the hypothesis development; Models are discussed in Section 4; Data and sample is presented in Section 5; Section 6 reports the study's empirical results; and the final section concludes the paper.

2. Literature Review

A manager's tenure is much shorter than a firm's lifespan. Managers' with shorter horizons can be myopic. They tend to focus on increasing the firm's short-term earnings. This horizon problem is more severe as managers approach retirement because they have weaker career concerns (Gibbons and Murphy, 1992).

Consistent with CEO horizon problem, Dechow and Sloan (1991) find empirical evidence that R&D expenditure reduces prior to CEO departures. However, Murphy and Zimmerman (1993) suggest that the reductions in R&D expenditures preceding CEO departures are driven by poor firm performance rather than horizon problems. Several studies finds no evidence that R&D spending is related to CEO horizon problem. Gibbons and Murphy (1992) find that firms spend most on R&D and advertising in the CEO's last year prior to retirement. Butler and Newman (1989) fail to find evidence of R&D expenditure reductions in the sample of firms with CEOs in their

final year before departures compared with a matched sample of firms. Cazier (2011) concludes that CEOs do not cut R&D spending in their final years prior to retirement.

Kalyta (2009) argue that CEOs may use discretionary accruals to increase contemporaneous earnings, which supports CEO horizon problem. Kalyta (2009) finds evidence of income-increasing accruals management in the years prior to CEO retirement when the CEO's Supplemental Executive Retirement Plan (SERP) is contingent on firm performance. However, several studies find inconsistent evidence with outgoing CEOs who boost earnings by involving income-increasing accruals management. Pourciau (1993) focused on the non-routine CEO turnovers[1] and found income-decreasing accruals and write-offs before the non-routine CEO turnovers. Murphy and Zimmerman (1993) find a significant negative association between accruals and the CEO transition. Using a sample of Australian firms, Wells (2002) finds no evidence of income-increasing accruals management prior to CEO turnover, despite whether the turnovers are routine or non-routine.

Compensation Committee, as a subcommittee of the Board responsible for overseeing the executive compensation packages, can foresee and mitigate CEO horizon problem (Cheng, 2004; Huson et al., 2012). Cheng (2004) finds that the association between changes in R&D spending and changes in the value of CEO annual option grants is significantly positive when the CEO approaches retirement but is insignificant when there is no horizon or myopia problem. Cheng's (2004) findings indicate that compensation committee may have mitigated opportunistic R&D reduction by rewarding (penalizing) CEOs for increasing (reducing) R&D expenditures when CEOs face horizon and myopia problem. Huson et al. (2012) find that compensation committees

[1] Pourciau (1993) classifies CEO turnovers as routine turnovers in which a successor is chosen, or several contestants are identified; and non-routine turnovers, which include voluntary and involuntary resignations.

are able to place a lower relative weight on the positive change in discretionary accruals compared with other components of earnings when setting CEO cash pay during the years before CEO voluntary turnovers.

The monitoring effectiveness of compensation committees is determined by the committee's characteristics (e.g. Sun and Cahan, 2012; Sun and Cahan, 2009; Sun et al., 2009; Bebchuk et al., 2010; Collins et al., 2009; Laksmana, 2008; Nelson et al., 2010). Sun and Cahan (2012) argue that six compensation committee characteristics affect compensation committee quality[2]. Two other studies (Sun et al., 2009; Sun and Cahan, 2009) use the same measure of compensation committee quality to examine whether the compensation committee quality affects the pay-for-performance. Bebchuk et al. (2010) document that a compensation committee consists of independent directors and at least one blockholder who is less likely to grant CEO options opportunistically at the lowest price of the month. Similarly, Collins et al. (2009) document a negative association between the likelihood of backdating CEO stock option grants and having an outsider who owns at least five percent of outstanding shares on the compensation committee. Several studies also claim that compensation committee characteristics are associated with disclosure transparency of executive compensation (Laksmana, 2008; Nelson et al., 2010).

Prior event studies suggest that stock market reacts to directors' characteristics and CEO horizon problem (Weisbach, 1988; Huson et al. 2004; Kalyta, 2009). Weisbach (1988) finds that CEO turnovers are preceded by negative stock returns for firms with boards of directors dominated by outsiders, but not for firms with insider-dominated boards, indicating independent directors are

[2] The six characteristics include the proportion of co-opted directors, the proportion of senior directors, the proportion of directors who are CEOs of other companies, the proportion of directors with block shareholdings in the company, the proportion of directors who have three or more board seats, and the size of the compensation committee.

more able to replace CEOs with poor performance. Moreover, by studying the stock prices around the turnover announcements, Weisbach (1988) finds that stock market reacts positively to the announcement of turnovers if the turnovers are preceded by poor performance and the board is outsider-dominated. Consistent with Weisbach (1988)'s findings, Huson et al. (2004) study 1,344 CEO turnovers between 1971 and 1994 and documents positive abnormal stock returns around turnover announcements. However, unlike forced CEO turnovers (i.e., fired, policy disagreement, death and illness, merger, etc.), retirements can be predicted and may not lead to abnormal stock returns. Kalyta (2009) finds no evidence of abnormal stock returns around CEO retirements, but observes negative abnormal returns around CEO retirements when the CEOs have performance - contingent pensions. Kalyta (2009)'s study suggests that investors perceive CEO horizon problem as bad news.

3. Hypotheses Development

3.1 CEO Power

CEOs who are also chairmen of the Board can exert more influence over the decision-making process (Adams et al., 2005). Jensen (1993) advocates the separation of the CEO and chairman position, arguing that chairmen are responsible for overseeing CEOs, but if CEOs also hold the position of chairmen, they may act in their own interests when they perform critical functions such as evaluating and compensating themselves. Dechow et al. (1996) find that firms subject to enforcement actions by the SEC for earnings management are more likely to have CEOs who also serve as chairmen of the Board.

Director monitoring is a critical mechanism to alleviate agency costs; however, the effectiveness of the monitoring is reduced if the chairman of the Board is assumed by the CEO, or if most of the directors on the board are co-opted by the incumbent CEO. Hence, we predict:

H1: CEO horizon problem is positively associated with CEO power.

3.2 Director Independence

It has been widely documented that a board with more independent directors help monitor managers more effectively. Weisbach (1988) shows that boards dominated by outside directors are more likely to remove CEOs when the companies suffer from poor performance. A number of studies show that board independence improves the quality of the financial reporting process. Dechow et al. (1996) find that board independence is inversely associated with the likelihood of being charged by SEC for earnings manipulations. Similarly, Beasley (1996) finds that board independence negatively associates with financial statement fraud. Uzun et al. (2004) compare the governance in firms that have committed fraud and those that have not. They note that the percentage of independent directors is higher in firms that have not engaged in fraud than the firms that have. Klein (2002a) documents a negative association between board independence and abnormal accruals. Board independence also improves firm disclosures (Ajinkya et al., 2005; Karamanou and Vafeas, 2005). Finally, Byard et al. (2006) show that the quality of analysts' earnings forecast an increase if the board is more independent.

If independent directors are more aligned with shareholder benefits, we expect that board and compensation committee independence reduce CEO pay and the CEO horizon problem. Therefore, we hypothesize that:

H2: CEO horizon problem is negatively associated with board and compensation committee independence.

3.3 Board and Compensation Committee Size

A number of scholars have expressed their concern about large board sizes (Lipton and Lorsch, 1992; Jensen, 1993; Yermack, 1996). For example, Lipton and Lorsch (1992) suggest that board sizes should not be larger than ten members, since it is difficult for every director to express his or her opinion freely in the limited time when they meet. Moreover, they point out that it's hard for a large board to become a cohesive body due to poor communication and lack of a common purpose. Jensen (1993) argues that boards that consist of more than seven or eight members are more subjective to CEO control. Those two studies are consistent with organizational behavior research studies, such as Steiner (1972) and Hackman (1990), which argue that as work groups become larger, productivity decreases. Yermack (1996) provides empirical evidence that board size negatively associates with a firm's value. He also shows that firms with large boards are less likely to have favorable profitability and operating efficiency financial ratios, to provide CEO compensation sensitive to firm performance, and to remove CEOs.

In contrast, larger boards have a wider knowledge base and it's easier for larger boards to distribute the workload. For example, Klein (2002b) and Anderson et al. (2004) suggest that large boards are more effective in monitoring the financial accounting process. Klein (2002b) suggests that as a board size increases, the board is more likely to assign an independent audit committee. Consistent with her prediction, she finds that as a board size increases, an audit committee's independence increases. Anderson et al. (2004) find that larger boards are associated with lower cost of debt, while Karamanou and Vafeas (2005) find that larger boards are more likely to update

management earnings forecasts. Laksmana (2008) finds that board size increases the executive compensation disclosure transparency.

Whether a firm can benefit from a large board of directors may depend on the complexity of the firm (Coles et al., 2008). Coles et al. (2008) argue that complex firms, those high in industry diversification, size, and leverage, require more advising from their board of directors, and as a result can benefit from a large board. They find that for simple firms, firm value decreases as board size increases; however, for complex firms, firm value increases as board size increases. Drawing from the findings of previous studies, We predict that the size of the board and compensation committee affects CEO compensation and CEO horizon problem. Nevertheless, We make no prediction about the sign. We hypothesize that:

H3: CEO horizon problem is associated with board and compensation committee size.

3.4 Busy Directors

The number of directorship may be a sign of director reputation, since an external labor market disciplines directors by rewarding or reducing directorships based on their performance (Kaplan and Reishus, 1990; Gilson, 1990). Kaplan and Reishus (1990) find that CEOs of firms that reduce dividends are less likely to sit on other boards. Gilson (1990) finds that the number of directorships reduces after directors resign from financially distressed firms. Consistently, Ferris et al. (2003) find that previous firm performance has a positive effect on directors' ability to attract directorships. Two studies examine the association between the likelihood of being a target of takeover and number of directorships (Shivdasani, 1993) and future directorships (Harford, 2003). Shivdasani (1993) documents that firms with outside directors holding fewer additional directorships are more likely to be a target of hostile takeover attempts. Harford (2003) documents

that directors of a takeover or merger target lose future directorships. Ferris et al. (2003) find no evidence that busy directors are less effective monitors. They find no evidence that number of directorships per director or number of directorships held by outside directors relate to firm value or the likelihood of securities fraud litigation. Moreover, they find positive and significant market reaction to the appointment announcement of a new director who holds multiple directorships, suggesting shareholders value directors' reputation. They also find that directors holding multiple directorships sit on more committees and attend more committee meetings, which contrast the idea that directors holding multiple directorships are overcommitted and shirk their responsibilities.

However, Lipton and Lorsch (1992) are concerned that directors are busy with more than one boards, and cannot emphasize one particular board. Beasley (1996) documents a positive relationship between number of additional directorships held by outside directors and the likelihood of financial statement fraud. Fich and Shivdasani (2006) define busy directors as those who hold three or more directorships. They show that firms with boards dominated by outside busy directors have lower market-to-book ratios, lower operating performance, and are less likely to remove CEOs for poor performance. They also find positive abnormal returns after busy outside directors announce their departure. Furthermore, they find negative abnormal returns when a director becomes a busy director as a result of obtaining one additional directorship, and even more negative when the board becomes dominated by busy directors. Core et al. (1999) measure busy directors as those who serve on three or more corporate boards. They argue that by focusing on directors who hold more than two other directorships rather than on those with average directorships, they can capture the degree of a director's over-commitment. They find that as the percentage of busy outside directors increases, CEO compensation increases. Shivdasani and Yermack (1999) find that if CEOs can exert more influence on the appointment of new directors

positively, the appointee is more likely to be a busy director and hold more board seats, which indicates that CEOs prefer less effective monitors. If busy directors cannot devote adequate time and attention to one particular board, the percentage of busy directors on the board or compensation committee may increase CEO compensation and face the CEO horizon problem. Therefore, we predict:

H4: The CEO horizon problem is positively associated with the percentage of busy directors sitting on the board and compensation committee.

3.5 Director Tenure

As director tenure increases, directors gain more experience. More experienced directors can provide higher quality governance. For example, Buchanan (1974) shows that managers' years of organizational service can enhance their commitment to exert high levels of effort to achieve the goal of the firm. Beasley (1996) finds that as outside director tenure increases, the likelihood of financial statement fraud decreases.

However, Katz (1982) finds that long tenure can be detrimental to the communication within and outside of organizations, due to the increasing stability in membership. Vafeas (2003) argues that directors with long tenure are more likely to be friendly to managers. He finds that senior directors who have held their board seats for twenty years or more on the compensation committee pay CEOs more generously, which supports the theory that long tenure compromises director monitoring efforts. The National Association of Corporate Directors (1996) advocates a limit of 10 to 15 years of board service so that new directors can bring new ideas and the board can better accommodate to the changing business conditions. If directors are more likely to be entrenched if they hold their directorships for a long time, we expect that the average tenure of

directors on the board or the compensation committee increases CEO compensation and the CEO horizon problem. We hypothesize that:

H5: CEO horizon problem is positively associated with the tenure of directors on boards of directors and compensation committees.

3.6 Director Ownership

Directors who have high equity ownership have more incentives to monitor CEOs (Shivdasani and Yermack, 1999). Among others, Shivdasani (1993), Vafeas (2003), Klein (2002a), and Beasley (1996) provide evidence that directors with high ownership are aligned with shareholders. Shivdasani (1993) documents a negative association between equity ownership by outside directors and the possibility of firms being a target of hostile takeover attempts. Vafeas (2003) shows that director ownership is rather low, even for senior directors whose tenure is longer than twenty years. He finds a negative relationship between director ownership and total CEO pay. Klein (2002a) documents an inverse association between the presence of an outside blockholder on an audit committee and abnormal accruals, indicating that director ownership affects the monitoring over financial reporting quality. Beasley (1996) finds that firms which commit fraud have higher directors' shareholding than firms which don't commit fraud. Rosenstein and Wyatt (1997) examine the stock market reaction to announcement of new inside directors and find that shareholders value expertise of inside directors when they own more than five percent of the firm's shares However, Core et al. (1999) find no empirical evidence that CEO compensation is associated with director ownership. If director ownership enhances the alignment the interest of directors and shareholders, we expect that as director ownership increases, CEO compensation and CEO horizon problem decreases, holding all else constant. Hence, we predict

H6: The CEO horizon problem is negatively associated with the average tenure of directors on boards of directors and compensation committees.

4. Models

We follow the model of Cazier (2011) to test whether the Board's characteristics affect CEO tendency in cutting R&D expenditure in their final years prior to retirement as follows:

$$RD = \alpha + \beta_1 HORIZON + \beta_2 CEO\_POWER + \beta_3 DIR\_INDEPENDENCE + \beta_4 DIR\_SIZE + \beta_5 BUSY\_DIR + \beta_6 DIR\_TENURE + \beta_7 DIR\_OWNERSHIP + \beta_8 HORIZON \times CEO\_POWER + \beta_9 HORIZON \times DIR\_INDEPENDENCE + \beta_{10} HORIZON \times DIR\_SIZE + \beta_{11} HORIZON \times BUSY\_DIR + \beta_{12} HORIZON \times DIR\_TENURE + \beta_{13} HORIZON \times DIR\_OWNERSHIP + \beta_{14} TOBINS\_Q + \beta_{15} LAG\_RET + \beta_{16} FCF + \beta_{17} ROA + \beta_{18} SIZE + \beta_{19} FIRM\_AGE + \beta_{20} EQUITY\_INCENTIVES + \beta_{21} INDUSTRY\_RD + YEAR + \varepsilon$$

Where *RD* is the R&D expenditure scaled by total assets, *HORIZON* is an indicator variable that equals to one if the CEO is in the final two years before retirement, and zero otherwise. We also follow Cazier (2011) to control for other variables that may affect R&D expenditures and relate to the CEO horizon problem and compensation committee co-option. *TOBINS_Q* is calculated as the market value of equity plus the book value of debt, scaled by total assets. *LAG_RET* is the firm's stock return from the previous year. *FCF* is the operating cash flows plus R&D expense minus capital expenditures, scaled by sales. *ROA* is operating net income before R&D expense scaled by assets. *SIZE* is the natural logarithm of total assets at the beginning of fiscal year *t*. *FIRM_AGE* is the number of years between year *t* and the first year the company was

listed on Compustat. *EQUITY_INCENTIVES* is the CEO's dollar wealth increase from a one percent change in stock price, as measured in Core and Guay's study (2002)[3]. *INDUSTRY_RD* is the average R&D expenditure of other firms in the same two-digit SIC industry.

We predict the coefficient on *TOBINS_Q* and *LAG_RET* to be positive, since firms with more growth opportunities may invest more in R&D. Consistent with Himmelberg and Petersen (1994), we predict that R&D expenditures positively associate with internal finance, which is measured by the firm's free cash flow (*FCF*). we predict that R&D expenditures negatively relate to accounting flexibility, as measured by *ROA*, since Wang and D'Souza (2006) suggest that when accounting flexibility is low, managers are more likely to engage in real earnings management. We expect that R&D spending varies with firm size. Cohen and Klepper (1996) suggest that it's advantageous for larger firms to invest in R&D since they can apply R&D results to greater output and therefore reduce the average cost of R&D. Based on the findings of Huergo and Jaumandreu (2004), we predict that firm age (*FIRM_AGE*) negatively associates with R&D expenditures, since older firms are less likely to introduce innovations. CEOs with more equity holdings are likely to have a long-term relationship with their firms and are willing to spend in R&D to improve future earnings, although R&D expenditures reduce current earnings (Barker and Mueller, 2002). Therefore, we predict the coefficient on *EQUITY_INCENTIVES* to be positive. Consistent with prior studies (Dechow and Sloan, 1991; Cheng, 2004), we also control for the industry average R&D expenditures. We exclude each firm-year from the calculation of the industry average R&D to prevent a mechanical relation between *RD* and *INDUSTRY_RD*.

[3] We calculate *EQUITY_INCENTIVES* as 1% × the firm's share price × (# of shares + # of options × option delta). We follow Core and Guay (2002) methodology to calculate option delta separately for newly granted options, unexercisable options, and exercisable options before the year of 2006. After the passage of SFAS 123R, Execucomp stops providing the inputs necessary to calculate Black-Scholes value of option delta. we follow Execucomp assumptions to construct self-calculated inputs.

To examine whether the Board's characteristics are associated with accruals management in CEOs' final years before retirement, we run the following model cross-sectionally:

$$\begin{aligned} DA = {} & \alpha + \beta_1 HORIZON + \beta_2 CEO\_POWER + \beta_3 DIR\_INDEPENDENCE + \beta_4 DIR\_SIZE \\ & + \beta_5 BUSY\_DIR + \beta_6 DIR\_TENURE + \beta_7 DIR\_OWNERSHIP + \\ & \beta_8 HORIZON \times CEO\_POWER + \beta_9 HORIZON \times DIR\_INDEPENDENCE + \\ & \beta_{10} HORIZON \times DIR\_SIZE + \beta_{11} HORIZON \times BUSY\_DIR + \\ & \beta_{12} HORIZON \times DIR\_TENURE + \beta_{13} HORIZON \times DIR\_OWNERSHIP \\ & + \beta_{14} EQUITY\_INCENTIVES + \beta_{15} SIZE + \beta_{16} STD\_CASHFLOW + \beta_{17} STD\_REV + \\ & \beta_{18} STD\_SALESGROWTH + \beta_{19} OLDFIRM + \beta_{20} LEVERAGE + \\ & \beta_{21} MARKETTOBOOK + G\_INDEX + EXCHANGE + INDUSTRY + YEAR + \varepsilon \end{aligned}$$

Where *DA* is the discretionary accruals[4]. Our control variables are similar to Bergstresser and Philippon (2006). We control for CEO equity incentive, as CEOs have more incentives to manage earnings when their wealth is more sensitive to the firms' share price (Bergstresser and Philippon, 2006). We also follow Core and Guay (2002) to measure equity incentives; *EQUITY_INCENTIVES* is the dollar change in a CEO's wealth following a 1% change in stock price, then normalized by the sum of the dollar change, salary, and bonus. *SIZE* is the natural logarithm of total assets at the beginning of fiscal year *t*. *STD_CASHFLOW* is the standard deviation of cash flows from operations deflated by total assets over the current and previous four

[4] We use the modified Jones model below to estimate both non-discretionary accruals and discretionary accruals:
$ACC_{it} = \beta_0 + \beta_1(1/TA_{t-1}) + \beta_2(\Delta Sales_{it} - \Delta Rec_{it}) + \beta_3(PPE_{it}) + \varepsilon_t$,
where ACC_{it} is accruals deflated by beginning total assets. TA_{t-1} is beginning total assets, $\Delta Sales_{it}$ is change in sales deflated by beginning total assets, ΔRec_{it} is change in accounts receivable deflated by beginning total assets. PPE_{it} is gross property, plant and equipment deflated by beginning total assets. β_0, β_1, β_2 and β_3 are estimated cross-sectionally for each year and industry combination. We estimate non-discretionary accruals deflated by beginning total assets ($NDACC_{it}$) based on these cross-sectional coefficients along with each firm's data. Discretionary accruals deflated by beginning total assets ($DACC_{it}$) are therefore ACC_{it} less $NDACC_{it}$.

years. *STD_REV* is the standard deviation of sales deflated by total assets over the current and previous four years. *STD_SALESGROWTH* is the standard deviation of sales growth over the current and previous four years. *OLDFIRM* equals one if a firm has been listed on Compustat for more than 20 years, and zero otherwise. *LEVERAGE* is total liabilities deflated by total assets. *MARKETTOBOOK* represents deciles of market value of assets divided by the book value of assets ranked within each year. *G_INDEX* represents the governance indicator variables described in Gompers et al. (2003). *G1* is a dummy variable equal to one if the G-score is less than or equal to 6, and zero otherwise. *G2* is a dummy variable equal to one if the G-score is between 7 (inclusive) and 9 (inclusive), and zero otherwise. *G3* is a dummy variable equal to one if the G-score is between 10 (inclusive) and 12 (inclusive), and zero otherwise. *G4* is a dummy variable equal to one if the G-score is greater than or equal to 13, and zero otherwise. *EXCHANGE* is an indicator for the stock exchange where the company is traded. *INDUSTRY* is the Fama and French (1997) industry classification indicator. *YEAR* represents year indicators.

We expect firm size (*SIZE*) to negatively associate with discretionary accruals, since larger firms are under more scrutiny by analysts and the press (Duellman et al., 2013). we expect that discretionary accruals vary with firm age (*OLDFIRM*), the standard deviation of cash flows from operations (*STD_CASHFLOW*), the standard deviation of revenues (*STD_REV*), the standard deviation of sales growth (*STD_SALESGROWTH*), and governance (*G_INDEX*), consistent with prior literature (Duellman et al., 2013; Jiang et al., 2010).

5. Data and Sample Selection

We collect director data from RiskMetrics for the period from 1998 to 2011. RiskMetrics provides director information, including committee membership, shareholding, age, independence,

additional directorships, and tenure, as well as the year directorship starts for directors in S&P 500, S&P MidCap, and S&P SmallCap firms. We lose 2,445 firm-year observations as they lack CEO compensation data from Execucomp. We further lose 479 firm-year observations which miss the date when the CEO was hired. We exclude 2,788 financial institutions (SIC codes 6000-6999). We also exclude 595 observations that have missing Compustat inputs to calculate sales, return, and ROA, and 352 observations lacking number of shares held by the CEO. Finally, we trim the top and bottom one percent of all continuous variables to mitigate the effect of outliers. Our final sample consists of 13,606 firm-year observations[5].

6. Results

Table 1 Panel A displays the descriptive statistics for the variables used in R&D test. Pearson correlations are reported in Table 1 Panel B.

[Insert Table 1 Panel A]

[Insert Table 1 Panel B]

Table 2 shows the Pearson correlations between the variables in this study to capture board and compensation committee characteristics. *CC_COOPTION* is the proportion of directors who are appointed after the CEO assumes office on the compensation committee. *B_COOPTION* is the proportion of directors who are appointed after the CEO assumes office on the board of directors. *COOPTED_CC* is an indicator variable equal to one if the majority of compensation committee directors are co-opted by the incumbent CEO, and zero otherwise. *COOPTED_B* is an indicator

[5] When estimating model (3)-(6), we further remove the firm-year observations with CEO tenure less than 3 years, to avoid the influence of the previous CEO.

variable equal to one if the majority of directors on a board are co-opted by the incumbent CEO, and zero otherwise. *CEO_CHAIR* is an indicator variable equal to one if the CEO is the chairman of the Board, and zero otherwise. *B_INDEPENDENCE* is the proportion of outsiders on the Board. *CC_INDEPENDENCE* is the proportion of outsiders on a compensation committee. *IND_NORM* is an indicator variable equal to one if the firm has a nominating committee that consists of only outside directors. *CC_SIZE* is the number of directors on a compensation committee. *B_SIZE* is the number of directors on the Board. Fich and Shivdasani (2006) argue that since the number of directorships held by directors disperses widely, the average number of directorships is a noisy measure to identify busy directors. Therefore, we define busy directors as those who hold more than three additional directorships. *B_BUSY* is the proportion of board directors who sit on more than three other boards of public companies. *CC_BUSY* is the proportion of compensation committee directors who sit on more than three other boards of public companies. *B_LONGSERV* is the average tenure of directors on a board. *CC_LONGSERV* is the average tenure of directors on a compensation committee. *CC_OWNERSHIP* is the total shares held by directors on a compensation committee divided by total outstanding shares. *B_OWNERSHIP* is the total shares held by directors on a board divided by total outstanding shares. *B_SIZE* is the number of directors on board.

[Insert Table 2]

Most of those variables are correlated. Therefore, we use a principal component analysis to transform board and compensation committee characteristic variables into a set of common factors. Consistent with Laksmana (2008), we retain all factors with an eigenvalue greater than one. We use an oblique rotation since oblique rotation often produces more useful patterns than do

orthogonal rotations. Six factors with an eigenvalue greater than one are retained and those six factors can explain 79.78% of the variation.

Table 3 presents the factors identified in a principal components analysis. *CC_COOPTION*, *B_COOPTION*, *COOPTED_CC*, *COOPTED_B*, and *CEO_CHAIR* have high loadings on the first factor that is indicated as *CEO_POWER*. *B_INDEPENDENCE*, *CC_INDEPENDENCE* and *IND_NORM* load highly on the second factor *INDEPENDENCE*. Two variables, *CC_SIZE* and *B_SIZE,* have high loadings on the third factor *DIR_SIZE*. *B_BUSY* and *CC_BUSY* have high loadings on the fourth factor, *BUSY_DIR*. Two variables measuring director tenure, *B_LONGSERV* and *CC_LONGSERV,* load highly on the fifth factor, *DIR_TENURE*. *CC_OWNERSHIP* and *B_OWERSHIP* have high loadings on the sixth factor, *DIR_OWNERSHIP*.

[Insert Table 3]

The multivariate analysis of the effect of board and compensation committee factors on the association between R&D spending and CEO horizon problem is presented in Table 4. The coefficient on the interaction term *HORIZON×CEO_POWER* is negative and significant (coefficient = -0.003, p=0.03), suggesting that as CEO power increases, CEOs are more likely to reduce R&D expenditures when they approach retirement. The coefficient on the interaction term *HORIZON×DIR_TENURE* is significantly negative (t = -0.015. p=0.02), which indicates that as the average tenure of directors on the Board and the compensation committees increases, retiring CEOs are more likely to cut R&D expenditures. The results provide support for *H1* and *H5*. Inconsistent with our prediction, the coefficient on *HORIZON×DIR_INDEPENDENCE, HORIZON×DIR_SIZE, HORIZON×BUSY_DIR,* and *HORIZON×DIR_OWNERSHIP* is insignificant.

[Insert Table 4]

Table 5 Panel A shows the descriptive statistics for the variables used in Discretionary Accruals test. Pearson correlations are reported in Table 5 Panel B.

[Insert Table 5 Panel A]

[Insert Table 5 Panel B]

Table 6 reports the regression analysis of the effect of board and compensation committee factors on the association between accruals management and the CEO horizon problem. The coefficient on the interaction term *HORIZON×DIR_SIZE* is negative and significant (coefficient = -0.439, p=0.02), which indicates that the size of the board and compensation committee decreases accruals management when CEOs face potential horizon problem. Contrary to expectations, the coefficient on *HORIZON×DIR_OWNERSHIP* is negative and marginally significant (p=0.10).

[Insert Table 6]

7. Conclusions

We examine whether the characteristics of the Board and the compensation committee are associated with CEO horizon problem using principal components analysis. We find that both CEO power and director tenure increases the likelihood of R&D curtailment when CEOs approach retirement. We also document that the size of the board of directors and the compensation committee decreases the likelihood of accruals management when CEOs face horizon problem.

Our findings have implications for corporate governance. The findings reveal that compensation committees play an important role in mitigating the CEO horizon problem by adjusting CEO compensation package. However, the effectiveness of compensation committees

in this role is contingent on its quality. Furthermore, our study may provide practical implications for investors. Since stock market reacts negatively to CEO horizon problem (Kylyta, 2009), less powerful CEO, directors with shorter tenure, and larger board of directors and compensation committee can better add to firm value.

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TABLE 1 Descriptive Statistics and Pearson Correlations for the R&D Test

Panel A : Descriptive Statistics

Variable	n	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
RD	5,599	0.04	0.05	0.00	0.03	0.07
HORIZON	5,599	0.08	0.27	0.00	0.00	0.00
TOBINS_Q	5,599	2.07	1.13	1.32	1.72	2.46
LAG_RET	5,599	0.10	0.45	-0.21	0.05	0.31
FCF	5,599	0.11	0.13	0.05	0.11	0.17
ROA	5,599	0.13	0.10	0.07	0.12	0.19
SIZE	5,599	7.29	1.43	6.22	7.12	8.23
FIRM_AGE	5,599	26.15	16.64	12.00	20.00	41.00
EQUITY_INCENTIVES	5,599	629.56	1,288.63	88.13	227.47	605.18
INDUSTRY_RD	5,599	0.15	0.17	0.01	0.12	0.20

This panel reports the descriptive statistics. *RD* is the R&D expense scaled by total assets. *HORIZON* is an indicator variable equal to one if CEOs are in each of the final two years prior to their retirement, and zero otherwise. *TOBINS_Q* is calculated as the market value of equity plus the book value of debt, all scaled by total assets. *LAG_RET* is the firm's stock return from previous year. *FCF* is the operating cash flows plus R&D expense minus capital expenditures, all scaled by sales. *ROA* is operating net income before R&D expense scaled by assets. *SIZE* is the natural logarithm of total assets at the beginning of the current year. *FIRM_AGE* is the number of years between the current year and the first year the company listed on Compustat. *EQUITY_INCENTIVES* is the CEO's dollar wealth increase from a 1% change in stock price, as measured in Core and Guay (2002). *INDUSTRY_RD* is the average R&D expenditures of other firms in the same 2-digit SIC industry.

Panel B: Pearson Correlations

	RD	*TOBINS_Q*	*LAG_RET*	*FCF*	*ROA*	*SIZE*	*FIRM_AGE*	*EQUITY_INCENTIVES*
TOBINS_Q	**0.26**							
LAG_RET	0.00	**0.12**						
FCF	**-0.43**	**0.17**	**0.03**					
ROA	**0.33**	**0.58**	**0.17**	**0.25**				
SIZE	**-0.19**	**-0.08**	**-0.05**	**0.16**	**-0.07**			
FIRM_AGE	**-0.19**	**-0.15**	**-0.05**	**0.03**	**-0.07**	**0.51**		
EQUITY_INCENTIVES	0.02	**0.35**	**0.04**	**0.12**	**0.14**	**0.22**	**-0.05**	
INDUSTRY_RD	**0.31**	**0.09**	0.02	**-0.09**	**0.15**	0.01	**0.08**	**-0.03**

This panel reports the Pearson correlations. *RD* is the R&D expense scaled by total assets. *TOBINS_Q* is calculated as the market value of equity plus the book value of debt, all scaled by total assets. *LAG_RET* is the firm's stock return from previous year. FCF is the operating cash flows plus R&D expense minus capital expenditures, all scaled by sales. ROA is operating net income before R&D expense scaled by assets. *SIZE* is the natural logarithm of total assets at the beginning of the current year. *FIRM_AGE* is the number of years between the current year and the first year the company listed on Compustat. *EQUITY_INCENTIVES* is the CEO's dollar wealth increase from a 1% change in stock price, as measured in Core and Guay (2002). *INDUSTRY_RD* is the average R&D expenditures of other firms in the same 2-digit SIC industry. Correlations with p-values equal to or lower than 0.05 are in boldface.

TABLE 2 Pearson Correlations between the Board and Compensation Committee Characteristics Variables

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
1.B_INDEPENDENCE	**1**														
2.CC_INDEPENDENCE	**0.57**														
3.B_COOPTION	-0.01	-0.01													
4.CC_COOPTION	**-0.03**	**0.02**	**0.91**												
5.B_LONGSERV	**-0.03**	0.00	0.00	0.01											
6.CC_LONGSERV	**-0.02**	-0.01	**-0.03**	**-0.06**	**0.69**										
7.B_SIZE	**0.01**	0.00	**0.02**	0.01	-0.00	0.00									
8.CC_SIZE	**0.03**	0.00	**0.02**	**0.02**	0.00	-0.00	**0.99**								
9.B_OWNERSHIP	**-0.24**	**-0.14**	**0.04**	**0.05**	**0.01**	0.01	-0.01	**-0.02**							
10.CC_OWNERSHIP	**-0.13**	**-0.21**	-0.00	**-0.02**	0.01	**0.02**	-0.01	0.00	**0.66**						
11.B_BUSY	**0.12**	**0.02**	**-0.09**	**-0.09**	**-0.02**	-0.01	**0.02**	**0.02**	**-0.05**	**-0.02**					
12.CC_BUSY	**0.07**	**0.03**	**-0.07**	**-0.07**	**-0.02**	-0.00	**0.02**	**0.02**	**-0.03**	**-0.03**	**0.79**				
13.CEO_CHAIR	0.01	**-0.03**	**0.19**	**0.17**	**-0.02**	**-0.02**	**0.05**	**0.03**	0.01	**-0.02**	**0.10**	**0.08**			
14.IND_NORM	**0.51**	**0.42**	-0.01	0.00	**-0.02**	**-0.02**	-0.01	-0.01	**-0.14**	**-0.10**	0.01	-0.00	**-0.04**		
15.COOPTED_CC	**-0.02**	**0.02**	**0.80**	**0.90**	0.01	**-0.05**	0.01	0.01	**0.04**	**-0.02**	**-0.08**	**-0.06**	**0.15**	-0.00	
16.COOPTED_B	-0.01	-0.01	**0.87**	**0.81**	0.00	**-0.03**	0.01	0.01	**0.03**	-0.01	**-0.07**	**-0.06**	**0.18**	**-0.02**	**0.77**

This panel displays the Pearson correlations between the board and compensation committee characteristics variables. Correlations significant at the 5% level or less appear in bold. *CC_COOPTION* is the proportion of directors who are appointed after the CEO assumes office on the compensation committee. *B_COOPTION* is the proportion of directors who are appointed after the CEO assumes office on the board of directors. *COOPTED_CC* is an indicator variable equal to one if the majority of compensation committee directors are appointed after the incumbent CEO assumes office, and zero otherwise. *COOPTED_B* is an indicator variable equal to one if the majority of directors on the board are appointed after the incumbent CEO assumes office, and zero otherwise. *CEO_CHAIR* is an indicator variable equal to one if CEO is the chairman of the board of directors, and zero otherwise. *B_INDEPENDENCE* is the proportion of outsiders on the board of directors. *CC_INDEPENDENCE* is the proportion of outsiders on the compensation committee. *IND_NORM* is an indicator variable equal to one if the firm has a nominating committee that consists of only outside directors. *CC_SIZE* is the number of directors on the compensation committee. *B_SIZE* is the number of directors on the board of directors. *B_BUSY* is the proportion of board directors who sit on more than three other boards of public companies. *CC_BUSY* is the proportion of compensation committee directors who sit on more than three other boards of public companies. *B_LONGSERV* is the average tenure of directors on the board. *CC_LONGSERV* is the average tenure of directors on the compensation committee. *CC_OWNERSHIP* is the total shares held by directors on the compensation committee divided by total outstanding shares. *B_OWNERSHIP* is the total shares held by directors on the board divided by total outstanding shares. *B_SIZE* is the number of directors on the board.

TABLE 3 Factors Identified in Principal Components Analysis

Factor	Factor Name	Board and Compensation Committee characteristics	Factor Loadings
1	*CEO_POWER*	*CC_COOPTION*	0.959
		B_COOPTION	0.951
		COOPTED_CC	0.919
		COOPTED_B	0.916
		CEO_CHAIR	0.269
2	*INDEPENDENCE*	*B_INDEPENDENCE*	0.848
		CC_INDEPENDENCE	0.794
		IND_NORM	0.793
3	*DIR_SIZE*	*CC_SIZE*	0.996
		B_SIZE	0.996
4	*BUSY_DIR*	*B_BUSY*	0.936
		CC_BUSY	0.93
5	*DIR_TENURE*	*B_LONGSERV*	0.919
		CC_LONGSERV	0.918
6	*DIR_OWNERSHIP*	*CC_OWNERSHIP*	0.909
		B_OWNERSHIP	0.896

This table presents the 6 factors identified in Principal Components Analysis. *CC_COOPTION* is the proportion of directors who are appointed after the CEO assumes office on the compensation committee. *B_COOPTION* is the proportion of directors who are appointed after the CEO assumes office on the board of directors. *COOPTED_CC* is an indicator variable equal to one if the majority of compensation committee directors are appointed after the incumbent CEO assumes office, and zero otherwise. *COOPTED_B* is an indicator variable equal to one if the majority of directors on the board are appointed after the incumbent CEO assumes office, and zero otherwise. *CEO_CHAIR* is an indicator variable equal to one if CEO is the chairman of the board of directors, and zero otherwise. *B_INDEPENDENCE* is the proportion of outsiders on the board of directors. *CC_INDEPENDENCE* is the proportion of outsiders on the compensation committee. *IND_NORM* is an indicator variable equal to one if the firm has a nominating committee that consists of only outside directors. *CC_SIZE* is the number of directors on the compensation committee. *B_SIZE* is the number of directors on the board of directors. *B_BUSY* is the proportion of board directors who sit on more than three other boards of public companies. *CC_BUSY* is the proportion of compensation committee directors who sit on more than three other boards of public companies. *B_LONGSERV* is the average tenure of directors on the board. *CC_LONGSERV* is the average tenure of directors on the compensation committee. *CC_OWNERSHIP* is the total shares held by directors on the compensation committee divided by total outstanding shares. *B_OWNERSHIP* is the total shares held by directors on the board divided by total outstanding shares. *B_SIZE* is the number of directors on the board.

TABLE 4 Regression Results: The effect of board and compensation committee factors on the association between R&D spending and CEO horizon problem

Variable	Pred. Sign	Coeff.	p-value
Intercept		0.017	(<0.01)
HORIZON	?	0.001	(0.60)
CEO_POWER	?	0.002	(0.00)
DIR_INDEPENDENCE	?	0.003	(<0.01)
DIR_SIZE	?	-0.051	(<0.01)
BUSY_DIR	?	0.002	(0.01)
DIR_TENURE	?	0.003	(0.27)
DIR_OWNERSHIP	?	-0.002	(0.01)
HORIZON×CEO_POWER	-	-0.003	(0.03)
HORIZON×DIR_INDEPENDENCE	+	-0.001	(0.46)
HORIZON×DIR_SIZE	?	0.016	(0.18)
HORIZON×BUSY_DIR	-	-0.001	(0.25)
HORIZON×DIR_TENURE	-	-0.015	(0.02)
HORIZON×DIR_OWNERSHIP	+	-0.001	(0.20)
TOBINS_Q	+	0.005	(<0.01)
LAG_RET	+	-0.007	(<0.01)
FCF	+	-0.193	(<0.01)
ROA	-	0.184	(<0.01)
SIZE	?	0.001	(0.06)
FIRM_AGE	-	-0.000	(<0.01)
EQUITY_INCENTIVES	+	-0.001	(0.46)
INDUSTRY_RD	+	0.064	(<0.01)
Number of observations		5,589	
R^2		49.07%	

The table presents the regression analysis of the effect of board and compensation committee factors on mitigating opportunistic R&D reduction. *RD* is the R&D expense scaled by total assets. *HORIZON* is an indicator variable equal to one if CEOs are in each of the final two years prior to their retirement, and zero otherwise. *CEO_POWER* is the factor on which *CC_COOPTION*, *B_COOPTION, COOPTED_CC, COOPTED_B*, and *CEO_CHAIR* have high loadings. *DIR_INDEPENDENCE* is the factor on which *B_INDEPENDENCE, CC_INDEPENDENCE*, and *IND_NORM* have high loadings. *DIR_SIZE* is the factor on which *CC_SIZE* and *B_SIZE* have high loadings. *BUSY_DIR* is the factor on which *B_BUSY* and *CC_BUSY* have high loadings. *DIR_TENURE* is the factor on which *B_LONGSERV* and *CC_LONGSERV* have high loadings. *DIR_OWNERSHIP* is the factor on which *CC_OWNERSHIP* and *B_OWNERSHIP* have high loadings. *TOBINS_Q* is calculated as the market value of equity plus the book value of debt, all scaled by total assets. *LAG_RET* is the firm's stock return from previous year. *FCF* is the operating cash flows plus R&D expense minus capital expenditures, all scaled by sales. ROA is operating net income before R&D expense scaled by assets. *SIZE* is the natural logarithm of total assets at the beginning of the current year. *FIRM_AGE* is the natural logarithm of the number of years between year *t* and the first year the company listed on Compustat. *EQUITY_INCENTIVES* is the natural logarithm of the CEO's dollar wealth increase from a 1% change in stock price, as measured in Core and Guay (2002). *INDUSTRY_RD* is the average R&D expenditures of other firms in the same 2-digit SIC industry. The p-values are presented in parentheses and are two-tailed. The standard errors are heteroskedasticity robust, clustered by firm and year. For the sake of brevity, we do not report coefficient estimates for year indicators.

TABLE 5 Descriptive Statistics and Pearson Correlations for the Discretionary Accruals Test

Panel A : Descriptive Statistics

Variable	n	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
DA	8,541	0.01	0.84	-0.07	0.01	0.12
HORIZON	8,541	0.08	0.27	0.00	0.00	0.00
EQUITY_INCENTIVES	8,541	0.25	0.22	0.09	0.17	0.34
SIZE	8,541	7.38	1.42	6.31	7.23	8.32
STD_CASHFLOW	8,541	0.04	0.03	0.02	0.04	0.06
STD_REV	8,541	0.14	0.10	0.06	0.11	0.18
STD_SALESGROWTH	8,541	0.19	0.17	0.08	0.13	0.24
OLDFIRM	8,541	0.55	0.50	0.00	1.00	1.00
LEVERAGE	8,541	0.22	0.16	0.06	0.22	0.34

This panel presents the descriptive statistics. *DA* is the discretionary accruals. *HORIZON* is an indicator variable equal to one if CEOs are in each of the final two years prior to their retirement, and zero otherwise. *EQUITY_INCENTIVES* is the dollar change in CEO's wealth from a 1% change in stock price, as measured in Core and Guay (2002), then normalized by the sum of the dollar change, salary and bonus. *SIZE* is the natural logarithm of total assets at the beginning of the current year. *STD_CASHFLOW* is the standard deviation of cash flows from operations deflated by total assets over the current and previous four years. *STD_REV* is the standard deviation of sales deflated by total assets over the current and previous four years. *STD_SALESGROWTH* is the standard deviation of sales growth over the current and previous four years. *OLDFIRM* equals one if a firm is listed on Compustat for more than 20 years, and zero otherwise. *LEVERAGE* is total liabilities deflated by total assets.

Panel B : Pearson Correlations

	DA	*EQUITY_INCENTIVES*	*SIZE*	*STD_CASHFLOW*	*STD_REV*	*STD_SALESGROWTH*	*OLDFIRM*
EQUITY_INCENTIVES	-0.01						
SIZE	0.02	**0.04**					
STD_CASHFLOW	-0.02	-0.01	**-0.31**				
STD_REV	0.01	-0.02	**-0.19**	**0.36**			
STD_SALESGROWTH	0.01	-0.00	**-0.04**	**0.27**	**0.24**		
OLDFIRM	**0.03**	**-0.15**	**0.36**	**-0.17**	**-0.08**	**-0.14**	
LEVERAGE	**0.02**	**-0.2**	**0.38**	**-0.19**	**-0.07**	**0.05**	**0.18**

This panel presents the Pearson correlations. *DA* is the discretionary accruals. *EQUITY_INCENTIVES* is the dollar change in CEO's wealth from a 1% change in stock price, as measured in Core and Guay (2002), then normalized by the sum of the dollar change, salary and bonus. *SIZE* is the natural logarithm of total assets at the beginning of the current year. *STD_CASHFLOW* is the standard deviation of cash flows from operations deflated by total assets over the current and previous four years. *STD_REV* is the standard deviation of sales deflated by total assets over the current and previous four years. *STD_SALESGROWTH* is the standard deviation of sales growth over the current and previous four years. *OLDFIRM* equals one if a firm is listed on Compustat for more than 20 years, and zero otherwise. *LEVERAGE* is total liabilities deflated by total assets. Correlations with p-values equal to or lower than 0.05 are in boldface. Correlations with p-values equal to or lower than 0.05 are in boldface.

TABLE 6 Regression Results: The effect of board and compensation committee factors on the association between discretionary accruals and CEO horizon problem

Variable	Predicted Sign	Coefficient	p-value
Intercept		0.212	(0.08)
HORIZON	?	0.012	(0.71)
CEO_POWER	?	-0.019	(0.08)
DIR_INDEPENDENCE	?	-0.011	(0.36)
DIR_SIZE	?	0.130	(0.08)
BUSY_DIR	?	-0.005	(0.61)
DIR_TENURE	?	0.002	(0.42)
DIR_OWNERSHIP	?	-0.003	(0.39)
HORIZON×CEO_POWER	+	0.018	(0.30)
HORIZON×DIR_INDEPENDENCE	-	0.018	(0.61)
HORIZON×DIR_SIZE	?	-0.439	(0.02)
HORIZON×BUSY_DIR	+	0.017	(0.28)
HORIZON×DIR_TENURE	+	-0.192	(0.14)
HORIZON×DIR_OWNERSHIP	-	0.023	(0.10)
EQUITY_INCENTIVES	+	0.047	(0.35)
SIZE	-	-0.008	(0.40)
STD_CASHFLOW	?	-0.793	(0.07)
STD_REV	?	0.141	(0.20)
STD_SALESGROWTH	?	-0.008	(0.90)
OLDFIRM	?	0.019	(0.42)
LEVERAGE	?	-0.002	(0.97)
MARKETTOBOOK	?	-0.005	(0.32)
Number of observations		8,526	
R^2		4.72%	

The table reports regression analysis of the effect of board and compensation committee factors on mitigating opportunistic accruals management. *CEO_POWER* is the factor on which *CC_COOPTION*, *B_COOPTION, COOPTED_CC, COOPTED_B*, and *CEO_CHAIR* have high loadings. *DIR_INDEPENDENCE* is the factor on which *B_INDEPENDENCE, CC_INDEPENDENCE*, and *IND_NORM* have high loadings. *DIR_SIZE* is the factor on which *CC_SIZE* and *B_SIZE* have high loadings. *BUSY_DIR* is the factor on which *B_BUSY* and *CC_BUSY* have high loadings. *DIR_TENURE* is the factor on which *B_LONGSERV* and *CC_LONGSERV* have high loadings. *DIR_OWNERSHIP* is the factor on which *CC_OWNERSHIP* and *B_OWNERSHIP* have high loadings. *EQUITY_INCENTIVES* is the dollar change in CEO's wealth from a 1% change in stock price, as measured in Core and Guay (2002), then normalized by the sum of the dollar change, salary and bonus. *SIZE* is the natural logarithm of total assets at the beginning of the current year. *STD_CASHFLOW* is the standard deviation of cash flows from operations deflated by total assets over the current and previous four years. *STD_REV* is the standard deviation of sales deflated by total assets over the current and previous four years. *STD_SALESGROWTH* is the standard deviation of sales growth over the current and previous four years. *OLDFIRM* equals one if a firm is listed on Compustat for more than 20 years, and zero otherwise. *LEVERAGE* is total liabilities deflated by total assets. *MARKETTOBOOK* represents deciles of market value of assets divided by the book value of assets ranked within each year. The p-values are presented in parentheses and are two-tailed. The standard errors are heteroskedasticity robust, clustered by firm and year. For the sake of brevity, we do not report coefficient estimates for year indicators, G_index indicators, exchange indicators, and industry indicators.