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Bankers on the Board and CEO Turnover*

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Abstract

The governance literature finds that independent directors from lending banks (commercial bank directors or CBDs) bring both financial expertise and conflict of interest between shareholders and debt holders. We examine how the presence of CBDs affects the implicit incentive of CEO turnover. Using BoardEx and DealScan data, we hypothesize and find that CBDs make the CEO turnover more sensitive to both performance and risk. Post-CEO turnover analysis reveals that firm performance improves and risk decreases in the presence of CBDs.

Keywords CEO turnover; Banker directors; Board of directors; Commercial bankers; Corporate governance; Implicit incentive

JEL Classification: G34

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1. Introduction

Boards of directors play an important role in monitoring and advising top managers (Adams *et al.*, 2010). Above all, independent directors from commercial banks (commercial bank directors or CBDs) receive much more attention from economists (Black and Scholes, 1973; Booth and Deli, 1999; Kroszner and Strahan, 2001; Güner *et al.*, 2008; Mitchell, 2015; Şişli-Ciamarra, 2012; Hilscher and Şişli-Ciamarra, 2013; Kang and Kim, 2017; Kang *et al.*, 2019), because they bring both financial expertise and conflicts of interest between shareholders and debt holders.

Through career training in commercial banking, CBDs become experts in risk management (Weinstein and Yafeh, 1998; John *et al.*, 2008) and in processing financial accounting information (Fama and Jensen, 1983; Weisbach, 1988). While CBDs have a fiduciary duty to protect the shareholders' interests that are by definition more risk-tolerant than debt holders', they (especially those from lending banks) have an equally important fiduciary duty to their employing banks to minimize firm risk (Jensen and Meckling, 1976; Hilscher and Şişli-Ciamarra, 2013; Erkens *et al.*, 2014; Kang and Kim, 2017). Kang and Kim (2017) find that CBDs influence a CEO's compensation structure to be less sensitive to firm risk. While compensation is an explicit incentive, the threat of dismissal is an implicit incentive to extract the best efforts of the agent (Gibbons and Murphy, 1990; Kwon, 2005; Hallman *et al.*, 2011). No paper has investigated the impact of CBDs on CEO turnover. Hence, we fill this gap in the literature.

If CBDs bring more financial expertise to the board, CEO dismissal would be more sensitive to firm performance (the financial expertise hypothesis). On the other hand, if CBDs bring conflicts of interest to minimize firm risk, CEO turnover would be more sensitive to firm risk (the conflict of interest hypothesis). These two hypotheses are not necessarily mutually exclusive, and testing them would reveal a complete picture of the impact of CBDs on CEO incentives.

Using the intersection of BoardEx, DealScan, and CRSP/Compustat data from 1999–2008, we find that CEO turnover is more sensitive to performance when CBDs are present. The effect is stronger for affiliated banker directors (ABDs). While the average investor response to forced CEO turnover news is negative, such announcement return is significantly positive if CBDs are present, and even more so if prior performance was poor. Additionally, we track down the cases of forced CEO turnovers and analyze subsequent performance under new CEOs. We find significant improvements in operating performance for firms with CBDs, and this is especially true when prior performance was poor. These results coherently support the financial expertise hypothesis.

We also find supporting evidence for the conflict of interest hypothesis. The likelihood of CEO dismissal increases as firm risk increases, especially when ABDs are present. Our post-turnover risk analysis shows that for firms with CBDs, idiosyncratic risk after the CEO turnover year further decreases when the prior risk is high.

Overall, we find that CBDs, especially ABDs, are a double-edged sword in providing a CEO's implicit incentive. Their financial expertise makes CEO turnover more sensitive to firm performance, but their conflict of interest makes the turnover sensitive to risk, which may be against shareholders' interests.

The remainder of this paper is organized as follows: Section 2 provides a literature review and the main hypotheses. Section 3 describes our data and empirical methods. Section 4 presents the main empirical findings and Section 5 concludes our study.

2. Literature and Hypotheses Development

Previous research suggests that effective boards show higher sensitivity to performance when firing a CEO (see Weisbach, 1988; Dahya *et al.*, 2002; Adams and Ferreira, 2009; Dimopoulos and Wagner, 2016; Agrawal and Nasser, 2019). Wang *et al.* (2015) suggest that directors' industry expertise improves the board's oversight role, which increases CEO turnover–performance sensitivity. Since commercial bankers amass greater financial expertise and better debt market expertise (Fama, 1980; Diamond, 1984; Booth and Deli, 1999; Byrd and Mizruchi, 2005; Dittmann *et al.*, 2010), we predict that these CBDs are better positioned to effectively work as monitors, leading CEO turnovers to be more sensitive to firm performance (Kang and Shivdasani, 1995). In addition, ABDs show intensive monitoring due to their affiliation with their own firm (Kang and Kim, 2017). Therefore, we predict the following:

Hypotheses 1. For firms with CBDs, forced turnover is more sensitive to firm performance and this effect would be more pronounced as there are more ABDs.

Bankers are different from entrepreneurs in perceiving and managing risks (Sarasvathy *et al.*, 1998). They focus more on controlling risks and try to avoid situations where they may face higher levels of risk (Mitchell, 2015; Kang and Kim, 2017; Kang *et al.*, 2019). This is because an increase in a bank's tail risk imposes more hardship and costs on its operation (Stulz, 2015; Srivastav *et al.*, 2017). Thus, a banker's sensitivity to firm risk even as a board member may be a natural response. Hence, ABDs should be particularly sensitive to risk measures for CEO turnover decisions, which leads to our second prediction:

Hypotheses 2. ABDs will be more sensitive to firms' risks on CEO turnover.

With respect to CEO turnover announcement, stock prices rise when forced dismissals are congruent with shareholders' interests (Huson *et al.*, 2001). And this effect is stronger when CEOs are dismissed in firms with poor prior firm performance or with good corporate governance (Furtado and Rozeff, 1987; Weisbach, 1988; Bonnier and Bruner, 1989; Huson *et al.*, 2001). We predict that such a forced turnover announcement effect will be more positive for firms with CBDs because CBDs provide industry-specific financial expertise, are trained to monitor actively,

and can make better decisions with private information (Diamond, 1984; Fama, 1985; Booth and Deli, 1999; Byrd and Mizruchi, 2005; Dittmann *et al.*, 2010). Hence, if the market perceives CBDs as better monitors and fire CEOs with poor firm performance, the stock market would react *more* favorably to the news. We therefore formalize Hypotheses 3 and 4 as follows:

Hypotheses 3. When CEO turnover is announced, firms with more CBDs will result in a more positive stock market reaction compared to firms with fewer or no CBDs.

Hypotheses 4. For firms with CBDs, the market perceives forced turnover news more positively when prior performance is poor.

Kang and Shivdasani (1995) and Dimopoulos and Wagner (2016) find that firm performance improves after a CEO is dismissed following lackluster firm performance. Likewise, if CBDs dismiss CEOs to correct prior poor firm performance (i.e., if our Hypothesis 4 holds), firm post-performance should improve after the CEO turnover. Therefore, our Hypothesis 5 is stated as follows:

Hypotheses 5. After the CEO turnover, firm performance improves more for firms with CBDs than for those without CBDs. This enhancement in firm performance will be stronger for firms with CBDs when the firm's prior performance was poor.

3. Data and Empirical Methods

3.1. Data

Board of directors data were obtained from BoardEx.[1] After running extensive text-matching algorithms, we obtained an exhaustive link of 27 034 unique firms that could be matched with Compustat.[2] We identified CBDs by following Güner *et al.* (2008) in defining an ABD who works for a bank that currently has or had a loan exposure to the monitored company in at least one point in time during its history. Firm characteristic variables are from CRSP and Compustat while CEO characteristics were obtained from Execucomp.[3] KMV expected default frequency measures

[1]Boardex is a database that contains information on more than 300 000 unique board members of publicly listed companies in the United States and around the world.

[2]The BoardEx database provides limited one-to-one link information for 8622 unique firms in Compustat via CIK. The BoardEx ID is unique depending on the spelling of a company's name that each director claims. In this respect, multiple company IDs in BoardEx are not matched with the same company in Compustat, leading us to run extensive text matching algorithms.

[3]If an observation was missing, we manually filled it by reading news articles obtained from Factiva.

the default probability during the forthcoming year which we obtained from Moody's KMV.

CEO turnover data on and before 2001 were provided by Dirk Jenter.[4] We hand-collected CEO turnover data from 2002–2008, following Jenter and Kanaan (2015). We followed Parrino (1997) to identify whether a CEO turnover was forced or voluntary, using Factiva (see Bushman *et al.*, 2010; Kaplan and Minton, 2012; Jenter and Kanaan, 2015).[5] Voluntary turnovers produce mixed or sometimes insignificant results due to various unobservable reasons behind the turnovers (Huson *et al.*, 2001). Thus, our paper, along with the extant literature, focuses only on forced CEO turnovers.

3.2. Empirical Method

In all multivariate analyses, all continuous variables are winsorized at 1% and 99% levels to mitigate possible distortion caused by outliers. To proxy firm performance, we use industry median-adjusted ROA.[6] Industry is classified using the Fama-French 49-industry classification using the current SIC code.[7] We use several risk measures for firm risk: ROA risk, idiosyncratic risk, stock return risk, and KMV expected default risk. ROA risk is the standard deviation of a firm's prior 5 years of industry median-adjusted quarterly ROA. Idiosyncratic risk is constructed by retrieving the root mean squared error after regressing daily stock returns on the CRSP value-weighted index (Bushman *et al.*, 2010). Stock return risk is the standard deviation of a firm's annualized daily stock return. KMV expected default risk (KMV EDF) is provided by Moody's, which measures a firm's default probability in the forthcoming year.

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[4]The same data that were used in Jenter and Kanaan (2015).

[5]Specifically, when searching newspaper articles in Factiva, we classified a succession as a forced turnover if the news articles reported that the CEO was fired, forced out, ousted, or departed due to unspecified policy differences. For the remainder of the transitions, if the incumbent CEO was under the age of 60 and the news articles did not report the reason for the departure such as death, poor health, or accepting other positions elsewhere or within the firm, we classified such cases as forced turnovers. In addition, if the departing CEO's accepted new position was with a private consulting business, such a case was considered to be a forced turnover because the move was from a big public corporation (typically the top 1500 largest public firms in the United States) to a smaller private company. However, moves to federal or local government were not classified as forced. In addition, the "retirement" announcement of a CEO younger than 60 years old was considered to be a forced turnover if the succession plan had not been announced at least 6 months prior to the actual transition.

[6]In our untabulated analyses, we also use the annual excess stock return, which is calculated by annualizing 12 months of monthly stock returns and subtracting the CRSP value-weighted index, and find qualitatively similar results.

[7]For all missing SIC codes, the industry is defined as industry 49.

Prior research shows that larger boards and/or boards where the CEO is also the chairman of the board (Fama and Jensen, 1983) are considered weak. Weak boards have lower CEO turnover–performance sensitivity, indicating a board's lower monitoring of top management (see Goyal and Park, 2002). Dikolli *et al.* (2014) further explain that CEO turnover sensitivity declines with tenure. Accordingly, we control for such factors in our forced CEO turnover regressions. We follow Adams and Ferreira (2009) and control for the fraction of independent directors and its interaction terms in all regression specifications.

4. Empirical Results

4.1. Summary Statistics

Table 1 presents the distribution across industries. Approximately 9.36% of all firm-years in our sample have at least one CBD.

Table 2 presents summary statistics for firm-years of the full sample and between two groups as to whether they have a CBD or not. It appears that CBDs sit on boards of larger firms, firms with less cash flow, and less risky firms, consistent with the literature that bankers tend to sit on boards of less risky firms but are less in need of bankers. Also, Table 2 shows that CBDs are on boards with weak governance; that is, boards whose chairman is a CEO, and firms with an insider CEO, with less CEO ownership, with larger board size, and with less independent directors.

4.2. Forced Turnover Regressions

Table 3 uses a logit model where the dependent variable is an indicator variable equal to one when there is a forced turnover. All specifications in Table 3 include industry and year dummies to control for time-invariant unobservable heterogeneity. Table 3, columns (1) and (2) show that simply having outsider directors or CBDs does not have a significant relationship with CEO turnover decisions. On the other hand, Table 3, columns (3) and (4) show that when there are more ABDs, a CEO is more likely be fired, especially when the prior ROA performance is poor. The coefficient estimates of NABDs, and the interaction terms with ROA performance, show statistical insignificance as well as smaller economic magnitude.[8] Overall, the Table 3 results are consistent with Mitchell (2015) and Şişli-Ciamarra (2012) that ABDs have the greatest incentive to monitor.

The results of Table 4 indicate that ABDs are also sensitive to firm risk on CEO turnover as the interaction coefficients with risk measures show a statistically significant positive sign in all panels. It is interesting to see that CEO turnover is sensitive to the risk measure only for firms with more ABDs. This effect is also

[8]In an untabulated analysis, we tried a negative net income dummy and a 1-year excess stock return as our performance measure in lieu of industry median-adjusted ROA and found qualitatively consistent results.

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

The sample period is 1999–2008. Firm-years in our sample combine data from Execucomp, Boardex, Compustat, and Crsp. The sample consists of 12 608 firm-years, of which 1180 have CBDs on their boards. We use the Boardex data to identify banker directors on the board. Industry classifications are based on the two-digit SIC code. The numbers in parentheses are firms with at least one banker director on their boards.

Year	Agriculture, forestry, and fishing	Mining	Construction	Manufacturing	Transportation, communications, electric, gas, and sanitary services	Wholesale trade	Retail trade	Finance, insurance, and real estate	Services	Public administration	Total
1999	0 (0)	3 (1)	26 (6)	36 (3)	9 (3)	17 (3)	18 (3)	17 (1)	2 (0)	2 (1)	130 (21)
2000	4 (0)	53 (3)	174 (25)	288 (25)	123 (26)	143 (18)	172 (18)	120 (12)	36 (3)	3 (1)	1116 (131)
2001	5 (0)	62 (4)	192 (28)	344 (27)	132 (31)	155 (18)	198 (18)	141 (8)	43 (3)	5 (1)	1277 (138)
2002	4 (0)	63 (6)	195 (31)	346 (26)	134 (26)	151 (19)	195 (17)	141 (10)	45 (3)	5 (1)	1279 (139)
2003	5 (1)	75 (2)	233 (33)	424 (23)	154 (36)	192 (21)	238 (25)	180 (11)	58 (4)	6 (1)	1565 (157)
2004	6 (1)	82 (4)	244 (34)	438 (18)	160 (29)	186 (16)	241 (31)	184 (9)	58 (1)	6 (1)	1605 (144)
2005	6 (1)	80 (3)	241 (30)	423 (15)	157 (25)	182 (16)	248 (23)	174 (8)	58 (0)	5 (1)	1574 (122)
2006	5 (0)	84 (3)	247 (29)	440 (20)	164 (26)	187 (18)	285 (27)	174 (7)	65 (2)	5 (1)	1656 (133)
2007	4 (0)	88 (5)	240 (26)	415 (19)	154 (24)	188 (16)	288 (25)	172 (6)	62 (2)	4 (0)	1615 (123)
2008	2 (0)	47 (2)	134 (15)	218 (16)	90 (17)	53 (4)	139 (10)	75 (7)	30 (1)	3 (0)	791 (72)
Total	41 (3)	637 (33)	1926 (257)	3372 (192)	1277 (243)	1454 (149)	2022 (197)	1378 (79)	457 (19)	44 (8)	12 608 (1180)

Table 2 Summary statistics

The sample period is 1999–2008. The sample consists of 12 608 firm-years, 1180 of which have banker directors on their boards. All continuous variables are winsorized at 1% and 99%. *, **, and *** denote significance levels at 10%, 5%, and 1%, respectively. Variable descriptions are in the Appendix.

	Total sample				No CBD: A			Has CBD: B			Difference test (A − B)	
Variable	Obs	Mean	Median	SD	Obs	Mean	Median	Obs	Mean	Median	*t*-test	Mann–Whitney *z*-test
Firm size	12 608	7.772	7.601	1.7289	11 428	7.692	7.5309	1180	8.549	8.4757	0.000***	0.000***
1-year excess stock return	12 608	0.089	0.018	0.5202	11 428	0.091	0.0178	1180	0.070	0.0184	0.178	0.981
ROA (ind.adj.)	12 608	0.049	0.031	0.1234	11 428	0.050	0.0311	1180	0.046	0.0258	0.354	0.223
Cash flow (ind.adj)	12 608	−0.766	0.134	159.1090	11 428	−0.871	0.1478	1180	0.257	0.0449	0.817	0.000***
Idiosyncratic risk	12 608	0.023	0.020	0.0124	11 428	0.023	0.0202	1180	0.020	0.0175	0.000***	0.000***
Stock return risk	12 608	0.026	0.023	0.0137	11 428	0.027	0.0232	1180	0.023	0.0202	0.000***	0.000***
ROA risk	12 070	0.016	0.011	0.0200	10 926	0.017	0.0113	1144	0.012	0.0087	0.000***	0.000***
KMV EDF	11 661	0.815	0.136	2.8425	10 574	0.850	0.1378	1087	0.477	0.1182	0.000***	0.001***
CEO age	12 608	55.616	56.00	7.511	11 428	56.336	56.000	1180	55.540	55.000	0.001***	0.000***
CEO tenure	12 608	7.889	5.000	7.6901	11 428	8.004	5.0000	1180	6.783	5.0000	0.000***	0.000***
1{Chairman = CEO}	12 608	0.686	1.000	0.4642	11 428	0.676	1.0000	1180	0.781	1.0000	0.000***	0.000***
1{High CEO ownership}	12 608	0.039	0.000	0.1933	11 428	0.041	0.0000	1180	0.018	0.0000	0.000***	0.000***
1{CEO outsider succession}	12 608	0.200	0.000	0.4003	11 428	0.204	0.0000	1180	0.165	0.0000	0.002***	0.002***
Board members	12 608	9.512	9.501	2.3890	11 428	9.405	9.5009	1180	10.550	10.0000	0.000***	0.000***
Board size	12 608	2.328	2.352	0.2210	11 428	2.318	2.3515	1180	2.425	2.3979	0.000***	0.000***
%Outside directors	12 608	0.833	0.875	0.1744	11 428	0.834	0.8750	1180	0.821	0.8571	0.017**	0.000***
%CBD	12 608	0.011	0.000	0.0382	11 428	0.000	0.000	1180	0.115	0.1000	0.000***	0.000***
%ABD	12 608	0.014	0.000	0.1173	11 428	0.000	0.000	1180	0.012	0.0000	0.000***	0.000***
%NABD	12 608	0.010	0.000	0.0375	11 428	0.000	0.000	1180	0.104	0.1000	0.000***	0.000***

Table 3 CEO turnover and performance

The sample period is 1999–2008. The dependent variable is forced turnover, defined as one if there is a forced turnover and zero otherwise. Logit regressions are performed. Industry (four-digit SIC code) and year dummies are included in all specifications. Independent and control variables are lagged by 1 year. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Standard errors are clustered at the firm level. *p*-values based on heteroskedasticity robust standard errors are in parentheses. Control variables are defined in the Appendix.

Dependent variable: 1{forced CEO turnover}	(1)	(2)	(3)	(4)
%Outside directors	−0.128 (0.730)	−0.154 (0.678)	−0.107 (0.773)	−0.139 (0.708)
%CBD		1.616 (0.303)		
%ABD			−19.578 (0.051)*	−19.686 (0.049)**
%NABD				2.049 (0.200)
ROA(ind.adj.)*%Outside directors	0.741 (0.661)	0.712 (0.673)	0.691 (0.684)	0.688 (0.684)
ROA(ind.adj.)*%CBD		0.060 (0.997)		
ROA(ind.adj.)*%ABD			−241.863 (0.000)***	−243.472 (0.000)***
ROA(ind.adj.)*%NABD				1.593 (0.918)
ROA(ind.adj.)	−0.934 (0.021)**	−0.928 (0.022)**	−0.921 (0.023)**	−0.926 (0.023)**
Idiosyncratic risk	19.197 (0.000)***	19.238 (0.000)***	19.069 (0.000)***	19.083 (0.000)***
Firm size	0.041 (0.365)	0.039 (0.387)	0.043 (0.340)	0.042 (0.360)
1{CEO retirement age}	−0.872 (0.009)***	−0.872 (0.010)***	−0.871 (0.010)***	−0.871 (0.010)***
CEO tenure	−0.042 (0.000)***	−0.042 (0.000)***	−0.043 (0.000)***	−0.042 (0.000)***
1{Chairman = CEO}	−0.354 (0.004)***	−0.357 (0.004)***	−0.351 (0.004)***	−0.353 (0.004)***
1{High CEO ownership}	−0.065 (0.860)	−0.075 (0.841)	−0.073 (0.845)	−0.085 (0.819)
Constant	−16.007 (0.000)***	−15.983 (0.000)***	−15.277 (0.000)***	−16.376 (0.000)***
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
N	12 246	12 246	12 246	12 246
Pseudo R^2	0.056	0.056	0.057	0.058

Table 4 CEO turnover and risk

The sample period is 1999–2008. The dependent variable is forced turnover, defined as one if there is a forced turnover and zero otherwise. Logit regressions are performed. Industry (four-digit SIC code) and year dummies are included in all specifications. Independent and control variables are lagged by 1 year. As a risk measure, Panel A uses idiosyncratic risk, Panel B uses stock return risk, and Panel C uses ROA risk. Column (5) in Panel A shows the average marginal effects of column (4) regression. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Standard errors are clustered at the firm level. *p*-values based on heteroskedasticity robust standard errors are in parentheses. Control variables are defined in the Appendix.

Panel A. Interaction with idiosyncratic risk measure

Dependent variable: 1{forced CEO turnover}	(1)	(2)	(3)	(4)	(5) d*y*/d*x*
%Outside directors	−0.121 (0.746)	−0.148 (0.691)	−0.107 (0.774)	−0.138 (0.710)	−0.004 (0.711)
%CBD		1.236 (0.551)			
%ABD			−70.341 (0.000)***	−69.483 (0.000)***	−1.778 (0.000)***
%NABD				2.513 (0.243)	0.064 (0.242)
Idiosyncratic risk*%Outside directors	−21.516 (0.596)	−20.945 (0.606)	−19.526 (0.629)	−18.480 (0.647)	−0.473 (0.647)
Idiosyncratic risk*%CBD		14.289 (0.823)			
Idiosyncratic risk*%ABD			2200.119 (0.000)***	2188.475 (0.000)***	56.006 (0.000)***
Idiosyncratic risk*%NABD				−14.379 (0.833)	−0.368 (0.833)
ROA(ind.adj.)	−0.891 (0.001)***	−0.889 (0.001)***	−0.892 (0.001)***	−0.885 (0.001)***	−0.023 (0.001)***
Idiosyncratic risk	19.382 (0.000)***	19.299 (0.000)***	19.108 (0.000)***	19.237 (0.000)***	0.492 (0.000)***
Firm size	0.042 (0.358)	0.040 (0.377)	0.043 (0.337)	0.041 (0.362)	0.001 (0.361)
1{CEO retirement age}	−0.872 (0.009)***	−0.873 (0.009)***	−0.888 (0.008)***	−0.888 (0.008)***	−0.023 (0.009)***
CEO tenure	−0.042 (0.000)***	−0.042 (0.000)***	−0.043 (0.000)***	−0.042 (0.000)***	−0.001 (0.000)***
1{Chairman = CEO}	−0.353 (0.004)***	−0.356 (0.004)***	−0.347 (0.005)***	−0.349 (0.005)***	−0.009 (0.005)***
1{High CEO ownership}	−0.062 (0.866)	−0.071 (0.848)	−0.057 (0.877)	−0.071 (0.849)	−0.002 (0.849)
Constant	−16.891 (0.000)***	−16.867 (0.000)***	−15.149 (0.000)***	−15.123 (0.000)***	

Table 4 (*Continued*)

Panel A. Interaction with idiosyncratic risk measure

Dependent variable: 1{forced CEO turnover}	(1)	(2)	(3)	(4)	(5) d*y*/d*x*
Year FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
N	12 246	12 246	12 246	12 246	12 246
Pseudo R^2	0.056	0.056	0.058	0.058	

Panel B. Interaction with stock return risk measure

Dependent variable: 1{forced CEO turnover}	(1)	(2)	(3)	(4)
%Outside directors	−0.101 (0.783)	−0.136 (0.710)	−0.088 (0.810)	−0.127 (0.729)
%CBD		−1.289 (0.647)		
%ABD			−48.474 (0.000)***	−48.469 (0.000)***
%NABD				0.080 (0.978)
Stock return risk*%Outside directors	−14.290 (0.695)	−13.450 (0.711)	−12.487 (0.730)	−11.310 (0.754)
Stock return risk*%CBD		113.368 (0.187)		
Stock return risk*%ABD			1275.911 (0.000)***	1282.953 (0.000)***
Stock return risk*%NABD				82.786 (0.357)
1-year excess stock return	−1.185 (0.000)***	−1.185 (0.000)***	−1.188 (0.000)***	−1.188 (0.000)***
Stock return risk	18.553 (0.000)***	18.308 (0.000)***	18.266 (0.000)***	18.182 (0.000)***
Firm size	0.018 (0.689)	0.019 (0.679)	0.020 (0.665)	0.020 (0.663)
1{CEO retirement age}	−0.837 (0.013)**	−0.840 (0.013)**	−0.852 (0.012)**	−0.854 (0.012)**
CEO tenure	−0.045 (0.000)***	−0.045 (0.000)***	−0.046 (0.000)***	−0.045 (0.000)***
1{Chairman = CEO}	−0.390 (0.002)***	−0.397 (0.001)***	−0.384 (0.002)***	−0.391 (0.002)***

Table 4 (*Continued*)

Panel B. Interaction with stock return risk measure				
Dependent variable: 1{forced CEO turnover}	(1)	(2)	(3)	(4)
1{High CEO ownership}	−0.099 (0.787)	−0.107 (0.770)	−0.098 (0.790)	−0.110 (0.765)
Constant	−16.636 (0.000)***	−15.872 (0.000)***	−16.266 (0.000)***	−15.998 (0.000)***
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
N	12 246	12 246	12 246	12 246
Pseudo R^2	0.075	0.076	0.076	0.077
Panel C. Interaction with ROA risk measure				
Dependent variable: 1{forced CEO turnover}	(1)	(2)	(3)	(4)
%Outside directors	−0.224 (0.556)	−0.246 (0.518)	−0.201 (0.597)	−0.230 (0.546)
%CBD		0.215 (0.895)		
%ABD			−39.774 (0.000)***	−40.051 (0.000)***
%NABD				0.781 (0.635)
ROA risk*%Outside directors	−40.336 (0.026)**	−38.835 (0.033)**	−39.930 (0.028)**	−38.251 (0.036)**
ROA risk*%CBD		54.859 (0.005)***		
ROA risk*%ABD			1607.156 (0.001)***	1628.732 (0.001)***
ROA risk*%NABD				51.454 (0.009)***

Table 4 (*Continued*)

Panel C. Interaction with ROA risk measure				
Dependent variable: 1{forced CEO turnover}	(1)	(2)	(3)	(4)
ROA (ind.adj.)	−1.321 (0.000)***	−1.408 (0.000)***	−1.333 (0.000)***	−1.415 (0.000)***
ROA risk	3.411 (0.092)*	1.611 (0.382)	3.301 (0.108)	1.555 (0.402)
Firm size	−0.002 (0.968)	−0.006 (0.887)	0.000 (0.992)	−0.004 (0.926)
1{CEO retirement age}	−0.882 (0.010)***	−0.883 (0.009)***	−0.884 (0.010)***	−0.886 (0.009)***
CEO tenure	−0.044 (0.000)***	−0.044 (0.000)***	−0.045 (0.000)***	−0.044 (0.000)***
1{Chairman = CEO}	−0.403 (0.001)***	−0.404 (0.001)***	−0.399 (0.001)***	−0.399 (0.001)***
1{High CEO ownership}	−0.038 (0.919)	−0.042 (0.912)	−0.032 (0.932)	−0.039 (0.917)
Constant	−15.430 (0.000)***	−15.834 (0.000)***	−14.703 (0.000)***	−16.354 (0.000)***
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
N	11 665	11 665	11 665	11 665
Pseudo R^2	0.051	0.053	0.053	0.054

economically significant, as can be seen in the marginal effects of column (4) (shown in column (5)) in Table 4, Panel A. On the other hand, none of the NABDs is associated with the risk measure on CEO dismissals, except when risk is proxied by ROA risk (see Panel C). However, we find that the coefficient estimate on the interaction between %ABD and ROA risk in column (4) is significantly larger than that between %NABD and ROA risk. This implies that ABDs are more sensitive to firm risk than any other type of CBD, resulting in more CEO dismissals. This implies that CEOs' dismissals are risk-sensitive with ABDs, whereas NABDs are not/less responsive to firm risk. This is consistent with the view that creditors are risk-averse (Jensen and Meckling, 1976; Sarasvathy *et al.*, 1998).[9]

Overall, the results in Tables 3 and 4 suggest that ABDs are performance-sensitive but are also sensitive to firms' risk regarding a CEO's dismissal, unlike other independent directors. These results support our Hypotheses 1 and 2.

4.3. Announcement Returns on Forced CEO Turnover News

In this section we examine whether a CBD's presence yields any positive effect on shareholder wealth when a CEO forced turnover is announced. We use both CEO forced turnover data and BoardEx data. Thus, we start with a total of 351 forced turnovers. Of these, 17 observations are deleted due to confounding events[10] and any observations with missing financial data are eliminated. As a result, we use 317 forced turnovers to examine the CEO turnover announcement effect.

Table 5, Panel A reports abnormal returns (ARs) and cumulative abnormal returns (CARs) for all firms, while Panel B compares ARs and CARs for firms with and without CBDs. To calculate CARs, we use the standard event study methodology used in the literature. ARs are calculated using the market model with CRSP value-weighted index.[11] The parameters are estimated over 120 days where the last day of the estimation period is 30 days prior to the announcement date.

[9]With respect to the concerns related to the interaction terms of logit models (see Ai and Norton, 2003), we perform the INTEFF analyses following Norton *et al.* (2004). Since we cannot run the INTEFF function when there are more than two interaction terms in one regression, that is, A*B and A*C, we rerun the logit models of Tables 3 and 4 by including only one interaction term for each regression. That is, we run A, B, and A*B for one regression and A, C, and A*C for another regression, and so on. Generally, after running the INTEFF function for our logit models, the coefficient sign and statistical significance holds similar as in our Tables 3 and 4.

[10]Confounding events include M&As, earnings announcements, restatements, interim-CEO or new CEO appointments, and class action lawsuits. We removed the observations if the aforementioned confounding events took place 15 calendar days before or after the CEO turnover announcement date.

[11]Other models, such as the equally weighted market index model, the Fama-French 3-factor model, or the Fama-French 4-factor model, show similar inferences on CARs for forced turnover announcements.

Table 5 Univariate tests: Cumulative abnormal returns around forced turnover announcement date

Panels A and B: The sample period is 1999–2008. To calculate the abnormal returns (ARs) and cumulative abnormal returns (CARs), we use the standard event study methodology used in the literature. Abnormal returns are calculated using the market model with CRSP value-weighted index. The parameters are estimated over 120 days where the last day of the estimation period is 30 days prior to the announcement, where $t = 0$ is the CEO turnover announced date. Panel A reports ARs and CARs for all forced CEO turnover announcement news. Panel B reports ARs and CARs for firms with and without CBDs. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. The test of difference shows the *p*-value.Panel C: The sample period is 1999–2008. The table reports the CARs, where the ARs are calculated based on the market model. The market model is estimated using returns from −150 to −31 days from the CEO turnover announcement date and uses the CRSP value-weighted index as a proxy for the market portfolio. The CAR is calculated over the $(-t, +t)$ window, where $t = 0$ is the day of the CEO turnover announcement. Confounding events such as M&As, earnings announcements, restatements, and class action lawsuits within +1/−1 day from the CEO turnover announcement day are excluded from the sample.

Panel A. ARs and CARs for all firms

	Obs	Mean	Median	*t*-test	Patell test	BMP test	Sign-rank statistics
AR (−1)	317	0.16%	−0.04%	0.2442	0.1741	0.2296	0.4629
AR (0)	317	−0.45%	−0.27%	0.1086	0.0000***	0.0466**	0.0720*
AR (+1)	317	−0.40%	−0.24%	0.1544	0.0223**	0.1930	0.0939*
CAR (−1, +1)	317	−0.69%	−0.27%	0.1311	0.0005***	0.0715*	0.1465
CAR (−2, +2)	317	−1.04%	−0.44%	0.0612*	0.0002***	0.0324**	0.0617*
CAR (−5, +5)	317	−1.38%	−0.70%	0.0714*	0.0001***	0.0104**	0.0533*
CAR (−10, +10)	317	−1.56%	−1.83%	0.0980*	0.0000***	0.0068***	0.0178**

Table 5 (*Continued*)

Panel B. ARs and CARs for firms with and without CBD

	No CBD				Has CBD				Test of difference	
	(*N* = 286): A				(*N* = 31): B				(B − A)	
	Mean	*t*-test	Median	Sign-rank statistics	Mean	*t*-test	Median	Sign-rank statistics	*t*-test	Mann–Whitney *z*-test
AR (−1)	0.17%	0.4850	−0.07%	0.9045	0.01%	0.9876	0.25%	0.8293	0.8273	0.8706
AR (0)	−0.59%	0.1295	−0.33%	0.0553*	0.82%	0.4542	0.21%	0.2811	0.2533	0.0950*
AR (+1)	−0.73%	0.0680*	−0.28%	0.0518*	2.69%	0.0825*	0.17%	0.0811*	0.0096***	0.0212**
CAR (−1, +1)	−1.14%	0.0829*	−0.34%	0.0931*	3.52%	0.0295**	0.60%	0.0745*	0.0250**	0.0277**
CAR (−2, +2)	−1.49%	0.0397**	−0.71%	0.0353**	3.12%	0.0658*	0.98%	0.1124	0.0430*	0.0306**
CAR (−5, +5)	−1.84%	0.0746*	−0.87%	0.0276**	2.90%	0.0400**	2.43%	0.0778*	0.1369	0.0218**
CAR (−10, +10)	−1.98%	0.1307	−1.87%	0.0239**	2.37%	0.3327	−1.38%	0.9064	0.2868	0.2907

Panel C. Summary statistics for forced turnover announcement date data

	CAR (−1, +1) sample			Has CBD: A			No CBD: B			Test of difference	
	(*N* = 317)			(*N* = 31)			(*N* = 286)			(A − B)	
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	*t*-test	Mann–Whitney *z*-test
Firm characteristics											
Firm size	7.591	7.440	2.041	8.826	9.256	1.920	7.457	7.276	2.012	0.000***	0.000***
1-year excess stock return	−0.105	−0.151	0.476	−0.173	−0.159	0.231	−0.098	−0.150	0.495	0.405	0.609
ROA (ind.adj.)	0.024	0.025	0.192	0.037	0.007	0.127	0.022	0.025	0.198	0.682	0.956
Cash flow (CF/k)	0.202	0.023	2.214	0.666	0.111	2.599	0.151	0.020	2.168	0.219	0.144

Table 5 (*Continued*)

Panel C. Summary statistics for forced turnover announcement date data

	CAR (−1, +1) sample			Has CBD: A			No CBD: B			Test of difference	
	(*N* = 317)			(*N* = 31)			(*N* = 286)			(A − B)	
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	*t*-test	Mann–Whitney *z*-test
Idiosyncratic risk	0.025	0.022	0.014	0.021	0.019	0.010	0.026	0.023	0.014	0.084*	0.099*
Stock return risk	0.028	0.026	0.014	0.025	0.022	0.012	0.028	0.026	0.014	0.177	0.186
ROA risk	0.020	0.014	0.028	0.025	0.011	0.068	0.019	0.014	0.019	0.282	0.074*
KMV EDF	1.363	0.222	3.558	0.659	0.183	1.086	1.441	0.227	3.726	0.246	0.312
Director variables											
%Outside directors	84.32%	87.50%	0.165	83.90%	85.71%	0.152	84.36%	87.50%	0.166	0.881	0.663
%CBDs	1.29%	0.00%	0.045	13.20%	10.00%	0.071	0.00%	0.00%	0.000	0.000***	0.000***
%ABDs	0.03%	0.00%	0.005	0.27%	0.00%	0.015	0.00%	0.00%	0.000	0.002***	0.002***
%NABDs	1.26%	0.00%	0.045	12.94%	10.00%	0.074	0.00%	0.00%	0.000	0.000***	0.000***

Both Panels A and B report ARs of −1, 0, and +1 day and CARs for the windows (−1, +1), (−2, +2), (−5, +5), and (−10, +10), where $t = 0$ is the CEO turnover announcement date. Panel A shows that forced CEO turnovers are generally considered negative news in our sample. However, Table 5, Panel B shows that firms with CBDs experience a favorable stock market reaction to forced CEO turnover news. For example, the mean (median) CAR (−1, +1) is −1.14% (−0.34%) for firms without CBDs while the CAR for firms with CBDs is 3.52% (0.60%) and the difference of mean (median) CARs is statistically significant. This result supports Hypothesis 3 that CBDs' existence is positively associated with forced CEO turnover news.

Table 5, Panel C presents the summary statistics and test of difference between firms with and without CBDs for 317 firms that experienced forced CEO turnovers and shows similar results as the overall sample shown in Table 2.

4.4. Multivariate Analysis of Forced CEO Turnover Announcement Returns

To further examine Hypothesis 3 and investigate Hypothesis 4, we perform a multivariate analysis with OLS regression using CAR (−1, +1) as our dependent variable. We follow the CEO turnover and corporate governance literature in selecting control variables. We control for firm size,[12] firm performance, idiosyncratic volatility (constructed as in Bushman *et al.*, 2010), book-to-market equity, and 1{CEO outsider succession} dummy, where the variable equals one when the CEO is succeeded by an outsider. We also include industry and year dummies to control for any possible fixed effects for all models and the standard errors are clustered at firm level.[13] Due to limited data, we only perform multivariate analyses with a fraction of CBDs and do not examine the effect of ABDs.[14]

Regression results in columns (1)–(2) of Table 6 confirm that the market on average reacts positively to forced CEO turnover news when there are more CBDs.[15] The result is not only statistically significant but also economically significant: with one standard deviation increase in the fraction of CBD (4.5%), it increases the forced CEO turnover announcement effect on stock return by 1.24% points when

[12]Using the natural log of sales to proxy for firm size yields qualitatively similar results.

[13]Although not reported in this paper, industry clustering or two-dimensional clustering, where it is clustered at firm- and year-level, show qualitatively similar inferences.

[14]In the subset of data, we only have 1 firm-year that has affiliated bankers on the board.

[15]In unreported regressions, when fractions of outside directors are split into banker directors and non-banker directors, we find that both types of directors have a positive association with the forced CEO turnover announcement returns. What is interesting is that when there are more banker directors on the board, the forced turnover announcement is more positive compared to when there are more non-banker directors on the board and the difference between these two coefficients is statistically different at 5% significance. This finding implies that a banker's existence on the board has a more positive association than that of non-banker directors on the CEO turnover announcement effect, supporting our Hypothesis 3.

Table 6 CARs around forced CEO turnover: Interaction of CBDs with performance measures

The sample period is 1999–2008. The dependent variable is CAR(−1, +1) for firms with a forced CEO turnover announcement. In columns (1)–(2), the effect of a CBD's existence on CEO turnover announcement is observed and in columns (3)–(8), interaction analysis with the performance measure is performed: the performance measure used in (3)–(5) is industry median-adjusted ROA and in (6)–(8) it is cash flow. Year and industry dummies are included in all specifications. Industry is defined using the Fama-French 49-industry classification. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Standard errors are clustered at the firm level. *p*-values based on heteroskedasticity robust standard errors are in parentheses. Control variables are defined in the Appendix.

Interaction with performance measures								
Performance measure used:	No interaction		ROA (ind.adj.)			Cash flow (ind.adj.)		
Dependent variable: CAR (−1, +1)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
%Outside directors	0.135 (0.006)***	0.131 (0.009)***	0.15 (0.005)***	0.148 (0.003)***	0.164 (0.003)***	0.139 (0.005)***	0.143 (0.004)***	0.143 (0.004)***
%CBD		0.276 (0.045)**		0.345 (0.012)**	0.361 (0.009)***		0.354 (0.014)**	0.348 (0.016)**
ROA(ind.adj.)*% Outside directors			−0.184 (0.532)		−0.288 (0.315)			
ROA(ind.adj.)*%CBD				−1.926 (0.028)**	−1.981 (0.027)**			
Cash flow(ind.adj.)*% Outside directors						0.008 (0.471)		0.007 (0.554)
Cash flow(ind.adj.)*% CBD							−0.053 (0.092)*	−0.054 (0.082)*
1-year excess stock return	−0.014 (0.292)	−0.013 (0.322)						

Table 6 (*Continued*)

Interaction with performance measures								
Performance measure used:	No interaction		ROA (ind.adj.)			Cash flow (ind.adj.)		
Dependent variable: CAR (−1, +1)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ROA(ind.adj.)			0.164	−0.001	0.274			
			(0.584)	(0.961)	(0.348)			
Cash flow(ind.adj.)						−0.007	0.001	−0.006
						(0.503)	(0.228)	(0.620)
Idiosyncratic risk	−0.035	−0.023	−0.001	−0.065	−0.071	0.041	0.015	0.017
	(0.960)	(0.974)	(0.999)	(0.924)	(0.917)	(0.954)	(0.983)	(0.981)
Firm size	−0.003	−0.003	−0.003	−0.003	−0.003	−0.003	−0.005	−0.005
	(0.423)	(0.414)	(0.530)	(0.418)	(0.475)	(0.433)	(0.297)	(0.285)
BE/ME	−0.006	−0.006	−0.001	−0.007	−0.001	−0.004	−0.007	−0.007
	(0.740)	(0.759)	(0.968)	(0.719)	(0.954)	(0.815)	(0.738)	(0.707)
1{CEO outsider succession}	0.009	0.007	0.01	0.006	0.006	0.011	0.009	0.009
	(0.522)	(0.599)	(0.490)	(0.645)	(0.651)	(0.424)	(0.524)	(0.496)
Constant	−0.021	−0.026	−0.034	−0.008	−0.029	−0.022	−0.058	−0.056
	(0.771)	(0.727)	(0.650)	(0.911)	(0.711)	(0.761)	(0.427)	(0.438)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	317	317	317	317	317	317	317	317
Adj. R^2	0.035	0.046	0.03	0.053	0.052	0.029	0.052	0.049

the average CAR (−1, +1) is −0.69%. This finding implies that the CEO dismissal decision is generally more positive for shareholders when there are more CBDs.

In order to examine Hypothesis 4, we include interaction terms with performance and director variables on CARs (−1, +1). The results are reported in columns (3)–(8) of Table 6. Only when performance measures are interacted with the fraction of CBD do we see a statistically significant negative sign. Column (5) shows that one standard deviation increase in %CBD (4.5%) and one standard deviation lower industry adjusted ROA of 19.2% would result in a 1.7%-point higher investor response on forced CEO turnover announcement. In addition, column (8) shows that one standard deviation increase in %CBD (4.5%) and one standard deviation lower industry adjusted cash flow (2.214) would result in a 0.54%-point higher investor response on forced CEO turnover announcement. Considering the unconditional mean of CAR (−1, +1) being −0.69%, the positive effects of having CBDs are economically significant. Overall, these results support Hypotheses 3 and 4.

However, when CBD is interacted with risk, as seen in Table 7, we do not find any significant results on the forced CEO turnover announcement effect. This may imply that the CBDs' firing decision rule based on firm risk to reduce downside risk is not necessarily value-enhancing for shareholders, supporting Jensen and Meckling (1976).

4.5. Post-Performance and Post-Risk Analyses

The post-turnover analysis is based on the same data used for analyzing the forced CEO turnover announcement effect. Figure 1, Panel A shows the industry median-adjusted ROA from 4 years prior to 3 years after the CEO turnover year. The group is divided into firms with and without CBDs. Figure 1 shows that both groups' ROA falls rapidly until the CEO turnover year and increases slightly post the CEO turnover year. Although post-ROA performance is slightly better in firms with CBDs than those without CBDs, the difference between the two groups is not statistically different. To examine whether this performance changes meaningfully from year to year by different groups of firms, we perform a difference-in-differences test and results are shown in Figure 1, Panel B. It shows that firms with CBDs have fewer and fewer negative ROA changes after the CEO turnover whereas firms without CBDs have more and more negative ROA changes for the same period.[16]

Figure 2, Panel A shows the idiosyncratic risk from 2 years prior to 2 years after the CEO turnover year. It shows that both groups' idiosyncratic risk rises slightly before the CEO turnover year and then falls after the CEO dismissal. It also shows that firms with CBDs generally have lower idiosyncratic risk for all time periods, confirming prior literature that bankers tend to sit on less risky firms. Figure 2, Panel B shows the difference-in-differences test to examine whether this idiosyncratic risk changes year to year depending on whether the firms have CBDs or not.

[16]However, these ROA changes are not statistically different from firms with banker directors compared to firms without banker directors for all periods.

Table 7 CARs around forced CEO turnover: Interaction of CBDs with risk measures

The sample period is 1999–2008. The dependent variable is CAR(−1, +1) for firms that announced a forced CEO turnover. Risk measure is interacted with director variables: columns (1)–(3) use winsorized KMV expected default frequency (KMV EDF), and columns (4)–(6) use change in the KMV EDF variable as a risk measure. Year and industry dummies are included in all specifications. Industry is defined using the Fama-French 49-industry classification. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Standard errors are clustered at the firm level. *p*-values based on heteroscedasticity robust standard errors are in parentheses. Control variables are defined in the Appendix.

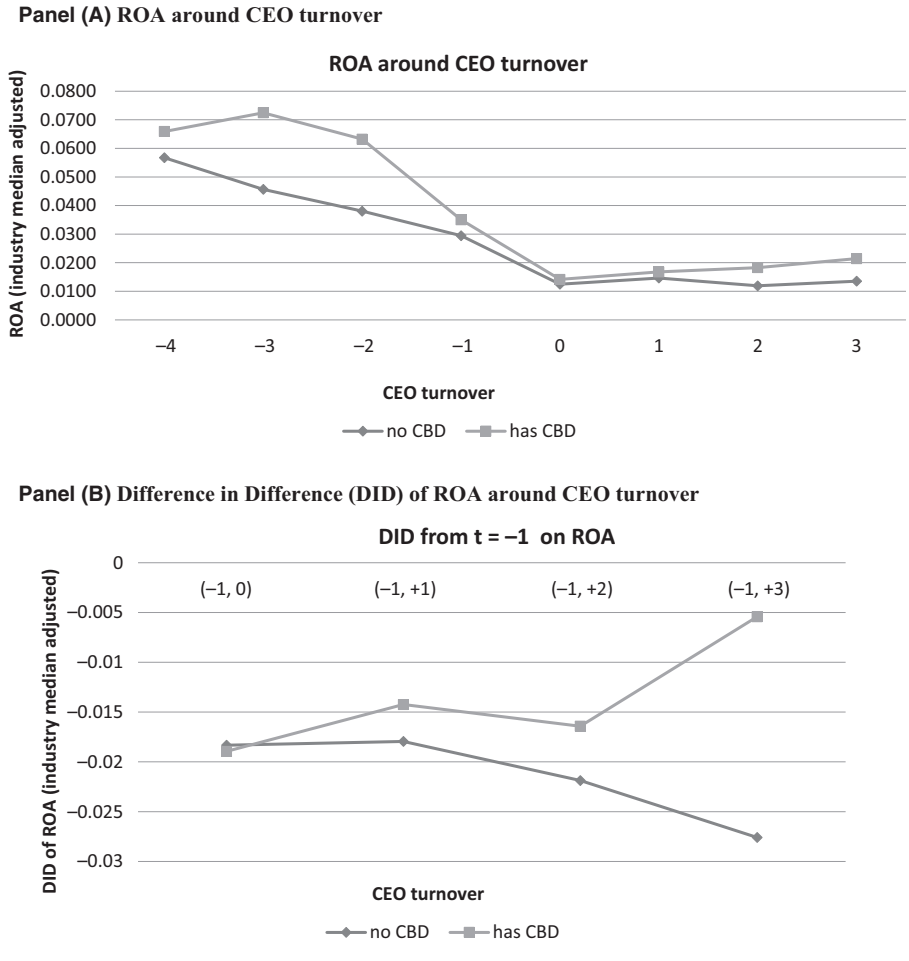
Interaction with risk measures						
Risk measure used:	KMV expected default risk			Chg in KMV expected default risk		
Dependent variable: CAR (−1, +1)	(1)	(2)	(3)	(4)	(5)	(6)
%Outside directors	0.094 (0.065)*	0.153 (0.006)***	0.086 (0.098)*	0.117 (0.013)**	0.123 (0.015)**	0.111 (0.021)**
x%CBD		0.434 (0.018)**	0.437 (0.016)**		0.327 (0.010)***	0.329 (0.011)**
KMV EDF*%Outside directors	0.041 (0.004)***		0.041 (0.003)***			
KMV EDF*%CBD		−0.012 (0.927)	−0.003 (0.984)			
Change in KMV EDF*% Outside directors				0.032 (0.080)*		0.032 (0.077)*
Change in KMV EDF*% CBD					0.021 (0.786)	0.007 (0.930)
1-year excess stock return	−0.017 (0.219)	−0.015 (0.268)	−0.015 (0.257)	0.02 (0.229)	0.018 (0.266)	0.023 (0.167)

Table 7 (*Continued*)

Interaction with risk measures						
Risk measure used:	KMV expected default risk			Chg in KMV expected default risk		
Dependent variable: CAR (−1, +1)	(1)	(2)	(3)	(4)	(5)	(6)
ROA (ind.adj.)	−0.536 (0.466)	−0.37 (0.622)	−0.567 (0.434)	0.011 (0.744)	0.005 (0.885)	0.011 (0.729)
Firm size	−0.003 (0.460)	−0.003 (0.400)	−0.003 (0.460)	−0.004 (0.243)	−0.004 (0.211)	−0.004 (0.215)
BE/ME	−0.015 (0.390)	−0.003 (0.839)	−0.016 (0.365)	−0.007 (0.708)	0.001 (0.938)	−0.006 (0.756)
1{CEO outsider succession}	0.002 (0.896)	0.003 (0.770)	0 (0.989)	0.005 (0.720)	0.004 (0.787)	0.003 (0.828)
KMV EDF	−0.028 (0.006)***	0.003 (0.318)	−0.028 (0.004)***			
Change in KMV EDF				−0.016 (0.284)	0.009 (0.006)***	−0.016 (0.291)
Constant	0.101 (0.380)	0.035 (0.764)	0.083 (0.485)	−0.305 (0.060)*	−0.347 (0.034)**	−0.317 (0.052)*
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	310	310	310	308	308	308
Adj. R^2	0.087	0.078	0.114	0.096	0.092	0.11

Figure 1 ROA performance before and after CEO turnover

The sample period is 1999–2008. The figures show industry median-adjusted ROA graphs before and after the CEO turnover event, where $t = 0$ is the year the CEO was forced out. The dotted values are average values.



Panel B of Figure 2 shows that firms with CBDs change idiosyncratic risk more drastically compared to the prior-CEO turnover year than those without CBDs.

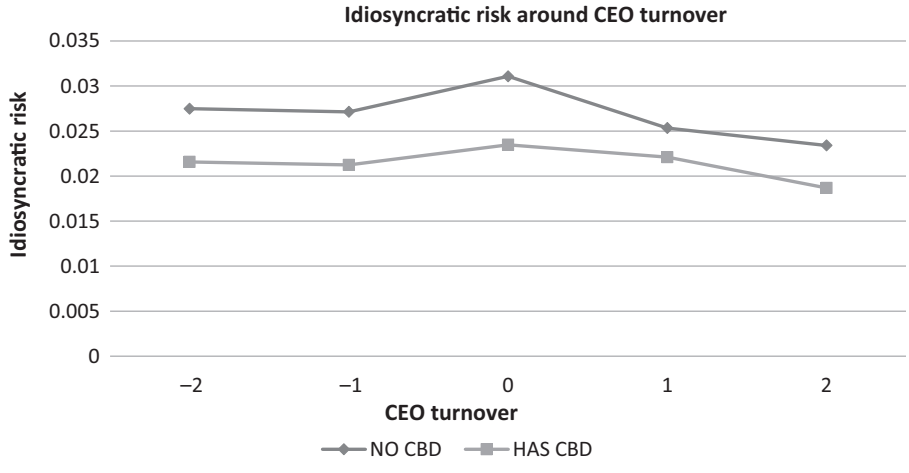
Although univariate analyses on post-performance or post-risk show no statistical significance, we find an interesting pattern: for firms with CBDs, post-performance rises more while post-risk decreases further. The non-statistical difference may be due to unobserved factors. Hence, we perform multivariate analyses.

First, we analyze post-performance with the dependent variable being a change in industry median-adjusted ROA between the CEO turnover year ($t = 0$) and 1 year after ($t = +1$). The results are presented in Table 8. Columns (2) and (3) of

Figure 2 Idiosyncratic risk before and after CEO turnover

The sample period is 1999–2008. The figures show idiosyncratic risk graphs before and after the CEO turnover event, where $t = 0$ is the year the CEO was forced out.

Panel (A) Idiosyncratic risk around CEO turnover



Panel (B) Difference in Difference (DID) of idiosyncratic risk around CEO turnover

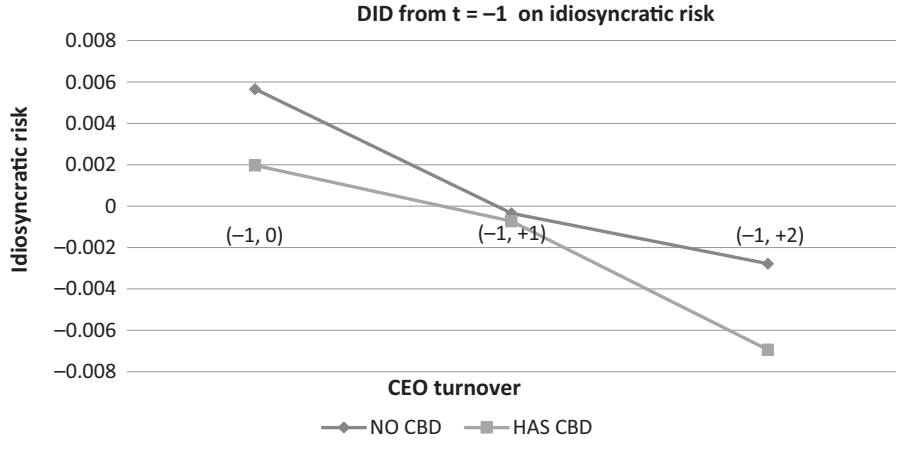


Table 8 indicate that when there are more CBDs, the industry median-adjusted ROA increases after 1 year post the CEO turnover year. This result suggests that the existence of CBDs helps firms to revive faster, possibly by providing appropriate financial advice and expertise. Moreover, this result is economically significant: the unconditional mean of the industry-adjusted ROA before the CEO turnover for this data sample is 0.024%. Having a one-standard-deviation higher percentage of CBD

Table 8 Changes in ROA and CBDs

The sample period is 1999–2008. OLS regression is performed where the dependent variable is industry median-adjusted change in ROA from year 0 to +1, where $t = 0$ is the year the CEO turnover was announced. Year and industry dummies are included in all specifications. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Standard errors are clustered at the firm level. *p*-values based on heteroskedasticity robust standard errors are in parentheses. Control variables are defined in the Appendix.

Dependent variable: Chg in ROA (0, +1)	(1)	(2)	(3)
%Outside directors	−0.121 (0.016)**	−0.057 (0.132)	−0.091 (0.062)*
%CBD		0.707 (0.018)**	0.685 (0.022)**
ROA*%Outside directors	0.416 (0.155)		0.29 (0.281)
ROA*%CBD		−5.36 (0.083)*	−5.206 (0.092)*
ROA	−0.44 (0.139)	−0.026 (0.488)	−0.303 (0.262)
Idiosyncratic risk	1.342 (0.006)***	1.32 (0.001)***	1.212 (0.007)***
Firm size	0.002 (0.577)	0.002 (0.627)	0.001 (0.799)
BE/ME	0.01 (0.006)***	0.009 (0.003)***	0.009 (0.010)**
1{CEO outsider succession}	0 (0.978)	−0.004 (0.729)	−0.004 (0.725)
Constant	−0.104 (0.143)	−0.172 (0.000)***	−0.119 (0.091)*
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	336	336	336
Adj. R^2	0.054	0.112	0.114

(4.5%) and one-standard-deviation lower industry-adjusted ROA (19.2%) before CEO turnover would lead to a 4.5%-point increase in industry-adjusted ROA 1 year after the CEO turnover.

Next, we perform multivariate analyses on post-risk in Table 9. Panel A of Table 9 uses change in idiosyncratic risk performance from CEO turnover year to 1 year after as a dependent variable. In Panel A, columns (1)–(3) include interaction with 1{High change of Idio.risk (−2, −1)}, which represents a dummy variable that equals one if the change in idiosyncratic risk (−2, −1) is in the 4th quartile and zero otherwise. Columns (4)–(6) use interaction with the level variable of idiosyncratic risk measured at 1 year prior to the CEO turnover year. We find that with more CBDs, when the change in idiosyncratic risk is high[17] between $t = -2$ and $t = -1$ or when the prior year's idiosyncratic risk is high, then post-idiosyncratic risk decreases.

Likewise, Panel B of Table 9 shows a similar result using ROA risk. Columns (1)–(3) use the change in ROA risk from CEO turnover announcement year ($t = 0$) to 1 year after ($t = +1$), while columns (4)–(6) use the change in ROA risk from

[17]Change in idiosyncratic risk is considered high when the change from $t = -2$ to $t = -1$ is in the upper 25% in the data sample.

Table 9 Changes in risk measure and CBDs

The sample period is 1999–2008. In Panel A, OLS regression is performed where the dependent variable is change in idiosyncratic risk from year 0 to +1, where $t = 0$ is the year the CEO turnover was announced. In Panel A, columns (1)–(3) include interaction with 1{High change of Idio.risk (−2, −1)}, which represents a dummy variable that equals one if the change in diosyncratic risk (−2, −1) is in the 4th quartile and zero otherwise, and columns (4)–(6) use interaction with the level variable of idiosyncratic risk measured at 1 year prior to the CEO turnover. In Panel B, the dependent variable is change in ROA risk from year 0 to +1 from columns (1)–(3) and change in ROA risk from year 0 to +2 from columns (4)–(6). Year and industry dummies are included in all specifications. *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Standard errors are clustered at the firm level. *p*-values based on heteroskedasticity robust standard errors are in parentheses. Control variables are defined in the Appendix.

Panel A. Idiosyncratic risk

Dependent variable: Change in Idio.risk (0, +1)	(1)	(2)	(3)	(4)	(5)	(6)
%Outside directors	−0.003 (0.709)	−0.005 (0.596)	−0.004 (0.678)	0.019 (0.257)	−0.002 (0.819)	0.019 (0.257)
%CBD		0.002 (0.922)	0.003 (0.902)		0.072 (0.109)	0.072 (0.113)
{High change of Idio.risk (−2, −1)}*%Outside directors	−0.011 (0.560)		−0.015 (0.451)			
{High change of Idio.risk (−2, −1)}*%CBD		−0.095 (0.091)*	−0.100 (0.061)*			
Idiosyncratic risk$_{t-1}$*%Outside directors				−0.843 (0.168)		−0.818 (0.195)
Idiosyncratic risk$_{t-1}$*%CBD					−2.958 (0.039)**	−2.904 (0.048)**
{High change of Idio.risk (−2, −1)}	0.007 (0.635)	0.000 (0.933)	0.011 (0.456)			
Idiosyncratic risk$_{t-1}$				0.477 (0.326)	−0.172 (0.181)	0.468 (0.344)
1-year excess stock return	−0.001 (0.300)	−0.001 (0.382)	−0.001 (0.353)	−0.002 (0.186)	−0.002 (0.180)	−0.002 (0.146)
ROA (ind.adj.)	−0.02 (0.129)	−0.023 (0.092)*	−0.024 (0.093)*	−0.027 (0.042)**	−0.024 (0.071)*	−0.027 (0.037)**
Firm size	0.000 (0.826)	0.000 (0.697)	0.000 (0.799)	0.000 (0.655)	0.000 (0.728)	0.000 (0.593)
BE/ME	0.000 (0.890)	−0.001 (0.807)	−0.001 (0.748)	0.000 (0.857)	0.000 (0.906)	−0.001 (0.775)

Table 9 (*Continued*)

Panel A. Idiosyncratic risk

Dependent variable: Change in Idio.risk (0, +1)	(1)	(2)	(3)	(4)	(5)	(6)
1{CEO outsider succession}	0.001 (0.550)	0.002 (0.470)	0.002 (0.463)	0.002 (0.484)	0.002 (0.429)	0.002 (0.446)
Constant	0.006 (0.501)	0.006 (0.515)	0.006 (0.487)	0.001 (0.912)	0.012 (0.281)	0.000 (0.974)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	205	205	205	205	205	205
Adj. R^2	0.073	0.077	0.074	0.099	0.094	0.101

Panel B. ROA risk

	Change in ROA risk (0, +1)			Change in ROA risk (0, +2)		
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
%Outside directors	0.007 (0.095)*	00.000 (0.955)	0.001 (0.808)	0.014 (0.026)**	0.003 (0.469)	0.001 (0.821)
%CBD		0.023 (0.076)*	0.023 (0.069)*		0.028 (0.033)**	0.029 (0.038)**
ROA risk*%Outside directors	−0.414 (0.055)*		−0.048 (0.798)	−0.735 (0.032)**		0.123 (0.702)
ROA risk*%CBD		−0.803 (0.002)***	−0.77 (0.004)***		−1.570 (0.000)***	−1.658 (0.000)***
1-year excess stock return	0.000 (0.758)	0.000 (0.922)	0.000 (0.930)	0.000 (0.895)	−0.001 (0.508)	−0.001 (0.489)
ROA (ind.adj.)	−0.016 (0.000)***	−0.009 (0.014)**	−0.01 (0.014)**	−0.044 (0.000)***	−0.03 (0.000)***	−0.029 (0.001)***
Firm size	−0.001 (0.027)**	−0.001 (0.083)*	−0.001 (0.084)*	−0.001 (0.006)***	−0.001 (0.025)**	−0.001 (0.025)**
BE/ME	−0.001 (0.534)	−0.001 (0.599)	−0.001 (0.577)	−0.003 (0.163)	−0.002 (0.255)	−0.002 (0.293)

Table 9 (*Continued*)

Panel B. ROA risk

	Change in ROA risk (0, +1)			Change in ROA risk (0, +2)		
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)
1{CEO outsider succession}	0.001 (0.464)	0.000 (0.672)	0.000 (0.664)	0.002 (0.252)	0.002 (0.335)	0.002 (0.352)
ROA risk	0.155 (0.463)	−0.133 (0.011)**	−0.092 (0.608)	0.28 (0.390)	−0.204 (0.009)***	−0.309 (0.274)
Constant	0.003 (0.518)	0.003 (0.311)	0.003 (0.401)	0.011 (0.086)*	0.012 (0.047)**	0.012 (0.043)**
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	304	304	304	289	289	289
Adj. R^2	0.421	0.445	0.443	0.487	0.522	0.521

$t = 0$ to $t = +2$ as the dependent variable. We find that the higher the ROA risk in the prior year, the lower the ROA risk 1 year after the CEO turnover year with more CBDs for both categories of dependent variables.

Overall, post-turnover analyses suggest that performance increases more for firms with CBDs 1 year after the CEO is fired when the prior year's ROA was inferior, while post-risk decreases when the prior year's risk was high for firms with CBDs. Such results infer that CBDs are firing poor-performing CEOs leading to higher performance after the CEO dismissal. But post-risk analysis results also suggest that CBD firms are more involved in firing risk-loving CEOs and later lead the newly-appointed CEO to focus on reducing firm risk, an action that may be in conflict with shareholders' interests.

We recognize the concern that CBDs may self-select to sit on certain types of boards.[18] To address such self-selection concern, we use Heckman's (1979) two-step procedure following Kang and Kim (2017) and Kang *et al.* (2019) in our untabulated analysis. In addition, we employ the propensity score matching procedure to ensure the results are not driven by small outliers and/or by systematic differences between CBD firms and non-CBD firms in our untabulated analysis.[19] We find that our baseline analysis that ABDs are both sensitive to firm performance and firm risk with respect to CEO dismissal is robust.

5. Conclusion

CBDs are double-edged swords in providing incentives for CEOs. Having bankers on the board brings a natural conflict of interest despite the financial expertise they may bring to the table. While Kang and Kim (2017) show that the presence of CBDs makes the *explicit* incentive of CEO pay less sensitive to risk, our study shows that the presence of CBDs makes the *implicit* incentive of CEO turnover more sensitive to both performance and risk. While the portion of US firms with CBDs is diminishing, it is still high in other countries with bank-based economic development (Goldsmith, 1959; Allen and Gale, 2000; La Porta *et al.*, 2002; Demirgüç-Kunt and Levine, 2004), as in Europe and Asia (Kroszner and Strahan, 2001; Levine, 2002). Also, this paper, which studies the governance effect of CBDs, is important because it extends the testing of the conflict of interest theory between two different kinds of investors in the capital market: debt holders and shareholders (Jensen and Meckling, 1976), formerly applied in various aspects of corporate finance, such as capital structure (Şişli-Ciamarra, 2012), M&As (Hilscher and Şişli-Ciamarra, 2013), investments (Güner *et al.*, 2008), R&D investment (Ghosh, 2016), and accounting conservatism (Erkens *et al.*, 2014).

[18]They may self-select to sit on certain boards of firms with less risk, a larger size, lower information asymmetry, and a lower short-term to long-term debt ratio to avoid bankruptcy (see Kroszner and Strahan, 2001).

[19]Please contact the author for details of the untabulated analyses.

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Appendix

Variable definitions (alphabetical order)

1 {High CEO ownership}	Dummy variable that equals one when the CEO owns more than 5%, and zero otherwise
1-year excess stock return	Annualized daily stock returns subtracted by CRSP value-weighted index [return-CRSP value-weighted index]
1{CBD}	Dummy variable that equals one when a firm has a CBD, and zero otherwise
1{CEO retirement age}	Dummy variable that equals one when CEO age is between 63 and 65 years old, and zero otherwise
1{Chairman = CEO}	Dummy variable that equals one when the CEO is also the chairman, and zero otherwise
1{CEO outsider succession}	Dummy variable that equals one when the successive CEO was an outsider
%ABD	Fraction of ABDs, following Guner *et al.* (2008)
%CBD	Fraction of CBDs
%NABD	Fraction of NABDs, calculated as %CBD – %ABD
%Outside directors	Independent director percentage
BE/ME	Book-to-market equity, calculated as ceq/ (prcc_f * csho)
Board members	The number of directors serving on a firm's board
Ln(board size)	Natural log(board size), where board size is the number of board members

Appendix (*Continued*)

Cash flow (CF/k)	Defined as CF/k; calculated as sum(ib, dp)/ lagppent, where lagppent is lagged PPENT from Compustat data
Cash flow (ind.adj.)	A firm's cash flow less the median cash flow in the same industry. Industry is defined using the Fama-French 49-industry classification
CEO age	The age of the CEO
CEO tenure	Tenure of a CEO which measures how long a CEO has been working in that firm
Idiosyncratic risk	"Sigma" = RMSE of running a market model using EVENTUS (where estimation length = 256) (but for missing sigma, replaced with RMSE where estimation.length = 20) which follows Bushman *et al.* (1999)
KMV EDF	KMV estimated default frequency from Moody's data
Firm size	Natural log(total assets), where total assets is AT variable from Compustat data
MAV_BOARDSIZE_IR	Trailing 3-year moving average of board size
MAV_CASHAT	Trailing 3-year moving average of cash divided by total assets (#CH/ #AT)
MAV_KMVEDF	Trailing 3-year moving average of KMV EDF
MAV_LAT	Trailing 3-year moving average of the natural logarithm of total assets
MAV_INSIDERPCT	Trailing 3-year moving average of the percentage of insiders as board members
MAV_NOCREDIT	Trailing 3-year moving average of an indicator variable that equals one if the credit rating is missing, and zero otherwise
MAV_MTB	Trailing 3-year moving average of the market value of equity divided by the book value of equity
MAV_RATINGNO	Trailing 3-year moving average of the credit rating by S&P in which the rating is transformed to numbers: better credit quality takes a higher number. We assign 22 to an AAA rating and 0 to a CCC rating
MAV_RETVOL	Trailing 3-year moving average of the standard deviation of daily stock returns over the fiscal year
MAV_RNDAT	Trailing 3-year moving average of R&D expense divided by total assets
MAV_TLTA	Trailing 3-year moving average of total leverage divided by total assets
ROA (ind.adj.)	Industry median-adjusted ROA, where ROA = oibdp/at (from COMPUSTAT)
ROA risk	An accounting-based risk measure used in Bushman *et al.* (1999); Standard deviation of prior 5 years of quarterly ROA, where ROA is calculated as oibdpq/ atq from fundq table of COMPUSTAT; before calculating for standard deviation, industry median is adjusted
STDEBTRATIO	Short-term debt divided by long-term debt