Bankers on the board and CEO incentives

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Abstract

Governance improvement measures, such as Sarbanes-Oxley Act (SOX), often stress the need for more financial experts on the boards. Directors who are from the borrowing bank need particular attention because the conflicts of interest between shareholders and debt holders would be most severe (Krozner and Strahan, 2001). In this paper, we examine whether commercial banker directors work for the best interest of shareholders in providing incentives to the CEO. When a commercial banker is on board, the equity compensation of the CEO decreases in the risk of the firm, especially when she is the member of compensation committee.

Key words: bankers on board, financial expertise, conflicts of interest, governance, board of directors, CEO compensation

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1. Introduction

Boards of directors play an important role in monitoring and advising CEOs for the interest of shareholders (Fama & Jensen, 1983; Jensen, 1993; Hermalin & Weisbach, 1998 & 2003; Adams, Hermalin & Weisbach, 2008). However, the boards of directors may not always act in the best interest of the shareholders (Bebchuk & Fried, 2003). In fact, US Non-shareholder Constituency Statutes allow directors to consider the effects on non-shareholder stakeholders when making board decisions (Adams & Ferreira, 2007), suggesting that a director's preferences may diverge from those of the shareholders, depending on the background of the director.

Among the many different backgrounds of board of directors, commercial banker director (henceforth, "CBD" for simplicity) deserves special attention due to their financial expertise and potential conflicts of interest between shareholders and debt holders (Jensen & Meckling, 1976; Booth & Deli, 1999; Kroszner & Strahan, 2001; Güner, Malmendier & Tate, 2008; Sisli-Ciamarra, 2012; Hilscher & Sisli-Ciamarra, 2013). Researchers have investigated several areas of corporate financial decisions in which the financial expertise of the CBDs and the conflicts of interest associated with them are salient, such as mergers and acquisitions (Hilscher & Sisli-Ciamarra, 2013), capital structure (Sisli-Ciamarra, 2012), and investment decisions (Güner, Malmendier & Tate, 2008). Researchers have found that CBDs provide industry-specific knowledge, enhance monitoring, and provide debt market expertise to the management (Diamond (1984); Boyd & Prescott (1986); Booth and Deli (1999); Kroszner & Strahan (2001); and Byrd & Mizruchi (2005)). In this paper, we look at the area of CEO incentives.

Providing incentives to the CEO has been a very important subject in corporate finance research, in which optimal compensation is understood as a linear function of the aggregate information about the firm's output (Holmstrom and Milgrom, 1987). Financial experts may be better at processing the information about the financial and operating performance of the company. Hence, they may also be better at tying the incentives of the CEO to the financial performance of the company (Holmstrom & Kaplan, 2003). Consequently, the pay-performance sensitivity of the CEO may be higher when CBDs are present in the board (Jensen & Murphy, 1990). Therefore, our research question is as follows: Do CBDs make the CEO incentives more sensitive to firm performance?

At the same time, since the CBDs come from (potential) lending banks, their decisions could be subject to conflicts of interest between shareholders and debt holders (Jensen & Meckling, 1976). While CBDs have a fiduciary duty to serve for the shareholders who prefer risk-increasing decisions, their incentives coming from their employing banks would induce them to prefer risk-reducing decisions (Black and Scholes, 1973; Jensen and Meckling, 1976; Myers, 1977; Kim and Sorensen, 1986). Therefore, the CBDs may influence the compensation contract of the CEOs and give an incentive that decreases in the risk of the firm. Namely, it may be giving incentives that are aligned with the debt holders instead of the equity holders. For example, when CBDs are present, debt-like CEO compensation, such as pension and deferred compensation (Sundaram & Yermack, 2007) may increase. In addition, when the risk is high under the presence of CBDs, equity (cash) based compensation of the CEO may decrease (increase).

Based on the intersection of Execucomp data and BoardEx data from 1999 to 2007, we find supporting evidence for "conflicts of interest" hypothesis for affiliated CBDs. Following Güner et al. (2008), we define an affiliated banker director as the one who works for the bank that currently has or previously had any type of loan exposure to the monitored company in the past according to the Dealscan database. Under the presence of affiliated CBDs, CEO's equity (cash) compensation decreases (increases) in firm risk. Such decrease in equity compensation with respect to firm risk is more pronounced when the CBDs are members of compensation committee. Moreover, the sensitivity of CEO compensation to firm risk (VEGA) decreases in firm risk when affiliated CBDs are present. We find that debt-like compensation is significantly higher when CBDs are present. We also find that industry relative VEGA of CEO compensation significantly decreases after the appointment of CBDs. Lastly, we find that industry relative leverage ratio significantly increases after the departure of CBDs.

We also find supporting evidence for financial expertise hypothesis. Pay performance sensitivity of CEO compensation increases in firm performance when affiliated CBD is present. Stock market event study of the appointment and departure of the CBD also supports the notion of financial expertise of the CBDs. Specifically, for the firms that did not have any CBD before, the investors response to CBD appointment is positive and significant if the prior risk level is high. Also, when a CBD is dismissed without any other CBD on board, the stock market investor response is negative if the prior performance is good and leverage ratio is high.

Since the assignment CBDs on the board is not random, endogeneity is always a concern. As pointed out by Hermalin and Weisbach (1998, 2003), firms optimally choose the board structure and CEO compensation structure to maximize the shareholder value. It could be that

the companies that appoint CBDs are the ones that attempt to reduce the risk of the firm in the first place. We attempt average treatment effects model as in Hilscher & Sisli-Ciamarra (2013) and Sisli-Ciamarra (2012). We first run a first stage probit regression about the determinants of having CBDs. Then we test whether the residual of the treatment model is significantly correlated with the residual of the structural model. If the two residuals are significantly correlated, endogeneity is a concern and we run a full ATE model. If not, we maintain our original regression model. Consistent with the literature, we find that firms with more collateral, less information asymmetry, lower default probability, better credit rating, larger board size, lower short-term debt amount are more likely to have CBDs (Kroszner & Strahan, 2001; Sisli-Ciamarra, 2012; Hilscher & Sisli-Ciamarra, 2013). However, we find that the residuals of the first stage treatment regression and that of the structural equation are not significantly correlated, which suggests that endogeneity is not a serious concern in our sample. Besides, we take industry and year fixed effects in all of our regressions. In untabulated tests, we exclude the sample where bankers' tenure on the board is less than two years and we find similar results.[3] In all of our regressions, we control for the impact of investment banker directors.

The rest of the paper is organized as follows. Section 2 provides literature review. Section 3 describes the data collection and methodology. Section 4 reports the results and discusses the endogeneity concern. Section 5 concludes.

2. Literature Review

While the conflicts of interest between debt holders and equity holders has long been a very important issue in finance research, the literature about the impact of banker directors on

[3] For detailed results, please contact the author.

corporate financial decision has been relatively less developed. Gilson (1990) finds that bankers are likely to sit as board members when a borrowing firm hits bankruptcy to better monitor the company. Kaplan and Minton (1994) find that Japanese bankers are more likely to be appointed as the director of the distressed borrowing firm than American bankers. Booth and Deli (1999) argue that the decision of the banks to put their bankers on the board of the borrowing company is a function of the cost and benefit coming from the banker director. Namely, the benefit stems from the fact that the director can monitor the borrower better and the cost comes from the fact that there would be conflicts of interest as a creditor and the representative of the shareholders.

Kroszner and Strahan (2001) find the determinants of having banker directors. Due to the lender liability and litigation concern, they find that firms with large size and medium risk level are more likely to have bankers as independent directors. However, they find relatively smaller portion (31.6%) of the Forbes 500 companies have bankers on their boards. Sisli-Ciamarra (2012) finds that board representation of bankers enhances monitoring, which in turn reduces borrowing costs, such as lower loan spreads and less covenants. She also finds that the presence of a CBD increases the amount of (private) debt, and decreases the sensitivity of debt financing to the amount of tangible assets of the borrowing firm. In comparison, Güner et al. (2008) find that the positive effect of CBDs on debt financing to reduce investment-cash flow sensitivity is concentrated on the firms with good credit quality yet with limited investment opportunities.

Hilscher & Sisli-Ciamarra (2013) study the impact of CBDs on mergers and acquisitions, and find that the firms with CBDs are 10.4% more likely to conduct diversifying mergers, which reduces the risk of the firm. Moreover, they report that the acquisition announcements are met

with negative abnormal return in firm value when CBDs are present (positive return for creditors but negative return for stock holders). Kuo et al. (2010) and Slomka-Golebiowska (2012) provide consistent evidence from Taiwanese data and Polish data, respectively. Using German data, Dittman et al. (2010) find that such relief of financial constraints comes at the expense of promoting the employer banks business, such as M&A advisory. Mitchell and Walker (2010) show that affiliated bankers have the most incentive to monitor intensively and find that banker directors are effective in reducing the distress risk of the borrowing firm.[4]

As for the impact of banker directors on corporate governance, Güner et al. (2008) and Dittman et al. (2010) fail to find any significant impact of banker directors on CEO compensation. Unlike the papers in CEO compensation, they use common stock returns up to two lags for firm performance as the explanatory variable and change in CEO compensation as dependent. In contrast, we use stock performance ROA of the previous fiscal year as our measures of firm performance. While Güner, et al. (2008) and Dittman et al. (2010) are investigating the first order effect of CBDs on the level of CEO compensation, we look at the effect of CBDs when the risk is high or performance is better, using interaction terms. Our paper is the first in the literature to find supporting evidence that banker directors' financial expertise as well as conflicts of interests both show up in CEO compensation. The finding is important because it suggests that banker directors' impact on governance is at force yet with some trade-off.

[4] These papers investigate the monitoring efficiency of the lender, understanding the banker director as the channel of information flow. From a different perspective, Engelberg et al. (2010) find that when the borrowing company's management and lending bank's management have personal network connections, the borrowing cost is significantly smaller and the borrowing firms with connections perform better in the stock market thanks to better monitoring efficiency through the network.

3. Data and methodology

3.1 The sample

To identify banker directors of public US firms, we use BoardEx data by Management Diagnostics Limited that contains information about more than 300,000 unique board members of publicly listed companies in the United States and the world. To obtain the information about whether a director works (or has worked) for a commercial bank, we use the names of all the banks in the Bank Regulatory Database, the Commercial Bank Database, and the Bank Holding Companies Database of FRB Chicago (WRDS) for text matching algorithm. We also use the name of the banks shown in LPC Dealscan Database with positive loan amounts. Additionally, the names of the firms in Compustat whose Fama-French 49 industry group identify as commercial banks are used as well. We also manually check whether the identified bank is a bank holding company or not, by using the bank holding company information in FDIC website. To make sure that we are not confusing between investment banks and commercial banks, we use the IPO Underwriter Reputation Rankings chart of Jay Ritter as in Loughran and Ritter (2004)[5] to identify investment banks. For more detailed description, please refer to Appendix B.

CEO compensation data are from Execucomp, which provides executive compensation data of S&P1500 companies in the U.S. Our sample period is from 1999 to 2007, because it is the intersection between BoardEx and Execucomp. Most of CEO characteristics such as CEO age or CEO tenure are obtained from Execucomp, but if an observation is missing we fill it

[5] http://bear.warrington.ufl.edu/ritter/ipodata.htm

manually by reading news article obtained from Factiva, the largest news database. For firm characteristic variables such as stock returns or return on assets, we use CRSP and Compustat.

3.2 Sample distribution and summary statistics

Sample distribution by the year and by the industry is shown in Table 1. In our compensation regressions, 8,926 firm years are used. We also display the number of firms in in which at least one CBDs are present (left) and at least one ABDs are present (right) in the square bracket of each cell. We use Global Industry Classification Standard code developed by MSCI and Standard & Poor's to display the breakdown of the firm years by the industry. We exclude financial institutions based on this GICS code because financial institutions are heavily regulated by the government, which makes the standard governance mechanism less applicable.[6] Interestingly, no firm in information technology sector appears to have ABD, which supports the previous finding in the literature that bankers sit on less risky firms. In terms of time trend, the number of firms with CBDs peaked out in 2003 and has been decreasing, which is consistent with prior literature (Sisli-Ciamarra, 2012; Hilscher & Sisli-Ciamarra, 2013). The time trend is attributable to the effort of reducing conflicts of interest in the boards after Sarbanes Oxley Act in 2002 (Hilscher & Sisli-Ciamarra, 2013).

[Insert Table 1 & 2 about here]

Table 2 shows the summary statistics of our sample.

Approximately 7.2% of all firm-years in our sample have at least one CBDs. 1.3% of the firm-years have at least one ABDs and the remaining 5.9% have NABDs (non-affiliated banker

[6] The results are robust when we include financial institutions (untabulated).

directors).[7] The proportion of the firms with CBDs is lower than what is reported in the literature (31.6% in Kroszner & Strahan (2001); 27% in Güner, Malmendier, & Tate (2008); 22~27% in Sisli-Ciamarra (2012); and 29.7% in Hilscher & Sisli-Ciamarra, (2013)). We believe the difference is attributable to two facts. First, our sample is from a larger pool that includes much smaller firms (1500 large publicly traded firms in the US). Prior literature has been focused on S&P500 firms (Hilscher & Sisli-Ciamarra, 2013) or Forbes 500 (Kroszner & Strahan, 2001; Güner, Malmendier, & Tate, 2008). As Kroszner & Strahan (2001) point out, bankers are more likely to sit on the boards of more stable firms that are presumably larger. Second, our classification of commercial banker as opposed to investment banker may have been stricter. Sisli-Ciamarra (2012) report that the proportion of firm-years that have at least one investment bankers has been less than 10% throughout the sample period. Hilscher & Sisli-Ciamarra (2013) report it to be 10.1%. We find that 13.8% of the firm years have at least one investment bankers on board. Some of the commercial banks that we find in Dealscan data as lead managers of syndicated loan often turn out to be investment banks based on IPO Underwriter Reputation Rankings chart even though they are found in the FDIC BankFind database. Thus, whenever the name of the bank is found in the IPO ranking chart, we classify them as investment banks even if it is found in Dealscan as lead manager of syndication loan. Therefore, our stricter classification rule may bias against finding the results.

[7] A director is classified as ABD if she is an executive of a commercial bank that has extended at least one loan to the company over the previous five years as a sole lender, or as a lead arranger in a syndicate.

4. Empirical method and results

4.1 Compensation regressions

Our performance measure is ROA (annual operating income before depreciation divided by total assets), because accounting information which aggregates performance over time is sufficient for optimal compensation (Holmstrom & Milgrom, 1987). Our risk measure is the trailing five-year standard deviation of quarterly ROA's. Previous research shows that board characteristics are associated with CEO compensation level (see Core et al., 1999; Chhaochharia and Grinstein, 2009; Chang et al., 2009; Agrawal and Nasser, 2010). Hence, we investigate if the existence of CBD affects CEO compensation level. If the financial expertise of the banker director were at play, the pay would be more sensitive to the performance. However, if the conflict of interest of the CBD manifests itself, the CEO pay would be more sensitive to the risk of the firm. Since the creditors prefer lower risk for the borrowing firm, the CBDs may influence the compensation contract of the CEO that would yield a lower pay when the firm risk increases. This hypothesis comes from the agency problem of debt (Jensen & Meckling, 1976). Such influence may be more pronounced for equity component of the CEO pays, such as option and restricted stock ownership. At the same time, CBDs may counterbalance the reduction in equity compensation by increasing the cash component of the CEO pays when the risk increases. The reason is that more cash compensation instead of equity compensation would induce the CEO to behave less like equity holders, but more like debt holders. In addition, such influence of CBD may be more pronounced when the CBD is a member of compensation committee. Our empirical specification is as follows.

$$\ln(1 + compensation)_t$$

$$= \beta_1 1\{CBD\}_{t-1} + \beta_2 1\{CBD\}_{t-1} * ROA + \beta_3 1\{CBD\}_{t-1} * \sigma_{ROA_{t-1}}$$

$$+ controls_{t-1} + \epsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$\ln(1 + compensation)_t$$

$$= \beta_1 1\{ABD\}_{t-1} + \beta_2 1\{ABD\}_{t-1} * ROA_{t-1} + \beta_3 1\{ABD\}_{t-1} * \sigma_{ROA_{t-1}}$$

$$+ \beta_4 1\{NABD\}_{t-1} + \beta_5 1\{NABD\}_{t-1} * ROA_{t-1} + \beta_6 1\{NABD\}_{t-1} * \sigma_{ROA_{t-1}}$$

$$+ controls_{t-1} + \epsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

where 1{CBD} (1{ABD}, 1{NABD}) is a dummy variable that is one if the firm has at least one CBD (ABD, NABD, respectively) in their board and zero otherwise. Our controls based on the CEO compensation literature (Benmelech & Frydman 2012; Frydman & Saks, Murphy, 1999, 2011; Humphrey-Jenner et al. 2015; Chen, Harford, Lin, 2015; Deng, Gao, 2013) are as follows: (1) one year stock performance over the fiscal year; (2) ROA, (3) standard deviation of ROA ($\sigma_{ROA_{t-1}}$), (4) firm size (natural log of total assets); (5) market to book ratio; (6) leverage ratio; (7) cash amount relative to total assets; (8) R&D expenditure relative to total assets as a measure of information asymmetry; (9) capital expenditure relative to total assets; (10) natural log of firm age; (11) a dummy variable that is one if the CEO is in the retirement age; (12) CEO Tenure; (13) percentage of independent directors in the board; (14) a dummy variable that is one if the firm has at least one investment banker directors (IBD, hereafter) on the board; (15) industry and year fixed effects.

Our key predictions are as follows: (1) if financial expertise hypothesis is supported, $\beta_2 > 0\ in\ eqation\ 1,\ \beta_2, \beta_5 > 0\ in\ equation\ 2$. (2) if conflicts of interest hypothesis is supported, $\beta_3 < 0\ in\ eqation\ 1,\ \beta_3, \beta_6 < 0\ in\ equation\ 2$. Notice that both views are not

mutually exclusive, because financial expertise of the CBD could manifest itself even when she influences the compensation contract of the CEO to be closer to the interest of the creditors. To steer clear of the concern that what we report in the paper is not attributable to the effect of IBDs or simply to that of independent directors, we control for the following interactions: indep.dir.%*ROA, indep.dir.%* $\sigma_{ROA_{t-1}}$, 1{IBD}*ROA, and 1{IBD} * $\sigma_{ROA_{t-1}}$ in every regression.

We use three different dependent variables for our analyses on the level of compensation: total compensation, equity compensation, and cash compensation. Total compensation is the sum of salary, annual bonus, restricted stock grants, valuation of option grants and all other payouts (total compensation is TDC1 variable from the EXECUCOMP data). Equity compensation is the sum of restricted stock grants (RSTKGRNT variable before year 2006 and STOCK_AWARDS_FV from year 2006 onwards in Anncomp table of ExecuComp dataset) and option compensation (OPTION_AWARDS_BLK_VALUE variable before year 2006 and OPTION_AWARDS_FV from year 2006 onwards in Anncomp table of ExecuComp dataset). Cash compensation is the sum of salary and bonus compensation. We use the level of pay, where we take a natural log of each compensation scheme due to high skewness in dollar-form of compensation. In order to include 0 values in our observation, we calculate the pay by adding 1 before taking natural log of them. Dependent variable is as of the end of fiscal year whereas our right hand side variables are as of the beginning of the fiscal year.

[Insert Table 3 about here]

The results are shown in Table 3. First, we find that the interaction between the percentage of independent directors and firm risk is negative and significant at one percent level throughout the different specifications. It suggests that better governed firms try to keep the risk of the company at an optimal level by curbing the CEO compensation when risk increases. However, some companies may try harder to harness the CEO risk taking due to the conflicts of interest coming from the board members' characteristics, such as CBD. In the first regression, we do not find significant coefficient of the interaction between 1{CBD} and ROA volatility even though the sign is negative. Nor do we find significant coefficients of the interaction between 1{ABD} and ROA volatility and that of the interaction between 1{NABD} and ROA volatility. On the surface, it does not seem that CBDs negatively affect CEO compensation due to potential conflicts of interest when it comes to the aggregate amount of compensation. This result is largely consistent with Güner, Malmendier, and Tate (2008), in which the authors do not distinguish between ABD and NABD and do not interact firm risk with the banker director variables.

However, we conjecture that the CBDs could still affect the composition of the compensation, because a significant part of CEO pay is equity compensation which induces her to behave more like equity holders and another significant part is cash compensation such as salary and bonus. Specifically, if the conflicts of interest of the CBD manifests itself, then CBDs may influence the compensation contract of the CEO and make her equity component of the compensation to shrink when the risk of the firm increases but cash component of the compensation to expand. Such counterbalancing would slow down the CEO in working only for the interest of the shareholders. Consistent with our conjecture, we find interesting contrast in

the subsequent sets of regressions. The third column shows that equity compensation of the CEO decreases in the firm risk under the presence of CBDs. Starting from the median equity compensation of $1,249 million, a change in ROA Volatility from the median of 0.013 to 75th percentile of 0.022 translates into a decrease of equity compensation by $295,663 under the presence of CBD (statistically significant at 1% level).[8] The fourth column suggests that such negative relation between risk and equity compensation is prevalent regardless of whether the CBD is ABD or NABD. In contrast, in the fifth and sixth regressions, we find that CEO's cash compensation INCREASES in the firm risk under the presence of CBD (ABD or NABD). The coefficient of interaction between 1{CBD} and ROA Volatility is positive and significant at 5% level. Starting from the median equity compensation of $945 million, a change in ROA Volatility from the median to 75th percentile translates into an increase of cash compensation by $45,932 under the presence of CBD (statistically significant at 5% level).[9] Interestingly, the symptom of the conflicts of interest between creditors and equity holders show up even for NABDs. We interpret that the NABD is sitting on the board with a view to become ABD in the future, as their employer banks' lending businesses grow.

We do not find significant coefficient of the interaction between 1{IBD} and ROA Volatility, which confirms that the conflicts of interest that IBDs suffer do not manifest itself in the context of designing CEO compensation. Interestingly any of the coefficients of the interactions between ROA and 1{CBD} or 1{ABD} or 1{NABD} are statistically significant. Nor do we find significant coefficient of the interaction between 1{IBD} and ROA. The results might cast doubt about the financial expertise of the banker directors in the context of CEO

[8] The magnitude is $352,151 when ABD is present and $294,649 when NABD is present.
[9] The magnitude is $95,265 when ABD is present and $42,181 when NABD is present.

compensation. As has been argued in the literature, their expertise may be more specific to the investment decisions. On the other hand, it may be that their financial expertise manifests itself only when the CBDs are in the compensation committee, which would be shown in the latter section. Most control variables in Table 3 show results consistent with the extant literature: CEO compensation is strongly positively correlated with the firm size (Gabaix & Landier, 2008). When market-to-book ratio is higher (i.e. when firm has a greater growth opportunity) total compensation is higher (Smitt & Watts, 1992; and Gaver & Gaver, 1995).[10]

We investigate whether the pay-performance sensitivity of the CEO increases in firm performance when CBDs are present as a symptom of better financial expertise of the CBDs. Pay-performance-sensitivity (PPS) is defined following Core and Guay (2002).[11] If CBDs could influence the design of CEO compensation, the conflicts of interest would make the compensation reduced when the risk of the firm increases. Typically, researchers have measured the sensitivity of CEO compensation to firm risk with VEGA as in Coles, Daniel, and Naveen (2006). Thus, we investigate whether the VEGA of the CEO compensation decreases in firm risk when CBDs. Hence, our regression models are as follows:

$$\mathrm{PPS}_t = \beta_1 1\{CBD\}_{t-1} + \beta_2 1\{CBD\}_{t-1} * ROA + \beta_3 1\{CBD\}_{t-1} * \sigma_{ROA_{t-1}} + controls_{t-1} + \epsilon \quad (3)$$

$$\mathrm{PPS}_t = \beta_1 1\{ABD\}_{t-1} + \beta_2 1\{ABD\}_{t-1} * ROA_{t-1} + \beta_3 1\{ABD\}_{t-1} * \sigma_{ROA_{t-1}} + \beta_4 1\{NABD\}_{t-1} + \beta_5 1\{NABD\}_{t-1} * ROA_{t-1} + \beta_6 1\{NABD\}_{t-1} * \sigma_{ROA_{t-1}} + controls_{t-1} + \epsilon \quad (4)$$

[10] Others report a negative correlation between growth opportunity proxies and CEO incentives, especially equity incentives (Bizjak et al, 1993; Yermack, 1995).
[11] In our untabulated analyses, we also measure PPS following Yermack (1995) and find consistent results.

$$\text{VEGA}_t = \beta_1 1\{CBD\}_{t-1} + \beta_2 1\{CBD\}_{t-1} * ROA + \beta_3 1\{CBD\}_{t-1} * \sigma_{ROA_{t-1}} + controls_{t-1} + \epsilon \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (5)$$

$$\text{VEGA}_t = \beta_1 1\{ABD\}_{t-1} + \beta_2 1\{ABD\}_{t-1} * ROA_{t-1} + \beta_3 1\{ABD\}_{t-1} * \sigma_{ROA_{t-1}} + \beta_4 1\{NABD\}_{t-1} + \beta_5 1\{NABD\}_{t-1} * ROA_{t-1} + \beta_6 1\{NABD\}_{t-1} * \sigma_{ROA_{t-1}} + controls_{t-1} + \epsilon \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots (6)$$

The right hand side variables are the same as in equations (1) and (2). Financial expertise hypothesis would predict that $\beta_2 > 0$ for equation (3) and $\beta_2, \beta_5 > 0$ for equation (4). Conflicts of interest hypothesis would predict that $\beta_3 < 0$ for equation (5) and $\beta_3, \beta_6 < 0$ for equation (6).

[Insert Table 4 about here]

The results in the second regression of Table 4 supports financial expertise view in that the coefficient of interaction between ROA and 1{ABD} is positive and significant at 10% level. Starting from the median PPS of $275,214, a change in ROA from the median to 75th percentile translates into an increase in PPS by $138 under the presence of ABD. As firm performance improves, affiliated banker directors appear to make the CEO compensation more sensitive to firm performance. At least, ABDs seem to act as an accelerator in aligning the CEO incentive tightly to the firm performance. On the other hand, we find evidence that ABDs make the CEO compensation less sensitive to firm risk as the firm's risk level goes up. The coefficient of interaction between firm risk and 1{ABD} is negative and significant at 10% level. Starting from the median VEGA of $16,931, a change in ROA Volatility from the median to 75th

percentile translates into a decrease in VEGA by $207 under the presence of ABD. The evidence is consistent with the hypothesis that banker directors incentivize the CEO not to increase risk when the risk level is already high.

4.3. Debt-like compensation and CBDs

One way the CBDs could incentivize the CEO to behave more like creditors is to provide more of debt-like compensation as in Sundaram and Yermack (2007). More specifically, pension and deferred compensation is a kind of liability of the company to the CEO, which makes the CEO more like the creditor of the company, because she is promised to be paid in the future. Therefore, in this subsection we hypothesize that when CBDs are present, the amount of debt-like compensation of the CEO increases. Following Sundaram and Yermack (2007), our empirical model is as follows:

$$Inside\ Debt_t = \beta_1 1\{CBD\}_{t-1} + controls_{t-1} + \epsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

Inside debt is the sum of pension and deferred compensation. Controls are as follows: CEO tenure; a dummy variable that is one if the CEO is an outsider; size of the firm; leverage ratio; a dummy variable that is one if operating income is negative; R&D relative to sales; a dummy variable that is one if the firm has tax loss carry forward; firm age; a dummy variable that is one if the CEO is a founder; institutional ownership; a dummy variable that is one if the institutional ownership is missing; board size; industry fixed effects; and year dummies. Since pension data is available only after 2006, we restrict our sample accordingly. The summary statistics of the sample used in the regressions is shown in Panel A of Table 5. Average of inside debt is 4.75 million dollars and standard deviation of it is 12.48 million dollars. We control for the dummy variable of being one if the CEO is an outsider, and outsider is defined as the one that was not employed by the company one year before the time of CEO appointment.

In our data, 23.6% of the CEOs are outsiders. We also collect whether the CEO is the founder of the company and it turns out that on average 12.4% of the CEOs are founders. The coefficient of 1{CBD} variable in the first column is positive and significant at one percent level. If a company has commercial banker director, the CEO receives more debt-like compensation than the CEOs of the firms without banker directors by 2.65 million dollars. The result is more salient if the banker director is an affiliated banker director. In the last regression in Panel B, we find that the coefficient of 1{ABD} is 3.67 and that of 1{NABD} is 2.37,which indicates that CEOs in the firms with ABD (NABD) receive more debt-like compensation than the CEOs in the firs without banker directors by 3.67 million (2.37 million) dollars. The coefficients of the controls are in general, consistent with the literature. CEO's with longer tenure receive more pension. Outsider CEOs receive less pension than insiders do. The CEO's of larger firms receive more pension compensation than the CEO's of smaller firms.

[Insert Table 5 about here]

4.4 Stock market event study of CBD appointments

One way of discerning whether CBDs are perceived as value adding by the shareholders or not is to run a stock market event study of CBDs appointments and departures. If CBDs financial expertise were well recognized by equity investors, the stock market would respond positively when a commercial banker is appointed as an outside director of the firm. Equivalently, the price response would be negative when the CBD departs. On the other hand, if CBDs were perceived as a source of conflicts of interest, the stock market response to the appointment (departure) of the CBDs would be negative (positive).

BoardEx database provides the date of first announcements of appointment and departure of the directors. We identify 50 (19) announcements of banker directors' appointments (departures) that are not confounded by major corporate events (earnings announcements, M&A announcements, joint venture announcements, class action lawsuits, and restatements) by [1,1] relative trading days. For the announcements of the appointments, we classify into three different subgroups by manually going through the DEF14-A documents in EDGAR system of the SEC.[12] The first subgroup is the cases in which a CBD is appointed in a company that did not have any CBDs in the year before (N=70). The second is the cases in which a CBD is appointed in a company that had at least one CBDs in the year before (N=8). The reason for classifying into these two groups is that the financial expertise or conflicts of interest associated with the appointed CBD would be more salient if she was not preceded by any CBDs before. Our last subsample is the cases in which we could not classify into any of the two aforementioned group due to the lack of data in the electronic system (N=12).

Equivalently, we classify the departure events into three different subcategories groups. In the departure setting, financial expertise or conflicts of interest associated with the departing CBDs would be more salient if she is not succeeded by a CBD afterwards. The first subsample is the ones in which there is no CBDs in the firm after a CBDs departure (N=10). The second is the ones in which there are at least one CBDs in the firm after a CBDs departure (N=8). The last case is in which we could not classify into any of the two aforementioned groups due to the lack of data in the electronic system (N=1).

Expected returns are computed based on various asset pricing models such as CAPM, Fama-French 3 factor model, and Carhart 4 factor model. Events that are confounded by major

[12] We greatly thank the anonymous referee for suggesting this classification approach.

corporate events, such as mergers and acquisitions, earnings announcements, restatements, and class action lawsuits, by +1/-1 trading day of the announcement are excluded from the sample. Estimation window is [-280,-31] trading days from the announced date. Average cumulative abnormal return on the trading day [0] are tabulated in Panel A (appointments) and B (departures) of Table 6. We find that the appointments of CBDs are especially unwelcomed when the company previously had CBDs (economic magnitude ranges from -0.39% to -0.29% and t-stat ranges from 1.78 to 2.37). This might suggest that conflicts of interest is supported, but more detailed analysis using regression analysis will follow in the next subsection. In Panel B, we find that stock market response is negative and significant when there is no more CBDs in the board after the departure of the CBDs (economic magnitude ranges from -0.93% to -0.75% and t-stat ranges from 2.46 to 2.87). This may suggest that stock market perceives that the departure of the CBD without any more CBD as a loss of financial experts.[13] However, as stated before, this is just a first cut result. We need multiple regressions of cumulative abnormal return, CAR[0], to understand the price response more precisely.

[Insert Table 6 about here]

Using the CAR[0] based on equal weighted CRSP market index based CAPM, we run multiple regressions in Table 6. For the sample of CBD appointments, we first run the regression for the whole sample (regression 1), then we run the regression for the sample in which there was no CBD before the appointment (regression 2), then finally we run the

[13] The result is largely consistent when we use different event windows, such as [-1,1] and [-1,0] trading days.

regression for the rest of the observations (regression 3). For the sample of CBD departures, we first run the regression for the whole sample (regression 1), then we run the regression for the sample in which there was no CBD after the departure (regression 2), then finally we run the regression for the rest of the observations (regression 3). Since financial expertise of the CBDs could manifest itself in the form of risk management, financial performance improvement, and debt capital management, we use the following regression model:

$$CAR[0] = \beta_1 Idiosyncratc\ Risk_{t-1} + \beta_2 1yr\ stock\ performance_{t-1} + \beta_3 Size + \beta_4 leverage\ ratio_{t-1} + \beta_5 Cash\ flow_{t-1} + \epsilon \dots\dots\dots\dots\dots\dots (8),$$

Panel A of Table 7 shows that the appointment of CBD is especially welcomed for the firm that did not have a CBD before if the idiosyncratic risk of the firm was high previously. It may suggest that stock market investors perceive CBDs as an expert in risk management. For the subsample of the firms that had CBDs before, additional CBD appointment is perceived as value adding when the firm's prior performance was bad and cash flow was negative. These also support the financial expertise hypothesis. Panel B of Table 7 shows that the departure of the CBDs are perceived as negative especially when the prior stock performance was good and cash flow was good or prior leverage ratio was high. It seems that the financial expertise of the CBDs is valued for the companies that have high leverage ratio.

[Insert Table 7 about here]

4.5. Change of VEGA and Leverage before and after CBD appointment/departure

What happens to the characteristics of financial position of the company and that of the CEO's compensation contract before and after the appointment (departure) of a CBD is another

interesting aspect that could be informative for our analysis. Especially, with regard to the conflicts of interest hypothesis, leverage ratio and VEGA of CEO compensation would be informative, because the former is the key driver of financial risk and the latter is one of the key drivers of the former (Chava & Purnanandam, 2010). We compute industry relative leverage ratio and industry relative VEGA of CEO Compensation using the median of each variable based on the two-digit SIC code. Then for the uncontaminated sample in the stock market event study in the previous subsection, we compute the average industry relative leverage ratio (VEGA) as of the fiscal year end before the announcements of the appointment (departure) of CBDs and as of the fiscal year end after the announcements. We focus on the appointments of the CBDs that did not have any CBD before and the departures of the CBDs that are followed by no CBDs in the board.

[Insert Table 8 about here]

[Insert Figure 1 about here]

Panel A of Table 8 shows that industry relative leverage ratio increases by 3.27% after the departure of CBDs. The result is statistically significant at 8.5% level. We also find that the decrease of industry relative leverage ratio surrounding the appointment of CBDs is significantly larger than the increase of industry relative leverage ratio surrounding the departure of CBDs (p-value=0.65). The contrast is shown in Panel A of Figure 1. Panel B of Table 8 shows that CEO's compensation VEGA decreases significantly by $38,860 for each %change in volatility (p-value=0.0945), which suggests that CBDs influence the CEO compensation structure in such

a way that the compensation's sensitivity to volatility decreases significantly. One may question why we do not see consequent decrease in industry relative leverage ratio in Panel A after the appointment of CBDs. However, we find consistent decrease in industry relative leverage ratio (-2.14%) that has only marginally significant p-value of 0.135. We also find that industry relative VEGA increases after the departures of the CBDs (p-value=0.15). Again, we compare the difference between the changes of VEGA surrounding CBDs appointments and departures, and find statistically significant difference (p-value=0.0378). Panel B of Figure 1 shows our results pictorially. Our quasi-difference-in-differences approach supports the hypothesis that CBDs suffer from conflicts of interest and reduces the financial risk of the company.

4.6. Endogeneity concern and selection

Since the assignment of having CBDs is not random, endogeneity is a valid concern (Hermalin & Weisbach, 2003; Adams, Hermalin, & Weisbach, 2009). More specifically, it may be that a board of directors that are determined to reduce the financial risk of the firm may be systematically hiring commercial bankers as outside directors in the first place. To the extent that the concern is coming from omitted variables that are time invariant or time specific, we control for industry fixed effects and year fixed effects. If the source of bias is measurement error, we run regressions using the percentage of CBDs (%ABDs and %NABDs, equivalently), and find similar results. Most serious concern is the self-selection of the commercial bankers to sit on the board of non-financial companies given the legal risk of equitable subordination and lender liability. Kroszner & Strahan (2001) find that bankers sit on the boards of the companies with medium level of risk to avoid the situation of bankruptcy. Also, bankers sit on the board of

large size and low information asymmetry, high leverage ratio, and low short-term debt to long-term debt ratio.

Thus, following the literature (Sisli-Ciamarra, 2012; and Hilscher & Sisli-Ciamarra, 2013), we pursue average treatment effects model (Greene, 2003), in which our dummy variables of 1{CBD}, 1{ABD} and 1{NABD} are endogenous variables. We model the probability of having CBDs (receiving the treatment) together with the structural outcome equation. Specifically, the full model is as follows:

$$Y_i = \beta_0 + \beta_1 X_i + \beta_2 D_i + \epsilon_i \quad (9)$$

$$D_i^* = \delta Z_i + \eta_i \quad (10)$$

$D_i = 1 \; if D_i^* > 0$ and 0 otherwise,

where D_i is an endogenous dummy variable that is one if the treatment is received and zero otherwise. D_i^* is an unobserved latent variable that is modeled to result in the binary decision, D_i. Z_i is a set of determinants of receiving the treatment, and the error terms, ϵ_i and η_i are assumed to have a bivariate normal distribution:

$$\epsilon_i \sim N(0, \sigma),$$

$$\eta_i \sim N(0,1),$$

$$corr(\epsilon_i, \eta_i) = \rho$$

For equation (10), we borrow from the literature (Booth & Deli, 1999; Kroszner & Strahan, 2001; Byrd & Mizruchi, 2005; Rumble & Santos, 2006; Sisli-Ciamarra, 2012; and Hilscher & Sisli-Ciamarra, 2013) and use the determinants of the presence of CBDs. Since it is a non-linear treatment model, the set of explanatory variables in the structural model (9) need not be a subset of the variables in the treatment equation (10). The set of determinants we use are (1)

short term debt to long term debt ratio; (2) firm size; leverage ratio; (3) cash to total assets; (4) stock return volatility; (5) market to book; (6) R&D expense divided by total assets; (7) KMV EDF[14]; (8) credit rating by S&P; (9) a dummy variable that is one if the firm do not have credit rating and zero otherwise; (10) ratio of insiders in the board; and (11) board size. All explanatory variables in the treatment equation are averaged over the past three years because the board composition are typically staggered and change slowly over time. Here we argue that short-term debt to long-term debt ratio works as an instrumental variable, because even though it is correlated with having CBDs, it is not related to CEO's incentives based on the argument of Chava & Purnanandam (2010). They find that debt maturity structure is not correlated with CEO's compensation contract. Following Hilscher & Sisli-Ciamarra (2013), we use average treatment effects model when the correlation $\rho \neq 0$, because it indicates the presence of self-selection.

[Insert Table 9 about here]

Table 9 shows the results of probit models of treatment equation regressions. We find that bankers are more likely to sit on the boards of a company that is less risky and larger and lower in information asymmetry. More specifically, the probability of having a CBD is negatively correlated with short-term debt to long-term debt ratio, R&D divided by total assets, and KMV's EDF (default probability). It is positively correlated with firm size, leverage ratio,

[14] We obtained the KMV EDF (Expected Default Frequency) data of S&P1500 firms over the sample period from Moody's KMV to measure the credit risk of the firm. Moody's KMV EDF measures the actual default probabilities of a company using Merton's (1974) structural model of default, where estimates range from safest credit of 0.01% to imminent default of 35%.

and board size. One additional finding is that firms with lower cash to total assets are more likely to attract banker directors. The results are largely consistent with the literature. Interestingly, for every regression in our paper, we could not reject the null that $\rho = 0$. Thus, we believe we could move on with our baseline regressions following the literature

4.7. Compensation committee membership of CBD

What is the empirical channel through which the influence of CBD upon the compensation works? We look at the compensation committee of the board, because it is the organization that designs the compensation contract of the CEO. Therefore, the effect of CBD on CEO compensation would be more salient when the CBD is in the committee. For most of the firm years in our sample, BoardEx provides the information about whether a board member belongs to different committees for any given fiscal year. Moreover, it gives information about whether the director is the chair of the committee or not. Based on the subset that has the information about the compensation committee, we find that 6.54% of the firm years have at least one CBDs (See Panel A of Table 10). However, not all CBDs are in the compensation committee. In our committee subsample, for 3.09% of the firm years (about half of the time), the CBDs are not in the compensation committee. We find that for the 2.43% of the firm years, all the CBDs are involved as compensation committee members only. Lastly, for the 1.03% of the firm years, we find that one of the CBDs is working as the chair of the compensation committee. Therefore, we modify the set of explanatory variables in our original empirical model (1) as follows:

$$\ln(1 + compensation)_t$$
$$= \beta_1 1\{CBD\ Mem\}_{t-1} + \beta_2 1\{CBD\ Mem\}_{t-1} * ROA + \beta_3 1\{CBD\ Mem\}_{t-1}$$
$$* \sigma_{ROA_{t-1}} + \beta_4 1\{CBD\ Chair\}_{t-1} + \beta_5 1\{CBD\ Chair\}_{t-1} * ROA$$
$$+ \beta_6 1\{CBD\ Chair\}_{t-1} * \sigma_{ROA_{t-1}} + \beta_7 1\{CBD\ NoMem\}_{t-1}$$
$$+ \beta_8 1\{CBD\ NoMem\}_{t-1} * ROA + \beta_9 1\{CBD\ NoMem\}_{t-1} * \sigma_{ROA_{t-1}}$$
$$+ controls_{t-1} + \epsilon \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (11),$$

where $1\{CBD\ Mem\}_{t-1}$ is a dummy variable that is one if the CBDs in the firm are involved in the compensation committee only as members. $1\{CBD\ Chair\}_{t-1}$ is a dummy variable that is one if any of the CBDs in the firm works as the chair of the compensation committee. $1\{CBD\ NoMem\}_{t-1}$ is a dummy variable that is one if none of the CBDs in the firm are in the compensation committee. The control variables are the same as in our compensation regressions. Our prediction based on financial expertise hypothesis is that $\beta_2, \beta_5 > 0$, but $\beta_8 = 0$. Also, our prediction based on conflicts of interest hypothesis is that $\beta_3, \beta_6 < 0$, but $\beta_9 = 0$.

[Insert Table 10 about here]

In the regression of equity compensation in Panel B of Table 10, we find that the pay is significantly sensitive to firm performance when CBDs are in the compensation committee as members. The coefficient of the interaction between ROA and $1\{CBD\ Mem\}_{t-1}$ is positive and significant at 1.7% level. Starting from the median equity compensation, an increase of ROA from the median to its 75th percentile level translates into an increase in equity compensation by $474,554 when CBD works as a member of compensation committee. The result supports

financial expertise hypothesis of CBDs. More importantly, we find that the CBDs make the equity compensation smaller when firm risk is high especially when they are either involved as compensation committee members or as the chair of the compensation committee. The coefficient of the interaction between $\sigma_{ROA_{t-1}}$ and $1\{CBD\ Mem\}_{t-1}$ is negative and significant at 0.3% level, and the coefficient of the interaction between $\sigma_{ROA_{t-1}}$ and $1\{CBD\ Chair\}_{t-1}$ is negative and significant at 10% level. Starting from the median equity compensation, an increase of ROA Volatility from the median to 75th percentile translates into a decrease in equity compensation by $371,966 when CBD works as a member of compensation committee. The economic magnitude is $382,338 when CBD works as the chair of compensation committee.

5. Summary and Conclusion

For a long time there has been a debate about whether having a banker director would induce conflicts of interest or bring financial expertise. Researchers have studied the various financial policies in which the conflicts of interest and financial expertise associated with the CBDs manifest themselves: e.g. capital structure (Sisli-Ciamarra, 2012); M&A (Hilscher & Sisli-Ciamarra, 2013); and investments (Güner, Malmendier, & Tate (2008)). Given that the key financial decision makings are actually done by the CEOs who are subject to economic incentives, our contribution to the literature is non-trivial, because we empirically find that CEO's incentives are affected by the conflicts of interest and financial expertise of the CBDs. Specifically, when the CBDs are in the compensation committee or sit as the chairman of the compensation committee the equity compensation of the CEO reduces in firm risk.

Of course, there is a limitation in our study. Due to the small number of cases in which the banker directors are present (especially ABDs), when we take firm fixed effects, some of the

results become weaker even though the signs of the coefficients are preserved. In addition, even though the threat of dismissal is a valid implicit incentive (Prendergast, 1999; Kwon, 2005), we only find evidence of conflicts of interest when we use the percentage of ABDs in the board instead of the dummy variable, which made us report the results in Appendix C. Also, since the number of cases in which CBDs are present is clearly in a declining trend in the United States due to the Sarbanes Oxley Act that encourages the firms to avoid conflicts of interest coming from the monitoring board of directors. Still, our finding has important implication for the international audience, because CBDs are much more prevalent in bank based economic system, such as Europe and Japan (Kroszner & Strahan, 2001; Levine, 2002). Lastly, it should be noted again that both conflicts of interest hypothesis and financial expertise hypothesis are not mutually exclusive, but simultaneously supported in our study. Even though majority of our regression results give supporting evidence for conflicts of interest hypothesis, the stock market event study results suggest that stock market participants perceive CBDs as having financial expertise. In the future, it would be fruitful to study the effects of CBDs upon firm innovation, because R&D investment is one of the most typical risky long-term investments that may be disproportionately favored by the equity holders instead of creditors.

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Figure 1. Industry relative leverage ratio surrounding the appointments and departures of commercial banker directors

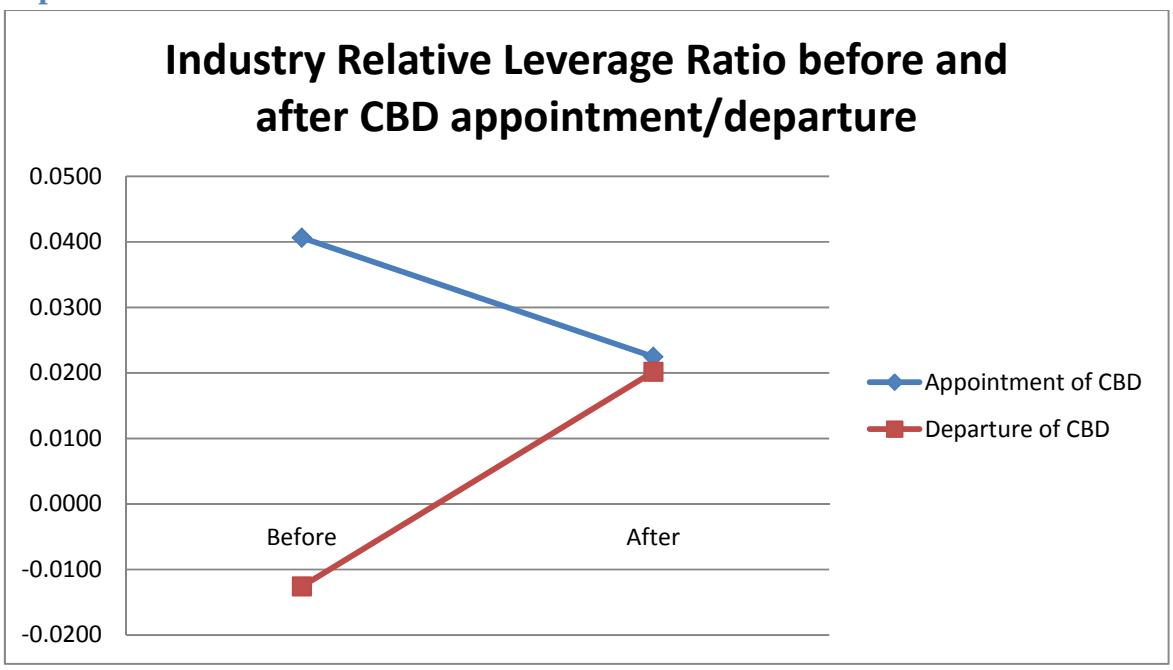

Figure 2. Industry relative VEGA of CEO compensation surrounding the appointments and departures of commercial banker directors

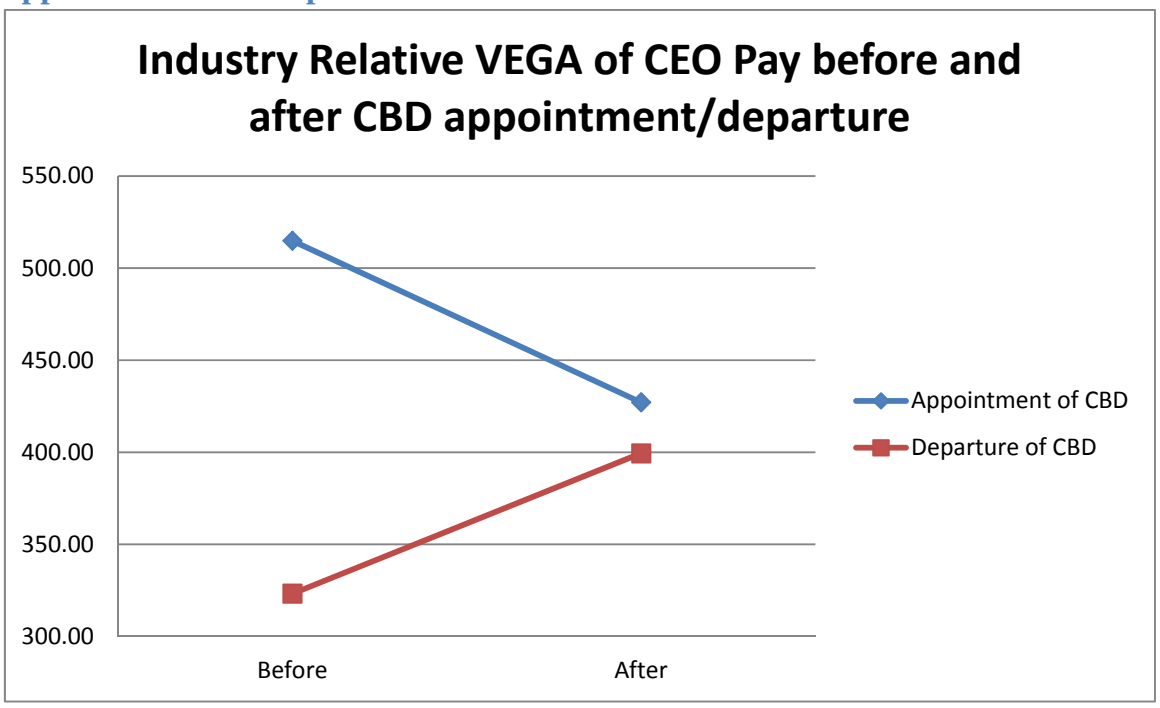

Table 1. Sample distribution by year, industry, and number of firms with banker directors

The sample period is 1999-2007. Firm-years in our sample is an intersection of Execucomp, Boardex, Compustat and CRSP. The sample consists of 8,926 firm-years, 647 of which have commercial banker directors in their firm board. We use the Boardex data to identify banker directors on board. We use Global Industry Classification Standard (GICS) developed by MSCI and Standard & Poor's to classify the firms by the industry. In each cell, the first number is the number of observations in the specific industry in the specific year. The first number in the square bracket is the number of firms that have at least one commercial banker directors in the sector in the year. The second number in the square bracket is the number of firms that have at least one affiliated banker directors in the sector in the year.

GICS Code:	10	15	20	25	30	35	45	50	Total
Year	Energy	Materials	Industrials	Consumer Discretionary	Consumer Staples	Health Care	Information Technology	Telecomm Services	
1999	69 [0,0]	84 [3,0]	187 [1,0]	227 [3,0]	53 [1,0]	127 [2,0]	226 [2,0]	16 [2,0]	989 [14,0]
2000	66 [2,1]	92 [10,2]	186 [24,3]	243 [22,2]	58 [8,2]	128 [7,0]	252 [7,0]	19 [4,2]	1044 [84,12]
2001	73 [5,2]	96 [11,4]	199 [25,3]	248 [22,2]	64 [9,1]	146 [10,1]	274 [5,0]	16 [2,2]	1116 [89,15]
2002	78 [5,1]	89 [9,3]	182 [27,5]	233 [23,2]	61 [10,1]	144 [10,2]	263 [7,0]	12 [1,1]	1062 [92,15]
2003	76 [5,2]	88 [12,5]	188 [25,5]	248 [29,4]	66 [8,0]	157 [13,1]	259 [7,0]	15 [3,1]	1097 [102,18]
2004	75 [4,1]	86 [13,5]	187 [22,4]	213 [21,2]	65 [7,2]	148 [8,0]	235 [1,0]	17 [1,1]	1026 [77,15]
2005	72 [4,1]	86 [13,5]	189 [16,1]	222 [21,1]	52 [7,2]	142 [7,0]	240 [4,0]	14 [1,1]	1017 [73,11]
2006	80 [5,3]	89 [11,5]	186 [22,4]	238 [16,1]	59 [8,3]	151 [6,0]	235 [6,0]	10 [1,0]	1048 [75,16]
2007	40 [4,4]	45 [3,1]	115 [14,3]	94 [9,2]	39 [6,4]	73 [2,0]	115 [2,0]	6 [1,1]	527 [41,15]
total	629 [34,15]	755 [85,30]	1619 [176,28]	1966 [166,16]	517 [64,15]	1216 [65,4]	2099 [41,0]	125 [16,9]	8926 [647,117]

Table 2. Summary statistics of firm characteristics / variables used

The sample period is 1999-2007. Firm-years in our sample is an intersection of Execucomp, Boardex, Compustat and CRSP. The sample consists of 8,926 firm-years, 647 of which have commercial banker directors in their firm board. The variables of firm characteristics are from Compustat and CRSP. CEO and board characteristics are from Boardex and Execucomp data. CEO compensation variables are from Execucomp data. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively. Detailed variable descriptions are in Appendix A

Variable	N	mean	Std.Dev.	p25	p50	p75
1{CBD}	8926	0.072	0.259	0	0	0
1{ABD}	8926	0.013	0.114	0	0	0
1{NABD}	8926	0.059	0.236	0	0	0
1{IBD}	8926	0.138	0.345	0	0	0
Total Compensation	8926	5388.642	11255.580	1337.256	2875.772	5997.375
Equity Compensation	8926	3290.151	10312.820	214.837	1248.522	3480.815
Salary & Bonus	8926	1374.196	1842.301	600	945	1541.416
PPS	6843	592.588	771.952	114.660	275.214	691.344
VEGA	6843	43.502	104.162	4.989	16.931	46.562
1yr Stock performance	8926	0.218	0.601	-0.128	0.119	0.404
ROA	8926	0.165	0.123	0.098	0.155	0.225
Total Assets	8926	5872.015	24839.090	446.814	1108.510	3461.579
M/B	8926	3.334	3.373	1.587	2.463	3.979
Leverage ratio	8926	0.210	0.181	0.038	0.196	0.325
Cash/total assets	8926	0.107	0.117	0.021	0.064	0.152
Firm age	8926	24.720	16.194	11	19	38
CEO Age	8926	0.064	0.245	0	0	0
1{CEO retirement age}	8926	7.757	7.754	3	5	10
ROA volatility	8926	0.019	0.023	0.008	0.013	0.022
Indep.dir.%	8926	0.687	0.145	0.625	0.684	0.800

Table 3. Compensation and banker directors

The sample period is 1999-2007. Dependent variables are one plus natural log of compensation. Total compensation is TDC1 variable from the Anncomp table of Execucomp data. Equity compensation is sum of stock and option pay, where stock is RSTKGRNT for years before 2006, and stock_awards_fv for years on and after 2006 while equity pay is defined as opt_awards_blk_value for years before 2006, and opt_awards_fv for years on and after 2006, variables all coming from the Anncomp table of Execucomp data. Cash compensation is sum of salary and bonus, where variables retrieved from the Anncomp table of Execucomp data. Industry is defined using four digit SIC code. Independent variables and control variables are lagged by one year. *, **, and *** indicate the significance at the10%, 5%, and 1% level, respectively. P-values based on heteroscedasticity robust standard errors are in every second line. Control variables are defined in Appendix A.

DEPENDENT VARIABLE:	ln(1+Total Compensation)				ln(1+Equity Compensation)				ln(1+Cash Compensation)			
1yr Stock performance	0.16	***	0.16	***	0.16	**	0.16	**	0.096	***	0.096	***
	0		0		0.014		0.014		0		0	
ROA	-0.1		-0.105		0.239		0.219		-0.204		-0.196	
	0.859		0.852		0.877		0.887		0.64		0.654	
ROA volatility	8.953	***	8.936	***	26.883	***	26.857	***	2.211		2.231	
	0.004		0.004		0.006		0.006		0.301		0.296	
Size:ln(total assets)	0.462	***	0.462	***	0.652	***	0.652	***	0.244	***	0.244	***
	0		0		0		0		0		0	
M/B	0.016	***	0.016	***	0.008		0.008		-0.007	*	-0.007	*
	0.001		0.001		0.52		0.516		0.088		0.087	
Leverage ratio	-0.151	*	-0.152	*	-0.284		-0.287		-0.104		-0.103	
	0.073		0.072		0.233		0.229		0.159		0.161	
Cash/total assets	0.204		0.204		0.046		0.044		-0.15		-0.15	
	0.107		0.108		0.901		0.905		0.184		0.183	
R&D/total assets	1.506	***	1.504	***	2.954	***	2.938	***	0.713	**	0.716	**
	0		0		0.003		0.003		0.01		0.01	
CAPEX/total assets	-0.214		-0.217		3.015	***	3.003	***	-1.361	***	-1.358	***
	0.468		0.461		0.001		0.001		0		0	
ln(firm age)	0.027		0.027		0.037		0.037		0.132	***	0.132	***
	0.169		0.169		0.554		0.551		0		0	
1{CEO retirement age}	0.004		0.004		-0.123		-0.123		0.041		0.041	
	0.92		0.917		0.374		0.374		0.281		0.281	
CEO tenure	-0.009	***	-0.009	***	-0.054	***	-0.054	***	-0.003	*	-0.003	*
	0		0		0		0		0.089		0.089	
Indep.dir.%	0.824	***	0.823	***	3.015	***	3.005	***	0.351	**	0.354	**

	0		0		0		0		0.015		0.015	
ROA*indep.dir.%	0.927		0.935		0.827		0.858		0.763		0.751	
	0.226		0.223		0.701		0.691		0.224		0.233	
ROA volatility*indep.dir.%	-10.529	**	-10.498	**	-38.337	***	-38.283	***	-4.003		-4.027	
	0.018		0.019		0.006		0.006		0.201		0.198	
1{IBD}	0.012		0.014		-0.328	*	-0.324	*	0.017		0.017	
	0.836		0.819		0.079		0.083		0.727		0.729	
ROA*1{IBD}	0.113		0.108		1.058		1.052		0.235		0.236	
	0.677		0.69		0.186		0.189		0.268		0.269	
ROA volatility*1{IBD}	1.003		0.969		8.225		8.189		-0.216		-0.223	
	0.588		0.601		0.103		0.105		0.788		0.782	
1{CBD}	0.025				0.202				-0.117			
	0.737				0.455				0.217			
ROA*1{CBD}	0.095				0.813				0.343			
	0.817				0.577				0.408			
ROA volatility*1{CBD}	-3.433				-30	***			5.268	**		
	0.281				0.006				0.023			
1{ABD}			-0.166				-0.149				-0.059	
			0.354				0.74				0.631	
ROA*1{ABD}			0.845				2.922				-0.495	
			0.425				0.326				0.523	
ROA volatility*1{ABD}			2.717				-36.783	*			10.661	**
			0.629				0.095				0.015	
1{NABD}			0.052				0.263				-0.122	
			0.517				0.386				0.268	
ROA*1{NABD}			0.006				0.588				0.409	
			0.989				0.706				0.367	
ROA volatility*1{NABD}			-4.169				-29.882	**			4.847	*
			0.199				0.011				0.051	
constant	3.647	***	3.649	***	-1.051		-1.043		4.687	***	4.684	***
	0		0		0.243		0.247		0		0	
Industry & year FE	Yes		Yes		Yes		Yes		Yes		Yes	
N	8926		8926		8926		8926		8926		8926	
Adj.R2	0.453		0.453		0.214		0.213		0.362		0.361	

Table 4. Banker directors and the sensitivity of CEO compensation to performance and volatility

The sample period is 1999-2007. PPS (CEO's pay – performance sensitivity) is measured as in Core and Guay (2002). VEGA (CEO's pay –risk sensitivity is measured following Coles, Daniel, and Naveen (2006). Industry is defined using two digit SIC code. Independent variables and control variables are lagged by one year. *, **, and *** indicate the significance at the10%, 5%, and 1% level, respectively. P-values based on heteroscedasticity robust standard errors are in every second line. Control variables are defined in Appendix A.

DEPENDENT VARIABLE:	PPS		PPS		VEGA		VEGA	
1yr Stock performance	0.166	***	0.166	***	0.098	***	0.099	***
	0		0		0		0	
ROA	2.675	***	2.659	***	0.699		0.691	
	0		0		0.24		0.245	
ROA volatility	7.395	*	7.4	*	4.49		4.533	
	0.064		0.063		0.215		0.21	
Size:ln(total assets)	0.551	***	0.551	***	0.562	***	0.563	***
	0		0		0		0	
M/B	0.056	***	0.056	***	0.053	***	0.052	***
	0		0		0		0	
Leverage ratio	-0.782	***	-0.786	***	-0.653	***	-0.652	***
	0		0		0		0	
Cash/total assets	0.37	***	0.368	***	0.184		0.184	
	0.006		0.006		0.229		0.229	
R&D/total assets	1.637	***	1.626	***	2.222	***	2.221	***
	0		0		0		0	
CAPEX/total assets	0.493		0.493		-1.166	***	-1.148	***
	0.114		0.114		0.002		0.002	
ln(firm age)	-0.189	***	-0.189	***	0.037		0.038	
	0		0		0.142		0.13	
1{CEO retirement age}	0.067		0.067		-0.056		-0.056	
	0.185		0.183		0.393		0.392	
CEO tenure	0.059	***	0.059	***	-0.004	*	-0.004	*
	0		0		0.093		0.09	
Indep.dir.%	0.23		0.222		0.254		0.252	
	0.198		0.213		0.219		0.223	
ROA*indep.dir.%	-1.315		-1.293		1.517	*	1.525	*
	0.103		0.109		0.074		0.072	
ROA volatility*indep.dir.%	-12.33	**	-12.318	**	-6.956		-7.018	
	0.033		0.033		0.187		0.183	
1{IBD}	0.07		0.072		0.089		0.086	
	0.32		0.306		0.279		0.297	
ROA*1{IBD}	-0.241		-0.243		-0.398		-0.386	
	0.45		0.446		0.252		0.267	
ROA volatility*1{IBD}	2.377		2.376		1.599		1.681	
	0.247		0.247		0.418		0.393	
1{CBD}	-0.115				0.169			
	0.287				0.281			
ROA*1{CBD}	0.694				-0.762			

	0.217			0.311			
ROA volatility*1{CBD}	0.974			-3.235			
	0.815			0.541			
1{ABD}		-0.254				0.436	
		0.211				0.122	
ROA*1{ABD}		1.971	*			-0.869	
		0.073				0.632	
ROA volatility*1{ABD}		-9.016				-22.953	*
		0.266				0.077	
1{NABD}		-0.091				0.1	
		0.447				0.573	
ROA*1{NABD}		0.547				-0.666	
		0.361				0.413	
ROA volatility*1{NABD}		2.25				0.536	
		0.619				0.927	
constant	0.556	0.56		-2.043	***	-2.048	***
	0.142	0.14		0		0	
Industry & year FE	Yes	Yes		Yes		Yes	
N	6843	6843		6843		6843	
Adj.R2	0.532	0.532		0.438		0.439	

Table 5. Banker directors and debt like compensation

Panel A. Summary Statistics

Variable	N	mean	Std.Dev.	p25	p50	p75
Inside Debt	2116	4754.102	12484.140	0	265.853	4132.120
1{Outsider CEO}	2116	0.236	0.425	0	0	0
1{Operating Income<0}	2116	0.064	0.244	0	0	0
R&D/Sales	2116	0.080	0.182	0.004	0.024	0.105
1{Tax Loss Carry Forward}	2116	0.235	0.424	0	0	0
Firm Age	2116	27.759	17.171	14	21	43
1{Founder CEO}	2116	0.124	0.330	0	0	0

Panel B. Regression Results

OLS regression is used. Dependent variable is the sum of pension value and deferred compensation in Execucomp data. Industry is defined using three digit SIC code. Independent variables and control variables are lagged by one year. *, **, and *** indicate the significance at the10%, 5%, and 1% level, respectively. P-values based on heteroscedasticity robust standard errors are in every second line. Control variables are defined in Appendix A.

DEPENDENT VARIABLE:	INSIDE DEBT							
1{CBD}	2.651	***						
	0.009							
1{ABD}			3.474	*			3.67	*
			0.097				0.079	
1{NABD}					2.287	**	2.374	**
					0.042		0.035	
CEO tenure	0.204	***	0.204	***	0.203	***	0.204	***
	0		0		0		0	
1{outsider CEO}	-1.362	**	-1.329	**	-1.352	**	-1.361	**
	0.02		0.023		0.021		0.02	
Size: ln(total assets)	2.371	***	2.384	***	2.397	***	2.364	***
	0		0		0		0	
Leverage ratio	0.344		0.483		0.355		0.361	
	0.819		0.747		0.813		0.81	
1{Operating income<0}	2.649	**	2.673	**	2.677	**	2.643	**
	0.021		0.02		0.02		0.021	
R&D/sales	0.209		0.245		0.237		0.205	
	0.89		0.871		0.875		0.892	
1{Tax Loss Carry Forward}	-0.594		-0.603		-0.607		-0.591	
	0.333		0.327		0.324		0.336	
Firm age	0.113	***	0.112	***	0.113	***	0.112	***
	0		0		0		0	
1{founder CEO}	-2.891	***	-2.885	***	-2.889	***	-2.891	***
	0.001		0.001		0.001		0.001	
Institutional ownership	-2.656		-2.622		-2.732		-2.625	
	0.122		0.127		0.112		0.127	
1{missing institutional ownership}	-1.441	**	-1.35	*	-1.477	**	-1.415	*
	0.048		0.065		0.043		0.053	
Board size	0.391	**	0.404	**	0.393	**	0.393	**
	0.014		0.011		0.014		0.014	
constant	-18.654	***	-18.993	***	-18.81	***	-18.652	***
	0.001		0.001		0.001		0.001	
Industry & year FE	Yes		Yes		Yes		Yes	
N	2116		2116		2116		2116	
Adj.R2	0.359		0.358		0.358		0.359	

Table 6. Stock market event study of appointments and departures of commercial banker directors

Expected returns are calculated based on CAPM (equal weighted and value weighted), Fama French 3 Factor model, and Carhart 4 Factor model (FF4F). Equal (value) weighted CRSP index return is used as market return for EWCAPM (VWCAPM). Estimation window is [-280,-31] trading days from the announced date. T-statistics is based on Boehmer, Musumeci, and Poulsen (1991) method. Events confounded by major corporate events, such as mergers and acquisitions, earnings announcements, restatements, and class action lawsuits, by +1/-1 trading day of the announcement are excluded from the sample.

Panel A. Appointment announcement effects

Appointments		EW CAPM	VW CAPM	FF3F	FF4F
No CBD Before	ACAR[0]	-0.42%	-0.38%	-0.33%	-0.40%
	t-stat	-0.74	-0.67	-0.58	-0.69
	N	30	30	30	30
Had CBD Before	ACAR[0]	**-0.35%**	**-0.37%**	**-0.29%**	**-0.39%**
	t-stat	**-2.37**	**-1.78**	**-1.88**	**-1.88**
	N	8	8	8	8
No EDGAR data available	ACAR[0]	-0.46%	-0.41%	-0.42%	-0.41%
	t-stat	-1.27	-1.17	-1.22	-1.18
	N	12	12	12	12

Panel B. Departure announcement effects

Departures		EW CAPM	VW CAPM	FF3F	FF4F
No CBD After	ACAR[0]	**-0.75%**	**-0.88%**	**-0.93%**	**-0.85%**
	t-stat	**-2.46**	**-2.65**	**-2.87**	**-2.59**
	N	10	10	10	10
Have CBD after	ACAR[0]	0.09%	0.08%	0.01%	0.03%
	t-stat	0.11	0.11	0.02	0.05
	N	8	8	8	8
No EDGAR data available	ACAR[0]	-1.82%	-1.44%	-1.79%	-1.31%
	t-stat	N/A	N/A	N/A	N/A
	N	1	1	1	1

Table 7. CAR regressions

Dependent variable is the abnormal return on the day of the announcement (CAR[0]), based on CAPM (capital asset pricing model), using equal weighted market index of CRSP. The result is robust when we use value weighted index return or S&P500 index return. The result is also robust when we use market model using S&P500 index return or Fama-French 3 factor model or Fama-French 4 factor model. The estimation window is [-280,-31] trading days before the event. Idiosyncratic risk is the root mean squared error of market model using monthly S&P500 index return over the past three years.

Panel A. Announcement of the appointments of the commercial banker directors

	All		No CBD Before		The Others	
Idiosyncratic risk	0.034	***	0.031	***	0.022	
	(0.00)		(0.01)		(0.64)	
1yr stock performance	-0.007		-0.005		-0.011	***
	(0.36)		(0.78)		(0.00)	
Size:ln(total assets)	-0.001		-0.002		0.001	
	(0.72)		(0.66)		(0.59)	
Leverage ratio	0.011		0.011		0.007	
	(0.38)		(0.69)		(0.40)	
Cash flow	-0.012		-0.013		-0.008	*
	(0.19)		(0.32)		(0.07)	
constant	0.001		0.013		-0.008	
	(0.92)		(0.72)		(0.43)	
N	48		28		20	
Adj.R2	0.11		0.024		0.253	

Panel B. Announcement of the departures of the commercial banker directors

	All		No CBD After		The Others	
Idiosyncratic risk	-0.037		0.015		0.16	
	(0.63)		(0.60)		(0.54)	
1yr stock performance	0.003		-0.016	**	0.113	
	(0.88)		(0.01)		(0.43)	
Size:ln(total assets)	0.005		0		0.018	
	(0.18)		(0.71)		(0.22)	
Leverage ratio	-0.022		-0.096	***	0.054	
	(0.70)		(0.00)		(0.84)	
Cash flow	-0.002		-0.016	***	-0.009	
	(0.78)		(0.00)		(0.90)	
constant	-0.036		0.027		-0.19	
	(0.36)		(0.12)		(0.14)	
N	19		10		9	
Adj.R2	-0.005		0.783		0.082	

Table 8. Leverage ratio and VEGA surrounding commercial banker directors' appointments and departures.

Panel A. Industry relative leverage ratio surrounding the appointments and departures of commercial banker directors

	Before	After	Chg.Ind.Rel.Leverage	p-value of t-test	N
Appointment of CBD	0.0406	0.0225	-0.0214	0.1353	29
Departure of CBD	-0.0126	0.0202	0.0327	**0.0852***	10
difference			-0.0541		
p-value of t-test			**0.0654***		

Panel B. Industry relative VEGA of CEO compensation surrounding the appointments and departures of commercial banker directors

	Before	After	Chg.Ind.Rel.VEGA	p-value of t-test	N
Appointment of CBD	514.84	427.11	-38.86	**0.0945***	29
Departure of CBD	323.25	399.42	76.18	0.15	10
difference			-115.04		
p-value of t-test			**0.0378****		

Table 9. Selection bias issue: Determinants of having banker directors

Probit regressions are used. Dependent variables are the dummy variables that are one if the company has CBD in the first column (ABD in the second column and NABD in the third column). Independent variables and control variables are trailing three-year moving average. Industry is defined using two digit SIC code. *, **, and *** indicate the significance at the10%, 5%, and 1% level, respectively. P-values based on heteroscedasticity robust standard errors are in every second line. Control variables are defined in Appendix A.

DEPENDENT VARIABLE:	1{CBD}		1{ABD}		1{NABD}	
STDebt/LTDebt	-0.231	**	-0.65	**	-0.161	
	0.021		0.021		0.117	
Size:ln(total assets)	0.094	***	0.159	***	0.069	***
	0		0.001		0.004	
Leverage ratio	0.329	**	-0.572		0.453	***
	0.026		0.162		0.002	
Cash/Total assets	-0.785	**	-2.785	***	-0.489	
	0.017		0.004		0.141	
stock return volatility	-3.525		-7.877		-3.292	
	0.308		0.372		0.356	
M/B	0.005		-0.014		0.007	
	0.55		0.427		0.354	
R&D/Total assets	-1.034	*	-3.082	**	-0.609	
	0.056		0.02		0.27	
KMV EDF	-0.062	***	-0.159	*	-0.053	***
	0		0.053		0.002	
credit rating	0.008		0.014		0.004	
	0.507		0.594		0.738	
1{missed credit rating}	0.194		0.402		0.101	
	0.225		0.265		0.544	
ratio of insiders	-0.177		0.693	**	-0.337	*
	0.287		0.041		0.056	
board size	0.098	***	0.057	**	0.094	***
	0		0.019		0	
constant	-7.507		-11.734		-7.079	
	0.935		0.988		0.938	
Industry & Year FE	Y		Y		Y	
N	9745		5487		9667	
Pseudo.R2	0.157		0.216		0.137	

Table 10. Compensation Committee membership/chairmanship of CBDs and CEO compensation

The sample period is 1999-2007. Total compensation is TDC1 variable from the Anncomp table of Execucomp data. Equity compensation is the sum of stock and option pay, where stock is RSTKGRNT for years before 2006, and stock_awards_fv for years on and after 2006 while equity pay is defined as opt_awards_blk_value for years before 2006, and opt_awards_fv for years on and after 2006, variables all coming from the Anncomp table of Execucomp data. PPS (CEO's pay – performance sensitivity) is measured as in Core and Guay (2002). VEGA (CEO's pay –risk sensitivity is measured following Coles, Daniel, and Naveen (2006). Industry is defined using four digit SIC code. Independent variables and control variables are lagged by one year. *, **, and *** indicate the significance at the10%, 5%, and 1% level, respectively. P-values based on heteroscedasticity robust standard errors are in every second line. Control variables are defined in Appendix A.

Panel A. Compensation committee involvement (in the regression subsample)

CBD is the Chair of compensation committee	1.03%
CBD is only a member of compensation committee	2.43%
CBD is not in compensation committee	3.09%
Total firm years that has CBDs in the regressions below	6.54%

Panel B. Regressions

DEPENDENT VARIABLE:	ln(1+Total Comp)	ln(1+Equity Comp)	
1{CBD Mem}	0.107	-0.32	
	0.336	0.389	
ROA*1{CBD Mem}	-0.496	4.599	**
	0.408	0.017	
ROA volatility*1{CBD Mem}	-4.724	-39.264	***
	0.217	0.003	
1{CBD Chair}	-0.18	0.692	
	0.387	0.358	
ROA*1{CBD Chair}	0.748	-4.091	
	0.508	0.285	
ROA volatility*1{CBD Chair}	0.175	-40.585	*
	0.984	0.1	
1{CBD No Mem.}	0.153	0.428	
	0.128	0.272	
ROA*1{CBD No Mem.}	-0.328	0.179	
	0.564	0.926	
ROA volatility*1{CBD No Mem.}	-5.739	-29.097	
	0.255	0.217	
Other controls & fixed effects	Yes	Yes	
N	8860	8860	
Adj.R2	0.45	0.213	

Appendix A. Variable Definition

1{ABD}	Dummy variable that is one if the firm has an affiliated commercial banker director on board and zero otherwise.
1{CBD}	Dummy variable that is one if the firm has a commercial banker director on board and zero otherwise.
1{NABD}	Dummy variable that is one if the firm has a non-affiliated commercial banker director on board and zero otherwise.
1{CBD Mem}	Dummy variable that is one if the firm's CBD is only a member of compensation committee and zero otherwise
1{CBD No Mem}	Dummy variable that is one if the firm's CBD does not belong to the compensation committee and zero otherwise.
1{CBD Chair}	Dummy variable that is one if the firm's CBD is the chair of compensation committee and zero otherwise
log(1+total compensation)	Natural log of one plus TDC1 from Anncomp table of Execucomp data. TDC1 is the sum of salary, bonus, other annual compensation, total value of restricted stocks granted, total value of stock options granted (using Black-Scholes formula), long-term incentive payouts, and all other total compensation.
log(1+equity compensation)	Natural log of one plus equity compensation, where equity compensation is the sum of the restricted stocks granted and the stock options granted.
log(1+cash compensation)	Natural log of one plus salary plus bonus from Anncomp table of Execucomp data
1 {has IBD}	Dummy variable that is one if the firm has an investment banker director on board and zero otherwise.
1yr excess stock return	Annualized monthly stock returns subtracted by CRSP value-weighted index
ROA	OIBDP (Operating income before depreciation) divided by AT (total assets) in annual Compustat
ROA volatility	Standard deviation of prior 5 years of quarterly ROA's, where ROA is calculated as oibdpq / atq from fundq table of Compustat data.
Size: log(Total Assets)	Natural log(total assets), where total assets is AT variable from Compustat data
M/B	Market value of equity (PRCC_F*CSHO) divided by book value of equity (CEQ)
Leverage ratio	Total interest bearing debt divided by total assets
Cash/total assets	Cash divided by total assets at the end of the fiscal year
R&D/total assets	R&D expense (XRD) divided by total assets (AT)
CAPEX/total assets	Capital expenditure (CAPX) divided by total assets
ln(firm age)	Natural log of firm age. Firm age is measured as the number of years since the company's data was available in Compustat
1 {CEO retirement age }	Dummy variable, where the value equals 1 when there CEO age is between 63 and 65 years old, and zero otherwise
CEO tenure	The number of years the person has been in the position of CEO in the same company. If missing, we hand collected using Google, Forbes, and Factiva.
Indep.dir.%	Proportion of outside directors out of the total number of board members

PPS	CEO's pay–performance sensitivity is measured as in Core and Guay (2002). It measures the dollar value change of CEO's total compensation when the stock return of the company changes by one percentage point.
VEGA	CEO's pay–risk sensitivity is measured as in Coles, Daniel, and Naveen (2006). It measures the dollar value change of CEO's total compensation when the volatility of the stock return changes by one percentage point.
INSIDE DEBT	Inside debt is the sum of pension compensation and deferred compensation of the CEO
1{outsider CEO}	Dummy variable that is one if the CEO was an outsider when appointed. We follow Parrino (1997) in defining the outsider. A CEO is an outsider if the person was not employed by the same company one year before the announcement of the appointment of the CEO.
1{Operating income<0}	Dummy variable that is one if the operating income of the company is negative in the fiscal year
R&D/sales	R&D expense (XRD) divided by total sales (REVT)
1{Tax Loss Carry Forward}	Dummy variable that is one if the company had negative income before tax up to three years before the fiscal year.
1{Founder CEO}	Dummy variable that is one if the CEO is a founder of the company and zero otherwise. It was constructed by hand collecting the information about the CEO using various sources including Forbes, Fortune, Factiva, Google, and company website search. We tracked down the history of the company and identify the names of the founders, and identify a CEO as a founder if his full name is the same as one of the founders.
Institutional ownership	Aggregate ownership by the institutional investors captured in Thomson 13F filing database.
Board size	Natural log of one plus the number of board members of the company.
Idiosyncratic risk	Idiosyncratic risk is the root mean squared error of market model using monthly S&P500 index return over the past three years
Cash flow	Net income plus depreciation divided by lagged property, plant, and equipment.
ln(tangible assets)	Natural log of tangible assets, which is the property plant and equipment.
stock return volatility	Standard deviation of daily stock returns over the fiscal year
KMV EDF	Expected Default Frequency estimated by Moody's KMV
credit rating	Credit rating by S&P is transformed as numbers: better credit quality takes up higher number. We assign 22 to AAA rating and 0 to CCC rating.
ratio of insider	The proportion of insiders out of the total number of board members
1{Chairman=CEO}	Dummy variable that is one of the CEO has chairmanship
1{high CEO ownership}	Dummy variable that is one if the equity ownership of the CEO is higher than or equal to 5%.
IBD%	Proportion of investment banker directors out of total number of board members

CBD%	Proportion of commercial banker directors out of total number of board members
ABD%	Proportion of affiliated commercial banker directors out of total number of board members
NABD%	Proportion of non-affiliated commercial banker directors out of total number of board members
STDebt/LTDebt	Short term debt divided by long term debt

Appendix B. Link between BoardEx and Compustat databases and identifying executives

The problem with BoardEx data is that only less than 7,185 firm names out of 601,442 organization names are matched with the Compustat database in a one-to-one basis through the CIK number. BoardEx is constructed based on the spelling of the names of the organizations (companies) each person claims to have worked in their resume. However, the persons may spell out the same company in a different manner. For example, one may claim to have worked for "Bank of America N.A.", while another may claim to have worked for "Bank of America NT&SA" even though they mean the same organization. BoardEx assigns different organization ID for these two, and only one is linked to Compustat data. Likewise, one slightly different name spelling of the same company would fail to have a matching CIK.

Since BoardEx is only partially merged with Compustat, I ran exhaustive fuzzy text/string matches to find firm identification numbers from all the databases to which the school subscribes. I ran multiple rounds of string matching using the following databases in a recursive manner in the sense that whatever is left over from the current matching round with a certain database is used again in the next matching round with the next database. These databases include Compustat North America, Compustat Global, CRSP, Dealscan, Bank Regulatory Database by Chicago FED (find Bank Holding Company Names), Jay Ritter's IPO Adviser ranking table, SDC Platinum (M&A/IPO adviser names). I use the 'compged' function of SAS.

I obtain identification numbers for 40,434 organization names in BoardEx from any of the databases listed above, and I am then able to identify whether the company is a commercial bank or investment bank. For these 40,434 matched names, I hand-checked whether the two company names (one from BoardEx and the other from one of the listed databases) really are the same business identity using Businessweek and Hoovers databases and checking their websites. In checking whether the companies really are a bank holding company, I use the FDIC's Bankfind database on FDIC's website. After this procedure, 39,370 of the BoardEx company names are matched with the ID numbers of one of the databases above.[15] Focusing on the GVKEYs, 27,035 unique GVKEYs in the Compustat universe are matched with 33,030 firm names in BoardEx, which is 4.6 times the number of initial matches through CIK.

[15] This number means that 6.55% different organization names in BoardEx are linked to standard databases. The reason for such a small matching result is that most of the organizations are non-profit organizations such as universities, clubs, government organizations, international organizations, etc.

Appendix C. CEO turnover regressions

While CEO compensation is an explicit incentive, the threat of dismissal is an implicit incentive to make the CEO to exert his/her best effort (Prendergast, 1999; Kwon, 2005). Therefore, in this section, we investigate whether the banker directors make the implicit incentive of the CEO sensitive to firm performance (financial expertise hypothesis) or firm risk (conflicts of interest hypothesis). We have the two empirical specifications of logistic model.

$$Prob(Forced\ CEO\ turnover_t) = \beta_1\%CBD_{t-1} + \beta_2\%CBD_{t-1} * ROA_{t-1} + \beta_3\%CBD_{t-1} * \sigma_{ROA_{t-1}} + controls_{t-1} + \epsilon \ldots\ldots\ldots (A.1)$$

$$Prob(Forced\ CEO\ turnover_t) = \beta_1\%ABD_{t-1} + \beta_2\%ABD_{t-1} * ROA_{t-1} + \beta_3\%ABD_{t-1} * \sigma_{ROA_{t-1}} + \beta_4\%NABD_{t-1} + \beta_5\%NABD_{t-1} * ROA_{t-1} + \beta_6\%NABD_{t-1} * \sigma_{ROA_{t-1}} + controls_{t-1} + \epsilon \ldots\ldots\ldots (A.2)$$

%CBD, $\%ABD_t$, and $\%NABD_t$ are the percentage of CBD, ABD, and NABD, respectively, among all directors.[16] Following CEO turnover literature (Parrino, 1997; Huson, Parrino, & Starks, 2001; Kaplan & Minton, 2008; Jenter & Kanaan, 2015; Guo & Masulis, 2015), our control variables are as follows: (1) one year stock performance; (2) ROA; (3) ROA Volatility; (4) firm size; (5) dummy variable that is one if the CEO age is retirement age (62~65); (5) CEO tenure; (6) dummy variable that is one if the CEO is also the chairman of the board; (7) dummy variable that is one if the CEO has equity ownership of the firm greater than 5%; (8)

[16] We also try the logit regressions with 1{CBD}, 1{ABD}, and 1{NABD}, instead of %CBD, %ABD, %NABD, respectively, but the results are weaker because of the rarity of the events of forced CEO turnover and the cases of having CBDs.

percentage of independent directors out of the total board members; (9) percentage of investment banker directors out of total board members; (10) interactions of ROA with (8) and with (9); (11) interactions of ROA Volatility with (8) and (9); (12) industry fixed effects; and (3) year dummies. Our key prediction based on financial expertise hypothesis is that $\beta_2 < 0$ in equation (A.1.), and $\beta_2, \beta_5 < 0$ in equation (A.2.). In addition, our prediction based on conflicts of interest hypothesis is that $\beta_3 > 0$ in equation (A.1.), and $\beta_3, \beta_6 > 0$ in equation (A.2.). The results are shown in Appendix Table C1.

[Appendix Table C1 about here]

We find that the coefficient of %ABD is negative and significant, which may suggest that ABDs are appointed where CEO's are difficult to be replaced in the first place. For example, ABDs are appointed for larger and stable companies, and those companies are more likely to have longer CEO tenure. Also, we find that the interaction between %ABD and ROA is negative and significant at 2% level, which supports the hypothesis that ABDs bring more financial expertise (stronger turnover-performance sensitivity) in giving implicit incentives to the CEO. We also find that the coefficient of ROA Volatility and %ABD is positive and statistically significant at 1.4% level. This supports the hypothesis that the threat of dismissals given to the CEO by the ABDs suffer from conflicts of interest coming from the creditor bank. Because of the small number of cases of having ABDs and the small number of cases of having forced CEO turnover, the coefficients are large in magnitude.

Appendix Table C1. CEO turnover and CBDs

The sample period is 1997-2008. The dependent variable is forced turnover, defined as one if there is a forced turnover and zero otherwise. We follow Parrino (1997) to classify the CEO turnovers into forced or voluntary. Logit regressions are performed with industry (four digit SIC code) and year dummies included in all specifications. Independent variables and control variables are lagged by one year. *, **, and *** indicate the significance at the 10%, 5%, and 1% level, respectively. P-values based on heteroscedasticity robust standard errors are in every second line. Control variables are defined in Appendix A. CEO turnover data before 2001 are provided by Dirk Jenter, used in Jenter and Kanaan (2015). We hand collected CEO turnover data from year 2002 to 2008 in a manner consistent with Jenter and Kanaan (2015) by investigating any name changes of the person with the annual CEO title in the Execucomp data set.

DEPENDENT VARIABLE:	1{CEO forced out}							
1 year stock return	-1.17	***	-1.154	***	-1.172	***	-1.154	***
	0		0		0		0	
ROA (raw)	-1.025	*	-1.57	**	-1.028	*	-1.582	**
	0.093		0.017		0.092		0.017	
ROA volatility	-0.009		9.778	**	-0.191		10.265	**
	0.997		0.045		0.937		0.046	
Size: ln(total assets)	0.024		0.023		0.025		0.025	
	0.618		0.64		0.612		0.609	
1{CEO retirement age}	-0.946	**	-0.919	**	-0.948	**	-0.93	**
	0.013		0.015		0.012		0.014	
CEO tenure	-0.037	***	-0.039	***	-0.037	***	-0.038	***
	0.002		0.002		0.002		0.002	
1{Chairman=CEO}	-0.486	***	-0.482	***	-0.486	***	-0.49	***
	0		0		0		0	
1{high CEO ownership}	0.199		0.211		0.195		0.204	
	0.581		0.558		0.588		0.572	
Indep.dir.%	0.613		0.518		0.619		0.559	
	0.304		0.388		0.299		0.353	
ROA*Indep.dir.%	-5.542		-5.006		-5.557		-5.023	
	0.326		0.377		0.327		0.381	
ROA volatility*indep.dir.%	-17.156		-16.882		-16.895		-16.591	
	0.175		0.182		0.18		0.19	
IBD%	0.425		0.458		0.443		0.455	
	0.786		0.77		0.777		0.771	
ROA*IBD%	-9.722		-10.835	*	-9.667		-11.015	*
	0.157		0.089		0.171		0.092	
ROA volatility*IBD%	-27.221		-16.424		-25.453		-19.371	
	0.696		0.82		0.722		0.781	
CBD%	1.83							
	0.302							

ROA*CBD%	5.266							
	0.695							
ROA volatility*CBD%	47.054							
	0.527							
ABD%			-93.277	**			-96.523	**
			0.036				0.04	
ROA*ABD%			-512.101	**			-527.01	**
			0.02				0.021	
ROA volatility*ABD%			8398.886	**			8617.898	**
			0.014				0.017	
NABD%					2.576		2.649	
					0.139		0.129	
ROA*NABD%					5.899		6.634	
					0.658		0.619	
ROA volatility*NABD%					21.256		20.835	
					0.788		0.79	
constant	-2.259	*	-2.384	*	-2.262	*	-2.374	*
	0.071		0.057		0.071		0.058	
Industry & Year FE	Yes		Yes		Yes		Yes	
N	8075		8075		8075		8075	
Pseudo.R2	0.121		0.124		0.121		0.125	

Appendix D. Classifying forced versus voluntary CEO turnover following Parrino (1997)

For each turnover event, we search corresponding newspaper articles in Factiva. A succession is classified as forced if the news articles report that the CEO is fired, forced, ousted, or departed due to unspecified policy differences. For the rest of the transitions, the CEO is considered to be forced out if the incumbent CEO is under the age of 60 and the news articles do not report the reason for the departure such as involving death, poor health, or accepting another position (elsewhere or within the firm). In addition, even though the CEO is said to have accepted a position outside the firm, if the firm is not a public company, but a private consulting business, the incidence is considered to be a forced turnover because the move is from a big public corporation (Execucomp firms are typically the top 1500 largest public firms in the US) to a smaller private company. However, moves to the federal or local government are not classified as forced. A "retirement" announcement of a CEO younger than 60 is considered to be a forced turnover if the succession plan was not announced at least six months prior to the actual transition. Even for departures that were classified as forced, we reclassify them as voluntary if the departure is due to some undisclosed personal or business reasons that are unrelated to the firm's activities. In total, we find 738 forced turnover and 2161 voluntary turnover over the sample period.

Appendix E. Compensation committee membership/chairmanship of ABD, NABD, and CEO compensation

This is an extension of Section 4.7. We replace the CBD related variables with ABD and NABD related variables Then we construct equivalent interactions with ROA and ROA volatility. The sample period is 1999-2007. Equity compensation is sum of stock and option pay, where stock is RSTKGRNT for years before 2006, and stock_awards_fv for years on and after 2006 while equity pay is defined as opt_awards_blk_value for years before 2006, and opt_awards_fv for years on and after 2006, variables all coming from the Anncomp table of Execucomp data. Industry is defined using four digit SIC code. Independent variables and control variables are lagged by one year. *, **, and *** indicate the significance at the10%, 5%, and 1% level, respectively. P-values based on heteroscedasticity robust standard errors are in every second line. Control variables are the same as in Table 3, and the definition of the variables are in Appendix A.

DEPENDENT VARIABLE:	ln(1+Equity Comp)	
Other controls	Yes	
1{ABD in Comp. Comm. only}	1.59	***
	0.008	
ROA*1{ABD in Comp. Comm. only}	-6.424	*
	0.076	
ROA volatility*1{ABD in Comp. Comm. only}	-11.758	
	0.755	
1{NABD in Comp. Comm. only}	-0.43	
	0.304	
ROA*1{NABD in Comp. Comm. only}	5.055	**
	0.012	
ROA volatility*1{NABD in Comp. Comm. only}	-38.551	***
	0.005	
1{ABD is Comp. Comm. Chair}	-3.961	
	0.112	
ROA*1{ABD in Comp. Comm. Chair}	27.254	
	0.325	
ROA volatility*1{ABD in Comp. Comm. Chair}	-119.027	
	0.655	
1{NABD is Comp. Comm. Chair}	1.799	**
	0.012	
ROA*1{NABD in Comp. Comm. Chair}	-7.769	**
	0.031	
ROA volatility*1{NABD in Comp. Comm. Chair}	-67.903	***
	0.008	
1{ABD not in Comp. Comm.}	-0.021	
	0.976	
ROA*1{ABD not in Comp. Comm.}	1.777	
	0.7	
ROA volatility*1{ABD not in Comp. Comm.}	-40.639	
	0.224	
1{NABD not in Comp. Comm.}	0.422	
	0.335	
ROA*1{NABD not in Comp. Comm.}	0.057	

	0.977
ROA volatility*1{NABD not in Comp. Comm.}	-27.154
	0.278
N	8860
Adj.R2	0.213