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Three Essays In Corporate Governance

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THREE ESSAYS IN CORPORATE GOVERNANCE

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To: Interim Dean William Hardin,
College of Business

This dissertation, written by Dung Thanh Nguyen, and entitled Three Essays in Corporate Governance, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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DEDICATION

To my mother, Vinh; my father, Ngan; my sisters Thuy and Hai; and most especially my wife, Tammy. Without their admonishments and sacrificial love, none of my successes would have been possible.

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ABSTRACT OF THE DISSERTATION

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This dissertation examines exploring how a board structure protects and creates shareholder value. The main responsibilities of a board of directors are to enhance the shareholder value by setting a strategic direction for the firm, monitoring, and advising managers. How exactly a board structure could create value and through what channels are one of the biggest challenges in corporate finance.

In the first essay, I use board structure changes brought by the Sarbanes-Oxley Act (SOX; 2002) as a natural experiment to investigate if founding families are expropriators or stewards of shareholder value. I hypothesize gain in a firm's value post-SOX if founding families are expropriators and a value loss if they are stewards. Using a difference-in-difference approach, I find that family firms that did not meet the requirements of SOX-related, board independence provisions before 2002, suffered significant value loss post-SOX. The results favor the steward role for founding families.

In the second essay, I examine the effect of an independent board structure on shareholder value in the context of mergers and acquisitions. The success of M&A transactions depends on the quality of supervision by corporate boards. Effective board monitoring could prevent entrenched managers from undertaking bad acquisitions. I find that acquirers with independent board chairpersons earn significantly higher CAR around M&A announcements.

In the third essay, I study whether effective monitoring by independent executive directors can mitigate stock return tail risk. Since these directors are active executives of other firms, they may have a better understanding of corporate practices due to their knowledge, expertise, and networks than other independent directors. I argue that these directors are more likely to understand various forces that affect crash risk and monitor them more effectively. Using a large sample of US public firms from 1996 to 2018, I find a negative association between independent directors and future stock crash risk.

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1.1 Introduction

Family firms range from small mom-and-pop stores to some of the largest corporations in the US, like Comcast and Ford. According to a 2017 report by Ernst and Young, the 139 largest family-owned corporations in North America generated over $2.4 trillion in revenue, had 6.7 million employees, and a $1.5 trillion market cap.[1] There is, however, mixed evidence on the ultimate effect of the existence of a founding family on firm value. Some researchers argue that founding families are expropriators of shareholders wealth and believe that they enjoy private benefits through concentrated board power and control-enhancing mechanisms that weaken firm-specific governance (Anderson, Duru, & Reeb, 2009; Anderson & Reeb, 2004; Fama & Jensen, 1985; Shleifer & Vishny, 1997; Villalonga & Amit, 2006; Zingales, 1995; Holderness & Sheehan, 1988).[2] Others find them stewards of shareholder value (Anderson & Reeb, 2003a, 2003b; Demsetz & Lehn, 1985; James, 1999), and argue that founding families embrace a longer-term approach to decision making and are less likely to pursue myopic policies driven by the split of ownership and control (Demsetz & Lehn, 1985; James, 1999). In this paper, I use the Sarbanes-Oxley Act of 2002 and subsequent modifications in listing standards (SOX) of US stock exchanges as a quasi-natural experiment to investigate if founding family acts as stewards of their firm or are expropriators. [3]

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[1] See https://familybusiness.ey-vx.com/pdfs/screen-ey-17-002-fby-2017-bkl1705-002-v27-18-facts-and-figures-north-america.pdf

[2] International evidence generally suggests that founding families are expropriators, see for example, Claessens, Djankov, Fan, & Lang (2002), Cronqvist & Nilsson (2003), Fan & Leung (2018), Maury (2006), Smith & Amoako-Adu (1999).

[3] After a series of massive corporate frauds such as Enron and Tyco, US Congress passed the Sarbanes Oxley Act (2002). Subsequently, NYSE and NASDAQ modified their listing standards to improve corporate governance and board effectiveness of US-listed firms. Collectively, we refer to these changes as SOX because of their concurrence around 2002.

1.2 Hypothesis Development

One of the major outcomes of SOX was to increase board independence of US-listed firms. Independent boards are effective monitors of firm managers, and multiple studies have documented evidence that how such boards carry-out discrete tasks in favor of shareholders (see for example, Armstrong, Core, & Guay, 2014; Coles et al., 2008; Guo & Msulis, 2015).[4] If founding families are expropriators, then effective monitoring through improved board independence should increase firm value. If founding families act as stewards, then diluting their decision-making power due to interference from independent boards should result in value loss for the firms. I find a negative and statistically significant effect of SOX on the value of family firms that did not meet the requirements of SOX before 2002, supporting the steward role for founding families over expropriators.

SOX and subsequent changes in listing standards by US stock exchanges imposed three board independence requirements: the majority of independent directors on a board; a fully independent audit committee; and a fully independent nominating committee of the board. With an intention to protect investors by improved board monitoring, SOX brings stricter scrutiny inside the corporate boardroom (Banerjee, Humphery-Jenner, & Nanda, 2015; Gao & Zhang, 2019) and it significantly improves the corporate information environment (Andrade, Bernile, & Hood, 2014). By forcing companies to add more independent directors, and by increasing the monitoring intensity of boards, SOX could impact family firms positively if the founding families are opportunistic entities. Due to a substantial investment of family capital and due to the desire to preserve the family wealth, the founding families may have an incentive to invest in assets that do not necessarily maximize external shareholders' value but serve family interests (Anderson & Reeb, 2004). Founding family entrenchment (Villalonga & Amit, 2006) and a moral hazard

[4] There are numerous studies that have examined various aspects of corporate decision making by independent boards such as CEO hiring, turnover compensation, capital structure, dividend decisions, takeovers etc. and generally find a positive link between board independence and these events. Multiple surveys have been published on board compositions that readers can refer to (See e.g., Masulis, 2020, Adams, Hermalin, & Weisbach, 2010, Hermalin & Weisbach, 2003, among others).

problem created by asymmetric altruism toward family members (e.g., Gomez-Mejia; Larraza-Kintana, & Makri, 2003) are well-studied problems associated with founding families. By improving and increasing the monitoring of family firms by independent board members and by limiting founding families' influence in nominating directors, SOX could reduce the agency conflicts and asymmetric information, and force executives to act in the interests of external shareholders. In this case, we should observe a constructive effect of SOX on the value of family firms.

On the other hand, if founding families are stewards, by increasing independence and monitoring intensity of boards, SOX can discourage founding families from taking the stewardship role. Founding families, as firms' stewards, not only reduce internal conflicts; they also increase collaboration, harmony, and knowledge sharing among employees (Eddleston & Kellermanns, 2007). Stewardship theory proposes the desire to maintain the control of an organization as the key motivator of stewards (Argyris, 1964; Davis, Schoorman, & Donaldson, 1997). By weakening the control of stewards over corporate boards through independent boards and committees with only independent directors, especially the nominating committee, thereby depriving the stewards of decision-making power, SOX might have weakened pro-organizational behavior and intrinsic motivation of founding families to act as stewards of firms. From this perspective, we should see a negative impact of SOX on the value of family firms.

Utilizing hand-collected data on S&P 1500 family firms, I research the effect of the provisions of SOX on the value of these firms. [5] I analyze family firms that met the requirements of SOX even before it was implemented (Compliant Firms) and those that did not (Noncompliant Firms) along with nonfamily firms and find a strong negative effect of SOX only for the noncompliant family firms. The value loss suffered by the noncompliant family firms in the post-

[5] To identify a family firm, we use similar approach as used by Anderson and Reeb (2003) and Villalonga and Amit (2006). We also conduct a series of robustness tests using the definition of Miller et al. (2007) and other modified definitions.

SOX period supports their steward role. Next, I examine whether the effects of SOX vary by the family firm types, i.e., if a family firm is led by founder CEO or descendent CEO. I find that the negative effects of SOX-related rules were more prominent in family firms led by founder CEOs. These findings are in line with Villalonga and Amit (2006), who find that founder CEOs serve as stewards of their firms, whereas descendants have an adverse effect on firm value. As further robustness, I use the definition of Miller, Breton-Miller, Lester, and Cannella (2007) to separate family firms into lone founder firms, first-generation family firms, and second-generation family firms. For the pre-Sox period, similar to Miller et al. (2007), I find that only lone founder firms beat nonfamily firms. The pre-SOX and post-SOX comparison show that SOX negatively affects the firms led by lone founders confirming the steward role of lone founders.

I acknowledge the possibility of alternative explanation of the empirical results. For example, it is plausible that founding families are expropriators and they continue to expropriate post-SOX but through impalpable channels or by changing the nature of projects where expropriation is extremely difficult to detect. The new projects could be worse on average and therefore the passage of SOX may lead to value loss.[6] However, for this explanation to be valid, we should observe a significant change in investments, risks or information opacity of founding family firms post- SOX. Also, if the entrenched CEOs are able to expropriate shareholder wealth, their turnover should increase as newly formed independent boards of these firms are more likely to fire CEOs (Guo and Masulis, 2015) unless the CEO is able to hide his/her actions from the board. We should therefore observe higher levels of opacity post-SOX as managers might attempt to limit information flow not only to outsiders but to board members also. I examine various characteristics of firms that could capture changes in CEOs' preferences for a particular type of investment/financing or risk post-SOX. I also compare the level of transparency of family and non-

[6] We thank an anonymous referee for suggesting this potential ambiguity in the results and the ways to address the concern.

family firms by their compliance status and in pre-SOX vs. post-SOX period. I do not find any significant change in the level of information environment. Using the natural logarithm of the number of analysts as a proxy for firm transparency (Anderson et al., 2009, Dahiya, Iannotta, and Navone 2017), I find that both non-compliant family firms and non-compliant non-family firms exhibit higher firm transparency post-SOX. Moreover, I find no evidence that non-compliant family firms participate in more complex projects such as mergers and acquisitions that are hard for outsiders to monitor. I also examine changes in forced CEO turnovers and find that forced CEO turnover of non-compliant family firms and non-compliant non-family firms both increased in the post-SOX period, but the change is statistically insignificant. Moreover, I do not observe any significant change in firm risk either. These assessments indicate that the outcomes are not driven by entrenched managers keeping their expropriation through less efficient channels.

Another plausible explanation for the observed decrease in firm value for family firms is the change in sample composition due to SOX. Due to the high compliance cost associated with SOX, some firms might have decided to merge or get acquired, to delist their equity or might have gone private. If these firms were the better performing or better managed firm, then the sample may have been biased by keeping poorly performing firms for the post-SOX analysis. To ensure that the findings are not driven by the firms that eventually delisted/went private or merged, I re-run the primary analysis after excluding family firms that become non-family firms; excluding firms that went private or were delisted due to failure to comply with exchanges' requirements; excluding firms that were acquired after the advent of SOX. I find that the results remain robust to these censoring criterions.

Yet another possibility is that the value decrease I capture is not due to SOX but a secular trend that started with multiple events (e.g., tech bubble bursts) or concurrent regulations (Reg FD, Global Settlement, Dodd-Frank). To address this concern, first I use Wintokin (2007) approach and examine announcement returns (CARs) around dates specifically for board requirement related events. These announcement returns help us disentangle the contaminating effects of other regulations and secular shifts. I find that while compliant family firms exhibit no significant abnormal return, non-compliant family firms have lower CAR in response to SOX related events. Second, I perform a placebo test by re-running the analysis using alternate dates as event date for SOX implementation. The placebo test confirms that it is indeed SOX that affected the valuation of family firms negatively and I are not capturing effects of any other events.

I perform additional robustness checks. For endogeneity concerns, I use firm fixed effects, random effects, generalized method of moments (GMM), Erickson-Whited linear errors-in-variables, and find similar results. I apply propensity score matching (PSM; Rosenbaum & Rubin 1983, 1985) to address potential self-selection bias and find that the results are robust to using PSM estimations. In the empirical tests I use Tobin's Q as a measure of performance as is commonly used in the literature (e.g., Anderson and Reeb 2004, Villalonga and Amit 2006, Miller et al. 2007, and Masulis and Zhang 2019). As robustness I use alternate measures of firm profitability such as returns on assets, Peter and Taylor Total Q (Peters and Taylor, 2016), announcement return (Wintokin, 2007) and annual stock returns. The results are robust to these alternative measures.

The study adds to the existing literature in several ways. First, I use SOX as a quasi-natural experiment to resolve the conflicting evidence in the literature, if founding families expropriate shareholders' wealth or act as stewards. Passage of SOX Act (2002) provides an exogenous shock to firms where they are required to have increased representation of independent directors in their board as per the government mandate.[7] Improvement in board independence translates into increased monitoring of the actions of company management. An increase in monitoring should curb the self-interested behavior of expropriators (e.g., free-riding, shirking), hence enhance firm

[7] In this paper we do not attempt to investigate the endogenous relationship of family ownership and firm value (Demsetz,1983; Demsetz and Villalonga, 2001; McConaughy, Walker, Henderson, and Mishra, 1998). The exogenous shock of increased board independence due to SOX reduces family's controlling power without influencing family ownership structure.

value (Eisenhardt, 1989; Jensen and Meckling, 1976). On the other hand, stewards are motivated to behave in the best interest of the organization (Davis et al., 1997; Donaldson and Davis, 1991; Lee and O'Neill, 2003), and any reduction in their decision making power should decrease their level of dedication and performance, and hence reduce firm value (Davis et al., 1997; Pieper et al., 2008). By showing a negative impact of SOX on family firms, I provide support to the stewardship role of founding families and extend the literature that highlights the consequences of regulatory actions that fundamentally alter the equilibrium established by market forces.

The study also contributes to the understanding of how SOX affected distinct groups of firms differently. While some studies show a constructive impact of SOX on firms (e.g., Andrade et al., 2014; Banerjee et al., 2015; Gao & Zhang, 2019), others find a negative effect of SOX (e.g., Bargeron et al., 2010; Zhang, 2007). Studies that find a positive impact of SOX claim that it has created a transparent environment by building uniform disclosure and governance policies and helped rebuild investors' trust in public firms in the US. The studies that find a negative impact of SOX document various direct and indirect costs associated with SOX compliance (Iliev, 2010; Hermalin & Weisbach, 2007; Kang & Liu, 2010; Wintoki, 2007). The study contributes to this discussion by proposing a new reason for value loss for a subset of firms. I show that SOX deprives stewards' control power and hence, their benefits to shareholders.

The paper is organized as follows. In section 2, I describe the data and variables. In section 3, I present the main results and robustness checks. In section 4, I summarize the main findings.

1.3 Data and Variables

1.3.1 Data

For the empirical tests, I utilize S&P 1500 firms from 1998 to 2010. The choice of the time period is consistent with prior literature on SOX (e.g., Ahmed et al., 2010; Banerjee et al., 2015; Gao & Zhang, 2019). There are some researchers (e.g., Chhaochharia & Grinstein, 2007; Zhang,

2007) who use shorter sample periods to investigate the effect of SOX. Therefore, I conduct robustness checks with shorter time periods as well, to show the consistency of the results.

I avoid the survivorship bias by allowing firms to enter or exit the S&P 1500 during the sample period. As is customary in this literature (e.g., Anderson & Reeb, 2003; Villalonga & Amit, 2006; Miller et al., 2007), I exclude utilities and financial service firms. Similar to Anderson and Reeb (2003) and Villalonga and Amit (2006), I define the family firms as those in which any member of the founding family (founder, his/her descendants either by blood or marriage, other relatives) is a director, officer, and/or a block holder, either individually or as a group. I consider a person as a founder if he/she had founded the sample firm and the predecessor firm (if any). This includes the person who controlled and developed the firm from an early formative stage. For example, the Graham family in the Washington Post and Robert Walter in Cardinal Health are considered as founders. I do not consider an individual to be a founder if he/she becomes the largest shareholder by accumulating shares through investments. If there is more than one family in the firm, I follow the methodology of Villalonga and Amit (2006) and consider only that family which has the largest voting power.

I use a two-step process to identify a founding family firm:

Step 1: Following Anderson and Reeb (2003) and Villalonga and Amit (2006), I collect information about the founding family members from referenceforbusiness.com; fundinguniverse.com; Hoovers; proxy statement; 10-K; firm websites; and other well-known websites such as NY Times, LA Times, HBR, Forbes.

Step 2: Once I identify a firm as a founding family firm, I manually collect the ownership and voting stake of the founding family.[8]

[8] Prof. Ronald Anderson provides two excel files on his website. One file identifies whether an S&P 500 firm is family firm or not, and it covers S&P 500 firms from 1992 to 1999. The second file contains a binary variable that indicates whether a firm is a family firm with at least five-percentage ownership, and it covers 2000 largest firm from 2001 to 2010. After finishing step two of the data collection process, we cross check the data with data provided by Prof. Anderson and find the family firm variable and his family firm variable have a correlation of 92%. See

I use Compustat for accounting, financial, and industrial segment data. Institutional ownership data is from the Thomson Financials 13F database. CEO related data is from Execucomp. I obtain stock return information and risk measures from CRSP.

The data on board attributes such as board size, board independence, and the classification of directors is from Institutional Shareholder Services (ISS). Coles, Daniel, and Naveen (2014) describe that the ISS database uses two separate coding methods for director ids (legacy_director_id and director_detail_id), which introduces an error in identifying individual directors and hence could lead to problems in calculating board size, board independence, and other variables. To address this issue, Coles et al. (2014) manually matched directors, and I use their methodology to clean the data from ISS.[9]

After applying all the data availability requirements, I obtain a sample of 10,181 firm-year observations.[10] In Appendix 1.A2a, 1.A2b, and 1.A2c, I further provide year-wise percentages of non-compliant and compliant family/non-family firms. The ratio of compliant firms in the sample is similar to previous literature (e.g., Duchin, Matsusaka, & Ozbas, 2010; Dahiya, Iannotta, & Navone, 2017). As expected, the percentage of compliant firms in the sample increases over time.

1.3.2 Key Variables

Consistent with previous literature (e.g., Anderson & Reeb, 2003; Villalonga & Amit, 2006; Miller et al., 2007; Masulis and Zhang, 2019), I use Tobin's Q as the measure of corporate value[11]. The main independent variable is *Family Firm* which takes a value of one if founder, his/her relative, and descendant (either by blood or marriage) is a director, officer, and/or

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http://www.ronandersonprofessionalpage.net/data-sets.html. The trivial difference may stem from rounding founding family ownership and the fact that we use Villalonga and Amit (2006) method to categorize family firms in the cases where there is more than one family in the firm. Nevertheless, we obtain similar results using Prof. Anderson's data.

[9] See more at https://sites.temple.edu/lnaveen/data

[10] The sample size is comparable to that of 10264 observations in Balsam, Puthenpurackal and Upadhyay (2016).

[11] We also find consistent results with ROA, Annual returns, Peter and Taylor Total Q as a dependent variable.

blockholder and zero otherwise. *Founder CEO* dummy equals one if the CEO is the founder of the firm and zero otherwise. *Descendant CEO* dummy equals one if the CEO is a founders' descendant and zero otherwise. *Hired CEO* dummy equals one when the CEO is a nonfamily member in a family firm and zero otherwise.

Firm-specific control variables are based on previous literature(e.g., Miller et al.,2007; Gao and Zhang, 2019) and are E-index, dual-class, R&D intensity (R&D expenses/Total Assets), Capex/Total Sales, firm size, firm age, diversification, leverage. R&D intensity is a proxy for growth opportunities and is equal to R&D expenses scaled by total assets. Diversification is the natural logarithm of the number of business segments. I use the natural logarithm of sales as a proxy for firm size and the natural logarithm of the number of years since the firm's founding year as a proxy for firm age.

The board related control variable is the natural logarithm of board size (Yermack, 1996). I control for various CEO characteristics such as CEO Compensation, the natural logarithm of CEO age, and the natural logarithm of CEO tenure. Following prior studies (e.g., Anderson & Reeb, 2003), I also include firm market risk.

1.4 Empirical Results

1.4.1 Univariate Analysis

Table 1.1 presents the number and percent of firm-year observations classified as family and nonfamily firms by industries as defined by two-digit SIC code. Consistent with the previous literature (e.g., Anderson, Duru, & Reeb, 2009; Anderson, Reeb, & Zhao, 2012), in the sample, family firms represent 42.8% of the total sample of firms. I perceive a large variation in terms of the presence of family firms across various industry sub-groups in the sample. For example, family firms appear to be the prevalent organizational forms in industries such as educational services, hotel services, transportation services, automotive dealerships, and constructions, but they are either non-existent or have a smaller presence in industries like automotive repairs, amusement, metal mining, railroad and furniture, and fixtures. To control for this variation, I add indicators for industry affiliation in the multivariate analysis by using two-digit SIC code.

In panel A of Table 1.2, I present the descriptive statistics of the variables used in this study. 42.8% of firms in the sample are categorized as family firms; 14.9% are founder led-family firms, 7.7% are heir led, and approximately 20.2% are hired/professional CEO led. Thus, within the family firm category, 35.1% (calculated as the ratio of founder-led firms ratio to family firm ratio: 0.15/0.428) of the firms have a founder CEO; 18% of the firms have a descendant CEO, and 47.2% of the firms have a hired professional CEO who is not a family member. Panel B of Table 1.2 presents the correlation among variables. Consistent with previous literature, *Family Firm, Founder CEO, and Hired CEO* dummy variables exhibit a positive correlation with Tobin's Q. Descendant CEO dummy has a negative correlation with Tobin's Q. In Appendix 1.A2a, 1.A2b and 1.A2c, I present year-wise ratios of non-compliant and compliant family/non-family firms in the sample. These ratios are consistent with the previous studies (e.g., Dah, Frye, & Hurst, 2014; Duchin, Matsusaka, & Ozbas, 2010). In general, I find that the family firms were less likely to meet the board related SOX requirements in the pre-SOX period. In the sample, at the end of 2001, only 19.7% of family firms were compliant with board related SOX requirements as compared with 45.6% nonfamily firms.

Table 1.3 provides difference-in-means tests for pre-SOX (1998 to 2001) and post-SOX periods (2002 to 2010). Compliant family firms experience an increase in their valuation post-SOX (from 2.19 pre-SOX to 2.21 post-SOX), whereas noncompliant family firms witness a significantly large drop of 22.75% in their Tobin's Q (from 2.55 to 1.97) post compliance. The comparison of Tobin's Q between non-compliant family firms and compliant family firms pre-SOX (row (a) and (b)) and post-SOX (row (e) and (f)) reveals that the non-compliant family firms enjoy a premium in the pre-SOX period relative to compliant family firms, which disappears in the post-SOX period. In the sample, an average non-compliant family firm has Tobin's Q of 2.55 in the pre-SOX period, which is about 25% higher than the Tobin's Q of an average non-compliant nonfamily firm during the same period. When I consider the post-SOX period (2002-2010)[12], the difference between the Tobin's Q of an average non-compliant family firm and a noncompliant nonfamily firm is still positive and significant (row (e)-(g)). However, the magnitude of this difference is significantly smaller by almost 74.31%: 0.12 (row (e)-(g)) in the post-SOX period vs. 0.50 (row (a)-(c)) in the pre-SOX period. This difference is economically significant and provides the first glimpse of how SOX-related provisions affected family firms as compared with nonfamily firms. The comparison results for ROA are similar to what I observe for Tobins Q. Consistent with the prior literature (e.g., Anderson & Reeb, 2003; Villalonga & Amit, 2006; Miller et al.,2007), I find that in the pre-SOX period, family firms have smaller board size and board independence ratio. However, in the post-SOX period, noncompliant family firms increased their board size while noncompliant nonfamily firms exhibited no statistical difference in their board size. In terms of firm age and size, I notice an increase for both variables in the post-SOX period. The difference-in-difference row ([(e)-(g)] – [(a)-(c)]) for R&D intensity and number of patents/R&D expenses are negative but insignificant. However, the difference-in-difference row ([(e)-(g)] – [(a)-(c)]) for the number of citations/R&D expenses is negative and significant. I also find that besides leverage, the difference-in-difference row ([(e)-(g)] – [(a)-(c)]) for market risk, credit rating, transparency, and number of M&As[13] are all insignificant. These results indicate that the founding family firms did not significantly alter their risk profile and investments in response to SOX related changes.

1.4.2 Multivariate Analysis

1.4.2.1 Effect of SOX on Firm Valuation

Consistent with previous literature (e.g., Anderson & Reeb, 2003; Villalonga & Amit, 2006; Miller et al., 2007; Masulis & Zhang, 2019), I use Tobin's Q as the dependent variable to

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[12] The results are similar with the 2002-2005 period.

[13] M&A data is from SDC platinum.

test the association between family firm presence and firm valuation. To examine whether SOX related board structure provisions affected the value of family firms, I analyze the coefficient for the interaction of *Family Firm*, *SOX*, and *Noncompliant* variables. I define a firm to be noncompliant to SOX if the firm did not comply with any one of the three requirements: a majority of independent directors, a fully independent audit committee, and the fully independent nominating committee in any fthe years pre-SOX, from 1998 to 2001[14]. Therefore, *Noncompliant* dummy variable takes the value of 1 for all years if a firm is noncompliant to SOX, and 0 otherwise. I control for the board, CEO, and firm characteristics, as discussed in section 2.2. I also include an intercept, industry fixed effect using two digits SIC code, and time fixed effect. I follow the methodology of Petersen (2009) and cluster the standard errors by both firm and time levels. I use the following regression model:

$$\text{Tobin's } Q_{i,t} = \alpha_1 + a_1 * \textit{Family Firm}_{i,t} + b_1 * SOX_t + c_1 * \textit{Noncompliant}_i + d_1 * \textit{Family Firm}_{i,t} * SOX_t + e_1 * \textit{Family Firm}_{i,t} * \textit{Noncompliant}_i + f_1 * SOX_t * \textit{Noncompliant}_i + g_1 * \textit{Family Firm}_{i,t} * SOX_t * \textit{Noncompliant}_i + \theta \mathbf{X}_{i,t} + \lambda_j + \varphi_t + \varepsilon_{i,t} \quad (1)$$

- $X_{i,t}$: control variables including Ln(Board Size), E-index, Dual Class, R&D Expense/Total Assets, Capex/Total Sales, Ln(Sales), Ln(Firm Age), Diversification, Leverage, CEO Compensation, Ln(CEO Age), Ln(CEO Tenure), Firm Market Risk.
- λ_j : industry fixed effect (two-digit SIC dummies)
- φ_t : time fixed effect (fiscal year dummies)
- $\varepsilon_{i,t}$: error term

[14] The choice of using fthe years from 1998 to 2001 is inspired by Banerjee et al. (2015). In an unreported robustness check, we relax this requirement by using only two years (2000 and 2001) to categorize compliant and noncompliant firms. We find consistent results with the baseline regressions in Table 4.

If SOX has a negative effect on family firms' value, I should observe a significant negative sign for the triple interaction term coefficient (g_1). Alternatively, if SOX has a positive effect on family firms' value, there should be a significant positive sign in the triple interaction term coefficient (g_1). In table 1.4, I present the results for the above regression equation (1) for the full sample and subsample from 1998 to 2005. The coefficient g_1 of the triple interaction term *Family Dummy * SOX * Noncompliant* is negative and significant at the 1% level for both samples. Moreover, the average Tobin's Q of noncompliant family firm being 2.546 (column 1 of Table 1.3) and the coefficient of the triple interaction term (column 1 of Table 1.4) being -0.648 translate into 25.45% value loss of noncompliant family firms. The magnitude of the value reduction is economically significant. The result of value loss due to SOX provides evidence that founding families are stewards.

Additionally, in untabulated results, I conduct three F-tests on the coefficients of *Family Firm* and its interactions and find that while SOX has a strong negative effect on noncompliant family firms (the sum of $b_1 + d_1 + f_1 + g_1 = 0$ is significantly different from zero at 1% level), it has no significant effect on compliant family firms (the sum of $b_1 + d_1 = 0$ is insignificantly different from zero). Importantly, the summation of coefficients of *Noncompliant* (c1) and *SOX * Noncompliant* (f1) is insignificant in both sample periods. It indicates that SOX has no effect on nonfamily firms.[15] [16] I find the difference-in-difference test for the effect of SOX between the coefficients for family firms that were noncompliant vs. nonfamily firms that were noncompliant

[15] The results are also consistent when we use the data from 1999 to 2004; or 1998 to 2006 but exclude the year 2002; or 1999-2005 but excludes the year 2002.

[16] In an unreported table, we examine family firms with hired CEO and no control-enhancing mechanism. These family firms have similar agency problems as nonfamily firms. We continue to find that SOX negatively affect those family firms. The finding further supports the steward role of founding families.

to be negative and statistically significant confirming that SOX was particularly distressful to family firms.[17]

1.4.2.2 Other modifications: firm-fixed, random effects, GMM, and Erickson-Whited Linear Errors-in-Variables

To address potential endogeneity arising out of unobservable firm-specific variables, I perform additional regression tests, including firm fixed, random effects, dynamic panel generalized method of moments (GMM) (Wintok, Linck, and Netter, 2012)[18], Erickson-Whited Linear Errors-in-Variables (Erickson and Whited, 2002)[19] and report the results in Table 1.5. The coefficients on the triple interaction term *Family Firm*SOX*Noncompliant* stay negative and significant, confirming that the primary results are not driven by a choice of a particular estimation method.

In untabulated results, I investigate if the decrease in family firm value post-SOX is driven by firms with very high Tobin's Q in the pre-SOX period. I exclude firms that were in the top quintile of Tobin's Q in 1998 and rerun the baseline regressions and obtain similar results.

1.4.2.3 Propensity Score Matching

I employ propensity score matching (PSM) (Rosenbaum & Rubin 1983, 1985) to control for potential sample selection bias. Using Radius and nearest neighbor (1:1) with caliper (0.0001) methodologies for the full sample 1998-2010, I match non-compliant family firms with non-compliant non-family firms and non-compliant family firms with compliant family firms based on

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[17] There is a possibility that laxed monitoring by sympathetic boards in pre-SOX period allowed family firms to artificially inflate their accounting earnings. In such case, the deterioration in family firm value could have been driven by the intensive monitoring of independent directors in the post-SOX period who prevented such practices and started reporting correct numbers. We explore this possibility by examining the effect of the fully independent audit committee requirement of SOX. We note that audit committees are responsible for the integrity of financial reports. However, we find an insignificant impact of this requirement on family firm value in post-SOX period and thus, rule out this alternative interpretation of the result.

[18] we use *xtabond2* Stata code with lag 2 to lag 4. We consider SOX dummy, year dummies, and firm age are exogenous, and other control variables are endogenous.

[19] We use xtewreg Stata code with maxdeg=5

all control variables, industry, and time dummies. In panel A and B of Table 1.6, I report the results from the balancing test of the control and treated sample under the nearest neighbor and radius methods. In panel C of Table 1.6, I present the regression results that are based on the matched samples. NF_NNF is a dummy which equals 1 when a firm is a non-compliant family firm, and 0 when a firm is a non-compliant nonfamily firm. I find Tobin's Q of non-compliant family firms to be significantly higher than that for non-compliant non-family firms. The coefficient on interaction term *NF_NNF * SOX* is negative and statistically significant, confirming the negative effect of SOX on the non-compliant family firms in the post-SOX period as compared to the non-compliant non-family firms.

1.4.2.4 Censoring

To make certain the results are not driven by transitions of family firms that might have become non-family firms during the sample period, I exclude such firms from the analysis.[20] In column 1 of Table 1.7, I present the results for the regression of equation (1), excluding the transition firms from the analyses. I also exclude delisted firms and those firms that went-private from the sample and report the result in column 2 of Table 1.7[21] [22]. In column 3, I exclude firms that were acquired after the advent of SOX.[23] In column 4, for the full sample, I include merger dummy, which equals 1 if the firm make a merger announcement during a year, and 0 otherwise. In column 5, I exclude family firms that become nonfamily firms; exclude firms that went private

[20] Family firms may transition to non-family firms due to many reasons, such as if all family members leave the firm, or there is a sudden death of a founder.

[21] We use the same control variables, time, and industry dummies as in Table 4.

[22] We report univariate analysis of these excluded firms in Appendix 1.A3. We find no significant difference in Tobin's Q and ROA of those firms (row 7 of column 1 and 2 of Appendix 1.A3).

[23] We also compare the performance of acquired family/non-family firms before their acquisition and report the results in Appendix 1.A4. There are 79 firms being acquired after the advent of SOX. Within 79 firms, 26 noncompliant family firm, 0 compliant family firms, 47 noncompliant nonfamily firms, and 6 compliant nonfamily firms. We find that acquired family firms have no difference in firm value to non-acquired family firms (row 7 of column 1 and 2 of Appendix 1.A4). To ensure that the findings are not driven by these firms, we exclude them from the sample and re-run the primary analysis.

or were delisted due to failure to comply with exchanges' requirements; exclude firms that being acquired after the advent of SOX; and I include merger dummy, which equals 1 if the firm make a merger announcement during a year, and zero otherwise. The findings remain robust to each of the censoring.

1.4.2.5 Placebo Tests:

There were several other regulatory and financial market shocks that occurred around the passage of SOX. These events include Reg FD, Global Settlement, and the dot.com crash. To ascertain that the results are due to SOX and not from the other confounding events around the passage of SOX, I conduct placebo tests that assume different implementation year of SOX instead of the year 2002. In columns 1, 2, 3, 4, and 5 of Table 1.8, I re-run the regressions that are similar to the baseline model but with 3-year sample periods and assuming that SOX happened in the year 2000, 2001, 2002, 2003, and 2004. For instance, in column 1 of Table 1.8, I use three years of data from 1998 through 2000 and assume that SOX was implemented in 2000 (SOX_2000=1 if the year equals 2000, and 0 if the year < 2000). Using three board requirements in the year 1999, I categorize firms into compliant and noncompliant. I apply the same approach for years 2001 to 2004 in columns 2 to column 5. I find that the triple interaction term is negative and significant only in columns 3 when year 2002 is assumed as the implementation year for SOX. These results indicate that the findings are indeed due to SOX and not from the other confounding events.

1.4.2.6 Does SOX Impact Vary by Type of Family Firm CEO?

A firm's CEO is the one who makes vital decisions that influence firm value. Family firms can have different types of CEOs like Founder CEO, Descendant CEO, or Hired CEO. Founder CEO firms have a founder serving as CEO, whereas hired CEO firms are family firms with a professional nonfamily CEO. Descendant CEO firms are family firms that are led by a CEO who is a descendant of the founder (second generation or above). Researchers are in general agreement that founder CEOs are valuable to their firms whereas descendant CEOs are not beneficial to firm value (Adams, Almeida, & Ferreira, 2009; Huang, Li, Meschke, and Guthrie (2015); Pinheiro and Yung, 2015; Villalonga & Amit, 2006). Fahlenbrach (2009) constructs an equal-weighted investment strategy by buying stocks of founder-CEO firms and finds that the strategy earns an abnormal yearly return of 8.3%. Lee, Kim, and Bae (2016) use data from the pre-SOX period and document that founder CEOs invest more in R&D and are better innovators. In another stream of research, Faleye, Hoitash, & Hoitash (2011) find that intense monitoring hurts innovation. Collectively from the evidence from these two streams of research, I argue that hiring more independent directors post-SOX would increase board monitoring, which could discourage founder CEOs from risk-taking activities and could stifle innovation and other value-enhancing decisions. Alternatively, increased board monitoring post-SOX could mitigate the adverse effects of descendant CEOs.

To test if the impact of SOX on family firms varies by the types of family firms, I categorize family firms into Founder CEO firms, Descendant CEO firms, and Hired CEO firms and run the following models[24]:

$$\text{Tobin's } Q_{i,t} = \alpha_2 + a_2 * \textit{Founder CEO}_{i,t} + b_2 * SOX_t + c_2 * \textit{Noncompliant}_i + d_2 * \textit{Founder CEO}_{i,t} * SOX_t + e_2 * \textit{Founder CEO}_{i,t} * \textit{Noncompliant}_i + f_2 * SOX_t * \textit{Noncompliant}_i + g_2 * \textit{Founder CEO}_{i,t} * SOX_t * \textit{Noncompliant}_i + \theta\, \mathbf{X}_{i,t} + \lambda_j + \varphi_t + \varepsilon_{i,t} \quad (2)$$

$$\text{Tobin's } Q_{i,t} = \alpha_3 + a_3 * \textit{Descendant CEO}_{i,t} + b_3 * SOX_t + c_3 * \textit{Noncompliant}_i + d_3 * \textit{Descendant CEO}_{i,t} * SOX_t + e_3 * \textit{Descendant CEO}_{i,t} * \textit{Noncompliant}_i + f_3 * SOX_t * \textit{Noncompliant}_i + g_3 * \textit{Descendant CEO}_{i,t} * SOX_t * \textit{Noncompliant}_i + \theta\, \mathbf{X}_{i,t} + \lambda_j + \varphi_t + \varepsilon_{i,t} \quad (3)$$

[24] For model 2, we run regressions with Founder CEO firms and Nonfamily firms. Similarly, for model 3, we run regressions with Descendant CEO firms and Nonfamily firms. Lastly, for model 4, we run regressions with Hired CEO firms and Nonfamily firms.

Tobin's $Q_{i,t} = \alpha_4 + a_4 * \textit{Hired CEO}_{i,t} + b_4 * SOX_t + c_4 * Noncompliant_i + d_4 * \textit{Hired CEO}_{i,t} * SOX_t + e_4 * \textit{Hired CEO}_{i,t} * Noncompliant_i + f_4 * SOX_t * Noncompliant_i + g_4 * \textit{Hired CEO}_{i,t} * SOX_t * Noncompliant_i + \theta \mathbf{X}_{i,t} + \lambda_j + \varphi_t + \varepsilon_{i,t}$

(4)

- Founder CEO: Founder CEO equals one if the CEO is the founder of the firm and zero otherwise.
- Descendant CEO: Descendant CEO equals one if the CEO is a founders' descendant and zero otherwise.
- Hired CEO: Hired CEO equals one when the CEO is a nonfamily member in a family firm and zero otherwise.
- $X_{i,t}$: control variables including Ln(Board Size), R&D expense/Total Assets, Ln(Sales), Ln(Firm Age), Capex/Total Sales, Dividend/Net Income, Diversification, Super shares, CEO Compensation, Ln(CEO Age), Ln(CEO Tenure), Firm-Specific Risk, Other Blockholder Ownership
- λ_j : industry fixed effect (two-digit SIC dummies)
- φ_t : time fixed effect (fiscal year dummies)[25]
- $\varepsilon_{i,t}$: error term

In column 1 of Table 1.9, I run a multivariate regression of equation (2), which is similar to what I report earlier in Table 1.4 except that I replace *Family Firm* dummy with *Founder CEO* dummy.[26] I find the coefficients of *Founder CEO * SOX * Noncompliant* to be negative and highly significant at the 1% level indicating the negative effect of SOX on Founder CEO led firms. In

[25] The results are similar when we exclude year dummies.

[26] We report only the triple interaction terms to conserve space.

column 2 of Table 1.9, I run regression equation (3) and find the coefficient on *Descendent CEO * SOX * Noncompliant* to be insignificant, indicating that the descendants do not act as stewards. Results for regression equation (4) in column 3 of Table 1.9 show the coefficients of *Hired CEO * SOX * Noncompliant* to be negative and significant, providing strong evidence that SOX hurts family firms with hired CEOs. Overall, these results confirm the steward role of founding families.

1.4.2.7 Alternative family firm definitions:

Miller et al. (2007) argue that while founders are valuable to shareholders, their relatives or descendants are not considered as valuable as the founders are because they may not have the same drive or motivations to make a venture successful as the founder may have. I use an alternate definition of family firms similar to Miller et al. (2007) and categorize family firms into those run by a lone founder and those run by multiple family members. In column 4 of Table 1.9, I present the regression results that shows SOX negatively impacts lone-founder firms. These results attest to the steward role of lone founders.

1.5 Additional Robustness Checks

1.5.1 Other Measures: ROA, Peters and Taylor Total Q, Announcement Returns, and Annual Returns

For the empirical tests, I use Tobin's Q as a measure of firm valuation and compare the Tobin’s Q of family firms with that of nonfamily firms. As robustness, I measure firm performance by returns on assets (ROA)[27] and “total Q”. Peter and Taylor (2016) propose “total Q” as a proxy for both physical and intangible investment opportunities. I replace the Tobin’s Q with ROA and Total Q and report the regression result in column1 and column 2 of Table 1.10. The triple interaction term in both columns 1 and 2 is negative and highly significant, which indicates that the

[27] ROA at fiscal year t equals Operating income before depreciation divided by total assets. We find similar results if we use Earnings before interest, taxes, depreciation, and amortization (EBITDA) divided by total assets.

results are consistent with the primary hypothesis that founding families are stewards of shareholder value.

The findings so far rely on the regression results of panel data from 1998 to 2010. To provide further evidence from the perspective of shareholders, I follow Wintoki (2007) approach to examine market reaction around the announcement dates related to the specific key events associated with SOX related board independence requirements.

I calculate 5-day cumulative abnormal returns (CAR)[28] around each of the key announcement dates that are identified by Wintoki (2007). For each firm, I calculate the sum of CARs associated with all event dates to obtain a total CAR (TCAR) and run the following Cross-sectional regression model:

$$TCAR = \alpha_5 + a_5 * \textit{Family Firm}_i + b_5 * \textit{Noncompliant}_i + c_5 * \textit{Family Firm}_i * \textit{Noncompliant}_i + \theta \mathbf{X}_i + \lambda_j + \varepsilon_i \quad (5)$$

- X_i : control variables including Ln(Board Size), R&D expense/Total Assets, Ln(Sales), Ln(Firm Age), Capex/Total Sales, Dividend/Net Income, Diversification, Super shares, CEO Compensation, Ln(CEO Age), Ln(CEO Tenure), Firm-Specific Risk, Other Blockholder Ownership
- λ_j : industry fixed effect (two-digit SIC dummies)
- ε_i: error term

In column 3 of Table 1.10, I report the results for regression equation (5) and find that the coefficient c_5 of the interaction term of *Family Firm* and *Non-compliant* variables is negative and significant. In contrast, the coefficient a_5 of the *Family Firm* variable is insignificant. These results provide a robust evidence that founding families are stewards of shareholders, and that the shareholders of non-compliant family firms reacted negatively to SOX related events.

[28] CAR is calculated based on Fama-French Three Factor Model.

In column 4 of Table 1.10, I use annual stock returns as a dependent variable and continue to find the coefficient for triple interaction term *Family Firm * SOX * Noncompliant* to be negative and significant. These results are consistent with the stewardship role of founding families. In untabulated analysis, I find a similar result when I replace annual return with excess return[29].

1.5.2 Possible Earnings Manipulations in Pre-SOX Period: Audit Committee Independence

There is a possibility that lax monitoring by sympathetic boards in the pre-SOX period allowed family firms to artificially inflate their accounting earnings. In such a case, the deterioration in family firm value could be driven by the intensive monitoring of independent directors in the post-SOX period who prevented such practices by reporting correct accounting numbers. I explore this possibility by examining the effect of the fully independent audit committee requirement of SOX. I note that audit committees are responsible for the integrity of financial reports. However, in unreported table, I find an insignificant impact of this requirement on family firm value in the post-SOX period thus, ruling out this alternative interpretation of the results.

1.5.3 Am I capturing the cost of Section 404 Compliance?

One could also argue that the cost of compliance with SOX requirements, especially section 404, is higher for family firms than for nonfamily firms, which reduces the profitability of family firms more than nonfamily firms. Prior studies find that section 404 compliance cost was high for many firms, especially smaller firms (Ahmed et al., 2010; Iliev, 2010). Although firms in the sample are quite large yet, it is possible that some family firms in the sample that are relatively smaller suffered the most from the compliance of Section 404 and are driving the primary results. In untabulated results, I follow the work of Ahmed et al. (2010) to account for the differences in

[29] Excess return = Annual stock return of firm i – annual market return. Market return is value weighted CRSP index.

compliance cost arising out of Section 404 and include the adjusted operating cash flow scaled by total assets[30] as a control variable and find consistent results.[31]

1.5.4 Degree of Noncompliance:

I argue that if founding families are stewards, I should observe a more significant value loss for family firms that have a greater degree of noncompliance. The current *Non-compliant* dummy may not fully capture the effects of non-compliance with the various provisions of SOX-related mandates. Hence, I create a new variable *Degree of Non-compliance* which is the sum of the number of unmet board independence related requirements for a firm at the end of year 2001. These conditions are majority of independent directors, fully independent audit committee and fully independent nominating committee. Thus, the Degree of Noncompliance ranges from 0 to 3 with 0 assigned to those firms that were in full compliance to these requirements.

In Panel A of Appendix 1.A5 I present a comparison of degree of noncompliance along the family firm status and by the FF12 industry. I include only non-compliant firms in this sample. I find that family firms generally tend to have a higher level of non-compliance. This is further confirmed in Panel B of Appendix 1.A4 that presents regression results for the determinants of the degree of noncompliance of firms in 2001, as a function of firm characteristics (including industry fixed effects and a family firm dummy). Family firm dummy is positive and significant at 1% level indicating higher degree of non-compliance for family firms. In Panel B of Appendix 1.A5 I also report results for OLS regression similar to Table 1.4 where I replace the independent variable, Non-compliant dummy, by Ln(1+ degree of non-compliance). I find that family firms that have a higher degree of non-compliance suffered the most value loss from SOX. These results further strengthen the findings.

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[30] Adjusted operating cash flow scaled by total assets: (Operating Cash Flows + Audit Fees)/Total Assets. Source: Compustat, Audit Analytics

[31] Using the adjusted operating cash flow/total assets as a dependent variable, we do not document any significant difference between family and nonfamily firms.

1.5.5 Possible Channels

In this section, I explore channels through which SOX-related board changes might have affected non-compliant family firms. Results from this analysis are presented in Table 1.11. I find that non-compliant family firms reduced R&D spending post-SOX (column 1 of Table 1.11). This finding is consistent with the argument that SOX discouraged founding families' efforts in pursuing long-term performance for their firms. In columns 2 and 3 of Table 1.11, I examine the R&D outputs (patents[32] and citations) and find no significant difference after the passage of SOX for non-compliant family firms. In columns 4 and 5 of Table 1.11, I follow Anderson and Reeb (2004) and examine R&D effectiveness measured by the number of patents divided by R&D spending or the number of citations divided by R&D spending. I find a significant reduction in the R&D effectiveness of non-compliant family firms post-SOX. In Table 1.11, I also report that non-compliant family firms have lower credit ratings post-SOX. Given no evidence that family firms became more opaque post-SOX, lower credit ratings may exhibit the break-down in decision making due to incoherent communication and possible conflict between family-friendly decision makers and independent directors. Anderson, Mansi, and Reeb, (2003) argue that pre-SOX, creditors were dealing with a single organizational structure (e.g., decision makers associated with the founding families). However, post-SOX, they had to deal with two organizations within a family firm (founding families and the independent board), which might have created confusion and miscommunications.

1.6 Conclusion

There is conflicting evidence in the current literature on whether founding families are expropriators of shareholders' wealth or they are stewards of their firms. In this paper, I attempt to resolve the existing conflict if founding families are expropriators, or they are stewards using the

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[32] We obtain patent and patent citation data from Bronwyn Hall’s database. See more at http://emlab.berkeley.edu/users/bhhall/patents.html)

Sarbanes Oxley Act of 2002 and subsequent modifications in listing standards (SOX) as a quasi-natural experiment. I argue that improvement in monitoring because of the addition of independent board members to company boards as mandated by SOX should increase the firm value if founding families are expropriators. SOX should result in a decrease in firm value if founding families act as stewards, and their decision making power is curtailed through the inclusion of independent board members. Using data on S&P 1500 firms from 1998-2010, I find that SOX has a negative effect on the value of family firms that did not comply with the SOX requirements in the pre-SOX period. I further find that the firms led by founder CEOs suffered the most from the changes in board and committee structure imposed by SOX. The empirical results support the steward role for founding families over expropriators.

Chapter 2: Value of Independent Board Leadership of Acquirers in Mergers & Acquisitions

2.1 Introduction

Corporate mergers and acquisitions (M&As) are among the most significant strategic decisions involving large amounts of capital and managerial resources. Nevertheless, a vast majority does not enhance shareholder values (e.g., Andrade, Mitchell, and Stafford, 2001). A large number of acquisition announcements generate negative stock market reactions (Moeller, Schlingemann, and Stulz, 2005). M&As could fail either due to over-payment relative to the quality of targets, poor implementation of post-merger policies facilitating the integration of targets with acquirers, or a combination of both.[33] An acquirer manager can undertake detrimental M&A deals for various motives but nurturing shareholder value. Amihud and Lev (1981) and Shleifer and Vishny (1989) show that entrenched managers could seek acquisitions that satisfy their own, private objectives (e.g., reducing an unemployment risk, professional reputation) and destroy shareholder value. Furthermore, when it comes to selecting targets, entrenched managers could actively avoid private targets or public targets with large block holders that might lead to greater scrutiny (Harford, Humphery-Jenner, and Powell, 2012). Moreover, overconfident and hubristic CEOs who tend to overestimate the gains and underestimate the risks associated with M&As may overpay for targets and refuse a value-enhancing M&A deal if it requires external financing (Malmendier and Tate, 2008). Similarly, mergers could also fail to clash of organizational culture, poor implementation of post-merger policies needed to generate synergetic gains (Stahl & Voigt, 2008). Thus, the decision-making process in M&As requires continuous monitoring by an acquirer's board of directors, right from the selection of a potential target to the integration of the acquired entity. However, the effectiveness of board monitoring and advising is a function of its

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[33] Overpayment or post-merger integration problems could arise due to incentive misalignment or behavioral biases of managers (Jensen (1986), (Morck, Shleifer, and Vishny (1990)), (Roll (1986); Malmendier and Tate (2008)). Those situations suggest why board monitoring is important during M&A process.

composition, skills, and motivations of directors. In this paper, I aim to expand the understandings of how independent leadership of the acquirer impacts the board monitoring effectiveness in the context of M&As.

2.2 Hypothesis Development

The role of corporate boards in monitoring managers is crucial for open organizations. Boards play a direct role in M&A-related transactions. Different from daily operating decisions, M&A deals invariably involve vigilant board-level discussions requiring final approval, where individual directors can make a difference to the final decision. Prior literature has examined various characteristics of individual board members that capture their skill, expertise, gender in protecting and fostering shareholder value in the M&A setting (e.g., Field & Mkrtchyan, 2017; Levi, Li, & Zhang 2014). By examining board connections of acquirers and targets, Cai and Sevilir (2012) find that shareholders of an acquirer benefit from the information flow and communication when the acquirer and its target share at least one director. Still, the role of board composition and leadership in the context of M&A has received little or no attention.[34] The role of board leadership of the acquirer becomes especially important when the acquisition is likely to be undertaken by entrenched management or when post-merger integration is likely to be complicated. This is because, while a CEO is the head of executives, a chairperson who is the leader of the board of directors plays a crucial role in setting up the meeting agenda, facilitating information flow between managers and directors, assigning directors to crucial committees, supervising and advising executives. These actions could have a significant impact on how a board operates, how limited resources are allocated, and how monitoring and advising actions are prioritized. Thus, the nature of a board leadership could greatly affect the effectiveness of a board of directors.

[34] Schmidt (2015) uses social ties between CEO and independent directors as a proxy for the less independent board and find that board independence can hurt takeover returns when advising need is more important than monitoring. Field and Mkrtchyan (2017) shed light on the positive effects of director's acquisition experience on acquisitions. Levi, Li, and Zhang (2014) explore the effects of board gender diversity and find that female directors are associated with a lower number of acquisitions and lower bid premia.

However, there is conflicting evidence on the independent leadership structure of a board of directors. On the one hand, a combined leadership structure, where a CEO is also a chairperson, can avoid confusion and delays in decision-making (Pfeffer and Salancik (1978)). Additionally, Mobbs (2015) find a positive relationship between inside chairs and forced CEO turnover sensitivity to firm performance. On the other hand, Balsam, Puthenpurackal, and Upadhyay (2016) find that in firms with high information asymmetry and low operational complexity, an independent leadership structure can effectively improve the monitoring effectiveness of boards and the firm performance.

I argue that the mixed findings documented by prior literature are primarily because of its limited attention to those monitoring activities where a board of directors plays a direct role. Since M&A activities need the direct involvement of corporate boards (Ahern and Dittmar, 2012), I study the role of board leadership structure using the M&A setting. So far, we have little understanding of whether an independent leadership structure enhances or destroys firms' value from the M&As perspective. There are many instances of failed M&As due to a deficiency of thorough verifications, such as Time Warner and AOL, which was mostly done over the weekend in a rushed manner (Munk, 2004). The lack of careful examinations could significantly impair shareholder wealth while privately profiting managers. Thus, active board monitoring and advising are essential to protect the interest of shareholders. The presence of an independent chairperson could raise the standards of verification by requiring managers to provide pertinent information to the board, which is more difficult to access for ordinary directors (D'Aveni and MacMillan, 1990; Pollock et al., 2010). I hypothesis that independent chairpersons, who are considerably distant from the control of CEOs, could protect shareholders from agency-driven M&As. Independent chairpersons could also shield CEOs from external pressures created by various stakeholders such as regulators, investors, analysts, and allow CEOs to focus on strategic decisions such as M&As. Independent board chairpersons could also create a conducive environment where people from two different corporate cultures can communicate effectively, which could allow better integration of two entities in the post-merger phase.

Yet, the presence of independent leadership could create confusion among lower-level executives and employees about authority and control. The division of power could delay decision-making at the top, which could be detrimental to shareholders. Power-sharing could also lead to a clash of egos and turf wars and could lead to a breakdown in decision-making. It could also lead to a gap in the availability of information between various groups of decision-makers. Thus, the impact of an independent board leadership structure on M&A outcomes is uncertain and is clearly an empirical question that can be answered by exploiting the data on leadership structure and M&A transactions.

Using a sample of 8233 completed US M&As between 1997 to 2019, I examine the relationship between the presence of independent board chairpersons and acquirer M&A announcement returns.[35]. The univariate analysis indicates that an average five-day CAR for an acquirer (CAR[-2:2])[36] with an independent chairperson is 1.74%[37] higher than that for an acquirer with a nonindependent chairperson. In a multivariate setting, after controlling for acquirer and deal characteristics, I find that CAR of acquirers with an independent chairperson is statistically and economically higher than that of acquirers with a nonindependent chairperson by 1.89%. Additionally, I find that acquirers with an independent chairperson have paid lower bid premiums, a lower probability of having large losses[38] , and have achieved higher profitability in the three years after completing deals.

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[35] The results with CAR are robust with uncompleted deals.

[36] Because SDC does not always provide precise dates of acquisition announcements (Fuller, Netter, and Stegemoller, 2002). Similar to previous literiture (e.g., Masulis, Wang, & Xie, 2007; Cai and Sevilir, 2012), we use the five-day event window to capture most of the announcement effects. Moreover, the results are still robust with 3 days even window (see more in Appendix 1.A4)

[37] At 1% significant level

Three potential endogeneity issues could drive the observed positive connection between the presence of an independent chairperson and acquirer announcement returns: (1) unobservable time-invariant factors, (2) simultaneity, (3) self-selection bias. I address time-invariant unobserved heterogeneity by using firm fixed effects, chairperson fixed effects, and CEO fixed effects. To resolve simultaneity, I use 2SLS (IV) approach with the use of a geography-based instrument that captures the supply of independent chairpersons at the county level where the sample acquirers are headquartered (Balsam et al., 2015). The results are robust to both approaches. Qualified directors are highly desirable but may not always be available to serve as a chairperson of a board (Fahlenbrach et al., 2010). To address the selection bias that an independent chairperson may self-select to serve in reputable firms and thus having better M&As, I utilize two standard methodologies: Propensity score matching and Heckman's two-step procedure. The findings continue to hold.

I explore possible conduits in which an independent chairperson could positively affect acquirer CAR: bid premiums, synergies, and long-run performance. Harford et al. (2012) find that entrenched managers incline to overpay and choose low synergy targets are among the main reasons for the value destruction. I find strong evidence that the acquirers led by independent board chairs offer lower bid prices than those led by nonindependent chairs. Further exploration shows that independent chairpersons play an important part in the post-merger phase. It is important to note that the supervision of post-merger processes is also important because when two firms merge, there is always a possibility of culture clash and hurt feelings. Senior executives from the acquirer may give an impression of a winner, whereas the employees of the target may exhibit a sense of loss. Thus, in the opinion creating a conducive environment where employees of both firms could feel equally welcome is very important for the success of a merger. The analysis indeed shows that the presence of an independent chair is helpful in post-merger integration of two entities as the long-run performance of the merged entity improves significantly when the firm is led by an independent chairperson. Using combined announcement returns and post-merger profitability (ΔROA and BHAR), I find that an independent chairperson can benefit acquirers' shareholders in choosing targets with higher synergies and fostering the integration of the merged firms.

I further conduct analysis aimed at establishing additional channels through which independent chairpersons protect shareholder value. I find that independent chairpersons benefit shareholders the most in acquirers with weak corporate governance, ones that need more monitoring from the board. I use a variety of proxies that have been used frequently by prior studies to capture the monitoring needs of a firm, including E-index, CEO tenure, CEO overconfidence, acquirer-target social ties. The analysis indicates that independent board chairs help acquirers that have a high monitoring need. More specifically, I find that independent chairpersons are associated with a higher CAR in firms that have high E-index, high CEO tenure, overconfident CEO, and high acquirer-target social ties. These firms are more likely to engage in M&As that could hurt shareholders for various reasons. For example, powerful CEOs could try to maximize their power or make acquisition decisions that are not necessarily good for shareholders (e.g., El-Khatib, 2015). Acquirers with high E-index or with a CEO residing on his thrown for an extensive of time could make a sub-optimal acquisition as these acquirers are difficult for outsiders to monitor. Overconfident CEOs, who overpay for targets and undertake value-destructing deals, are also in need of appropriate monitoring from a board of directors (Malmendier and Tate, 2008). The results indicate that the presence of an independent board leader helps mitigate these monitoring problems. Ishii and Xuan (2014) find that acquirer-target social ties could reduce due diligence standards and fail to detect better opportunities outside the network. I find that an independent leadership structure of an acquirer could strengthen due diligence and enhance shareholder value in the case of high social ties. I further examine whether the positive relation between announcement return and the independence of a chairperson is the result of cash offers, which are considered to have a positive impact on acquirer announcement returns (Fuller et al., 2002). I find that the results are not driven by cash payment option.

The paper contributes to the existing literature in multiple ways. First, I contribute to the understanding of what drives the success of M&As. These transactions are large value investments, and prior studies indicate that a majority of M&As fail to achieve the goals as stated by acquirers and targets at the time of the announcements. Literature finds several reasons why M&As fail. These include agency-driven acquisitions, poor selection of a target, over-payment of premium, or inadequate supervision of post-merger integration. The results indicate that the costs associated with a poor choice of targets and post-merger integration problems could be largely integrated by the presence of an independent board leader. This mechanism could ensure the exchange of the right information among the decision-makers, could impose penalties on entrenched managers that might take advantage of their position during pre-merger negotiations, and could also ensure that post-merger integration occurs smoothly.

The study also contributes to the understanding of structures that could improve the effectiveness of a board of directors. Prior literature finds that size and composition impact a board’s functioning (Yermack, 1996; Coles et al., 2008). However, there is an unsettled debate about the role of board leadership. While many studies have found that the separation of a board chairperson from a CEO is good in some cases, there is a large body of evidence that supports combining two positions. Those studies that find the separation of two roles to be beneficial to firms, they hardly venture into examining whether it is the independent board chair or employee chair that contributes to the value of separation (Balsam et al., 2016). The paper contributes to this literature and shows that it is the independent board leadership that contributes to the value of M&As and not the other types of leadership structures.

The paper is organized as follows. In Section II, I describe the data. In section III, I present the main results and robustness checks. In section IV, I summarize the main findings.

2.3 Data and Variables

2.3.1 Data

I start the sample from Securities Data Company's (SDC) database from 01/01/1997 to 12/31/2019. I exclude buy-back, exchange offers, and recapitalizationd deals. Consistent with previous literature (e.g., Vijh and Yang, 2011; Levi et al., 2014), I apply the following requirements: completed deal; non-missing deal values; deal value is at least 10 million dollars; acquirers are US public firms; the acquirer does not hold any ownership of the target six months prior to the deal announcement; the acquirer has a positive book value per share and seeks to own more than 50% after the transaction.

2.3.2 Variables

I further require acquirers to have annual accounting data from Compustat, exist in the Institutional Shareholder Service (ISS) database, have daily stock return data from CRSP. After applying these filtering rules, the final sample consists of 8233 completed M&A transactions.

ISS has chairperson names and their affiliation (Independent, Affiliated, or Inside). By examining the ISS data carefully, I find that 22.91% of the full data have two chairpersons for a firm in a year, 40.60% of the full data have three or more chairperson for a firm in a year. I resolve this inconsistency by using Boardex database and proxy statements. Boardex database is a good source of background information of a director back to 1933. [39]

2.4 Univariate and Multivariate Analysis

2.4.1 Univariate Analysis

The primary dependent variable is the *Independent Chair* dummy which is a dummy variable that takes a value of 1 if a firm has an independent board chair, and 0 otherwise. Table 2.1 presents the M&A sample, in which 15.80% of the deals are acquirers with an independent

[39] We do not start off the sample with Boardex database because its categorization of director independency relies on firms' self-reporting. After reconciling Boardex and ISS databases, we check proxy statements for any conflicts. If we cannot decide who is the chairperson of the firm, we exclude that firm-year observation.

chairperson[40]. Table 2.2 presents the descriptive statistics of the variables used in the analysis. The main dependent variable is cumulative abnormal return five days (CAR [-2:2])[41] around the announcement date for the acquirer, where abnormal stock returns are calculated using the market model parameters estimated over the 200-trading-day period from event day -210 to event day -11. In Table 2.2, the average CAR of acquirers and combined CAR of acquirers and targets (PCAR) for the full sample is 0.25%, 1.04%, respectively. The figures are consistent with previous literature (e.g., Schmidt (2015)). Furthermore, the measure of post-M&A performance, which is -1.84%, predicates that M&As are value-destroying transactions where the shareholder protection of the board of directors is necessary.

In table 2.3, I provide univariate analysis for important measures of acquisition performance, acquirer, deal, and target characteristics among two groups of acquirers. The average CAR of acquirers with an independent chairperson is 1.71%, much higher than the average CAR of acquirers with nonindependent chairpersons, which is negative 0.03%. With a measure of synergies (PCAR) and post-merger performance (ΔROA 3 years), I find consistent initial evidence that independent chairpersons provide shareholder protection against entrenched managers in the M&A context. Importantly, on average, shareholders of acquirers with the independent leadership structure significantly pay less for targets and have a lower probability of experiencing large losses after announcements than those without one. These univariate results support the conjecture that an independent chairperson is valuable for shareholders in M&A deals.

Panel B of Table 2.3 describes the characteristics of acquirers. Acquirers with an independent chairperson tend to have a smaller board of directors, higher board independence ratio than those with nonindependent chairpersons. Interestingly, acquirers with an independent leadership structure have lower firm performance in terms of Tobin's Q and ROA. The univariate

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[40] These figures are consistent with the finding of Balsam et. al. (2016).

results initially suggest that the higher CAR[-2;2] is not driven by acquirers with good firm performance but because of the effect of an independent chairperson. Results in panels C and D indicate that acquirers with an independent chairperson tend to make larger deal sizes, focus less on diversifying deals.

In sum, the univariate analysis advocates that an independent leadership structure is valuable for shareholders. However, since various characteristics can affect these results, I cannot make any credible inferences from these results without further analysis. In the next section, I evaluate the association between independent chairperson-led acquirers and M&A performance in multivariate settings.

2.4.2 Multivariate Analysis

2.4.2.1 Presence of Independent Board Chairs and Acquirer CAR: Baseline Results

In Table 2.4, I discuss and elaborate on the impact of independent chairpersons on acquirer announcement returns in multivariate settings. I use the following model:

$$CAR_{j,\,t} = \beta_{10} + \beta_{11}\, Independent\ Chair_{j,\,t-1} + \theta_{12}\, C_{j,\,t-1} + \lambda_i + \varphi_t + \varepsilon_{j,\,t} \quad (1)$$

- $C_{j,\,t-1}$: Control variables
- λ_i: Industry fixed effects (two-digit SIC dummies)
- φ_t : time fixed effects (fiscal year dummies)
- $\varepsilon_{j,t}$: error term. Standard errors are clustered at the firm level

I use five days cumulative abnormal return (CAR[-2:2])[42] to test the difference in the performance of acquirers with or without an independent chairperson. The key independent variable is *Independent Chair* dummy, which is equal to 1 if the acquirer's chairperson is independent according to ISS definition. Consistent with on prior M&A literature (e.g., Moeller et al., 2004; Masulis et al., 2007; Levi et al., 2010; Cai & Sevilir, 2012, Schmidt, 2015), I control for

[42] Using 3 days CAR, we find consistent results (Appendix 2.A2).

various acquirer-specific characteristics that have been considered to affect acquirer return, such as board size, board independence ratio, ROA, prior-year excess return, firm size, firm age, book leverage, free cash flow, and CEO compensation structure.

I also include deal characteristics (Masulis et al. 2007) such as relative deal size, stock deal, diversifying acquisition, tender offer, friendly offer, and target public status.

Table 2.4 provides results with different sets of control variables. In column 1 of Table 2.4, by simply controlling for only acquirer characteristics, I find that the coefficient of *Independent Chair* dummy is positive and significant, 1.89% at 1% level. The magnitude and significant level of the coefficient are similar in column (2), where I control both acquirer and deal characteristics. [43] [44] These results indicate that relative to a nonindependent chairperson-led firm, the M&A announcement CAR of an independent chairperson-led acquirer is 1.89% larger[45]. Given that the market value of the average acquirer in the sample is $127 billion, 1.89% higher CAR is approximately equivalent to a $2.4 billion increase in shareholder wealth.

2.4.2.2 Omitted Variables and Simultaneity

Unobservable time-invariant variables, such as management style or firm culture, maybe a concern for the findings if those variables correlate with the primary independent variable, *Independent Chair* dummy. To address the endogeneity concern, we add industry-specific time trend, firm, CEO, Chairperson fixed effects in the primary regression analysis, as presented in column 2 of Table 2.4, and present the estimation results in table 2.5, column 1, 2, 3, 4, and 5. The coefficient of *Independent Chair* dummy continues to be positive and significant at the 1% level, even after controlling for unobservable time-invariant heterogeneity. Although I cannot directly

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[43] The results are robust when we cluster standard errors at firm and year level (Petersen, 2009) (Appendix 2.A3)

[44] In untabulated, we obtain similar results if we control for institutional ownership, defined as the sum of ownership of dedicated institutions and quasi-indexers (Bushee,1998; Chen, Harford, and Li, 2007)

[45] The results are robust when we include only acquirer chairpersons who have been in a chair position for at least 3 years.

test how these results compare with those in Table 2.4, on the face of it, the size of the effect from this model is considerably larger compared with those in columns 1 and 2 of table 2.4.

Another endogeneity concern in the hypothesized relationship is a simultaneity bias. Acquirers with better capability to make good acquisitions may also be likely to hire an independent chairperson. Alternatively, eminence individuals qualified to be a chairperson are also in greater demand could join the boards of high-quality acquirers. I address this possibility using two-stage least squares regressions (2SLS) approach with the use of a geography-based instrument that captures the supply of independent chairpersons at the county level where the sample acquirers are headquartered (Balsam et al., 2015). Following Glaeser and Scheinkman (2002), John and Kadyrzhanova (2010), Anderson et al. (2011), and Balsam et al. (2016), I create an instrument, *County Independent Chair Ratio*, which is the proportion of firms (excluding the sample firm in question) in the county of the sample firm's headquarters[46] that have an independent chairperson and is computed yearly. The county-based instrument is a good instrument because the board leadership structure of local peers is unlikely to affect the acquirer M&A announcement return; peers in the same geographic area tend to imitate each other corporate governance structure (Balsam 2016). I conduct first stage regression using the Probit model (Wooldridge ((2002), pp. 623–625) and present results in column 1 of Table 2.5 (Cont.), in which the dependent variable is the *Independent Chair* dummy. [47] Results show that the instrument is positive and highly significant ($p<0.01$). The second stage results are presented in Table 2.5 (Cont.), column 2. I include predicted *Independent Chair* from the first stage regression into the second stage regression. I continue to find a positive and significant coefficient on *Independent Chair* variable in the 2nd stage estimation.

[46] We use historical address of a firm's headquarter from proxy statements.

[47] In addition, the IV is a good IV because the *F*-stat of the instrumental variable in the first-stage regressions is 122 which is higher than 10, the threshold suggested by Staiger and Stock (1997)

These results imply that the association between independent chair presence and positive CAR is unlikely to be driven by the endogeneity.

2.4.2.3 Selection Bias

Although I use 2SLS estimation to test if the results might be driven by the simultaneity, I could still have a selection bias in the sample. For example, a qualified individual for an independent chairperson is highly desirable, but they may not always be available for recruitment, especially by poorly performing firms. Due to the scarcity of director supply, finding an independent chairperson who is willing to spend adequate time to supervise and monitor managers might be an immense challenge for such firms. That may be why I observe fewer firms that have an independent chair and also have poor M&A performance. In other words, the association between independent chairperson presence and positive outcome of M&As maybe not driven by the independent chairpersons themself but is due to selection bias in the sample. As a result, comparing announcement returns of acquirers with an independent chairperson and without an independent chairperson may introduce a biased estimate of the treatment effect. However, Balsam et al. (2016) find that smaller firms tend to hire outside chairperson than larger firms do. In their paper, firm performance measured by Tobin's Q and ROA has no statistically significant relationship with the probability of firm hiring outside chairperson. As a result, selection bias is less likely an issue with the paper[48]. Nevertheless, to increase the confidence in the empirical result, I exploit the Heckman's two-step procedure (Heckman, 1979). In the first stage,presented in the column 1 of table 2.5 (Cont.), I employ a Probit regression using County Independent Chair ratio as the instrumental variable along with other acquirer and deal characteristics similar to table 2.4 column 2. From this estimation, I calculate Inverse Mills Ratio. In the second stage, I estimate OLS regression where the dependent variable is acquirer CARs, and I include Inversed Mills Ratio as

[48] Balsam et al.(2016) use the sample from 1996 to 2010. We use the sample from 1997-2019 with independent chairperson and document the same findings as they did.

one of the independent variables. Results from this analysis are presented in Table 2.5, column 3. I find that the coefficient of the Inverse Mills Ratio is insignificant, but the coefficient on the *Independent Chair* dummy is still positive and significant (at 1% level). These results are consistent with the baseline results in table 2.4 and show that acquirers with an independent chairperson outperform those with a nonindependent chairperson.

2.4.2.4 Matched Sample Analysis:

In this section, I address the concern of self-selection bias using propensity score matching approach. I estimate a probit regression where the dependent variable is the independent chairperson dummy, and independent variables are the same as table 2.4 column 2, which are the acquirer, deal characteristics, year dummies, and industry dummies. After obtaining the estimated propensity score of a particular acquirer with an independent chairperson, I use the nearest neighbor matching approach (1:1) and pair each acquirer in the control group (Nonindependent chairperson) with each acquirer in the treatment group (Independent chairperson). In Appendix 2.A4, I present results of the diagnostic analysis evaluating the effectiveness of this matching; I find a good balance of control and treatment group in the post-match sample. After obtaining the matched sample, I run the regression with the same control variables (acquirer and deal characteristics) as in table 2.4 column 2 and present the regression results in column 4 of table 2.5 (Cont.). The coefficient of *Independent Chair* continues to show a positive and significant relationship with acquirer CARs.

2.4.3 How Does An Independent Chairperson Add Shareholder Value in The M&A Context?

2.4.3.1 Bid Premium, Large Loss Transactions, Synergies, and Post-merger Performance

I examine various situations when monitoring by an independent chair led board could benefit the shareholders of acquirers. I conduct analyses to examine whether independent chairpersons can help their acquirers avoid overpaying for targets[49] and having large loss acquisitions. Columns 1 and 2 of Table 2.6 show evidence that acquirers with an independent leadership structure can mitigate overpaying for targets and less likely to enter large loss deals.

Harford et al. (2012) further find that poor target selection is one of the main reasons for value destruction. In this section, I test whether an independent chairperson can help an acquirer choose a good target by examining synergies between the acquirer and the target, and long-run performance of the merged entity. In column 3 of Table 2.6, using portfolio CAR (PCAR) as a proxy for synergies, I find that an independent chairperson can aid acquirers in choosing targets with higher synergies (Higher PCAR). In columns 4 and 5 of Table 2.6, I utilize ΔROA 3 years and long run buy and hold abnormal return (BHAR) to examine the long-run operating performance of combined entities. I find evidence to support the argument that an independent chairperson assists the acquirer post-merger stage by improving the integration of the merged firms.

2.4.3.2 Bidder Independent Leadership Structure and The Managerial Labor Market:

In this section, I provide another benefit of having an independent leadership structure in M&A settings. Jensen and Murphy (1990) argue that removal from a top executive position is a severe risk for a CEO, whose reputation and future employment opportunities are significantly adversely affected. However, there is much evidence that CEOs may be immune to getting fired due to their lousy deal decisions. For instance, El-Khatib et al. (2015) find that CEOs who have higher network centrality are less likely to be dismissed from their positions following their value-destructive deals. Because the likelihood of top executive turnover is negatively associated with a firm's stock returns (Jenter & Kanaan, 2010; Warner, Watts, & Wruck, 1988; Weisbach, 1988), and well-monitored boards will oust poorly performing managers. I investigate whether acquirers with an independent leadership structure are more likely to fire entrenched CEOs. The current

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[49] Bid premium is calculated as the ratio of the final offer price to the target stock price fthe weeks prior to the acquisition announcement date minus one.

entrenched CEO removal originated from a board of directors also provides a signaling effect to upcoming CEOs in making M&A decisions, and hence improve the performance of subsequent M&As. Following El-Khatib (2015), Lehn and Zhao (2006), and Jenter and Kanaan (2015), I employ the Cox Hazard model:

$$\text{CEO Turnover} = 1|K_{i,t} = \Gamma_0 + \gamma_1 \text{ Independent Chair} + \gamma_2 \text{ Independent Chair} * \text{Post Deal CAR} + \gamma_3 \text{ Post Deal CAR} + \gamma_4 \text{ Pre-Deal ROA} + \gamma_5 \text{ Ln(CEO Age)} + \gamma_6 \text{ Ln(CEO Tenure)} + \gamma_7 \text{ CEO Compensation} + \gamma_8 \text{ High CEO Ownership} + \varepsilon_t \quad (2)$$

Similar to El-Khatib (2015), I perform the analysis on a subsample of M&A deals announced from January 1 1997 to December 31 2014[50] to see if CEOs were ousted within five years from the date of the first merger announcement. I obtain data about CEO turnover from ExecuComp[51]. The results for the model (2) are presented in Table 2.7. The coefficient of *Independent Chair * Post Deal CAR* is negative and significant at 5% level when I either use CAR 3 years after the announcement or two years after the announcement [52]. The results indicate that acquirers with an independent leadership structure are more likely to oust CEOs for conducting value destructing M&As. Other covariates have similar signs and significant level with previous literature (El-Khatib, 2015; Lehn & Zhao,2006; Jenter & Kanaan, 2015).

2.4.3.3 Additional Evidence on The Value of An Independent Leadership:

In this section, I use subsample analysis to investigate whether the relation between acquirers led by independent chairpersons and shareholder value can be explained by the variations in important acquirer characteristics. According to agency theory, managers are likely to exploit

[50] In this analysis, we only consider up to the year of 2014 because we need examine the deal performance for the next five year and the sample's year end is 2019.

[51] To identify CEO turnover, we identify a CEO (EXECID variable on Execucomp database) just before the first merger announcement and compare the CEO's name and EXECID number to that of the acquirer's CEO five years later. If they are not the same then we consider the acquirer to have experienced CEO turnover.

[52] The results hold if we use forced CEO turnover data obtained from professors Jenter, Kanaan, Peters, and Wagner. (Jenter and Kanaan, 2015; Peters and Wagner, 2014)

shareholders the most in firms that have weaker corporate governance systems. Additionally, more entrenched managers are less susceptible to market discipline and, therefore, more likely to engage in value-destroying acquisitions (Masulis, Wang, & Xie, 2007). Hence, I postulate that the relation between an independent chairperson and M&A performance will be stronger for firms that have weaker corporate monitoring mechanisms. I use E-Index and CEO Tenure to proxy for corporate governance quality and CEO Entrenchment (Berger, Ofek, and Yermack, 1997; Hermalin and Weisbach, 1998). In columns 1 and 2 of Table 2.8, I create *High E-Index* and *High CEO Tenure,* dummy variables which equal one if E-Index and CEO-Tenure are above the sample median of the variables, respectively. I find that the coefficients of the interaction terms, *Independent Chair * High E-Index* and *Independent Chair * High CEO Tenure,* is positive and highly significant. The results indicate that the effect of an independent leadership on M&A performance is more pronounced in acquirers with weak corporate governance and higher CEO entrenchment.

Malmendier and Tate (2008) find overconfident executives are one of the main reasons for value-destroying M&A deals. I examine the effect of the independent leadership structure on mitigating overconfident executives in column 3 of Table 2.8. I follow Campbell et al. (2011) to construct a proxy for CEO confidence, *CEO Holder67.* Before creating *CEO Holder67,* I create a continuous variable called *CEO Overconfidence* as follows:

- The realizable value per option equals the total realizable value of the exercisable options divided by the number of exercisable options.
- The estimated average exercise price of the options equals the stock price at the fiscal year end minus realizable value per option.
- *CEO Overconfidence* equals the realizable value per option divided by the estimated average exercise price of the options.

I define a CEO as overconfident if the CEO holds options at least twice during the sample period that are more than or equal 67 percent in the money, CEO Overconfidence >= 67%. *CEO*

Holder67 takes the value of one beginning with the first time the CEO exhibits the above option-holding behavior and zero otherwise. In column 3 of Table 2.5, the coefficients of *CEO Holder67* and *Independent Chair * CEO Holder67* are significantly negative and positive, respectively. The result indicates that shareholders of acquirers with overconfident CEOs are well protected under the independent leadership structure.

Ishii and Xuan (2014) find that acquirer-target social ties[53] adversely influence the due diligence of an acquirer in determining the best deals for shareholders and lead to value-destructive deals. I argue that the independent leadership structure could improve the due diligence of a bidder's board of directors. Following Ishii and Xuan (2014), I create *Average Connection* variable, which is a proxy for social ties between an acquirer and a target. For each deal, *Average Connection* equals the total number of connected pairs divided by the total number of pairs. From Table 2.2, the *Average Connection* has a mean of 12%, which is comparable to 10.6% of Ishii and Xuan (2014)[54]. I include *High Social Ties,* which equal one if *Average Connection* is above the sample median of the variable, to column 4 of Table 2.8 and find that the coefficient of *Independent Chair * High Social Ties* is positive and significant. It further fortifies the positive value of having an independent leadership structure in protecting shareholder value in the M&A environment.[55]

2.4.3.4 Payment Method:

Prior literature shows a higher announcement return for acquirers who make acquisitions using cash as a mode of payment rather than using stock offers (Travlos, 1987; Fishman, 1989; Brown and Ryngaert, 1991; Martin, 1996; Fuller et al., 2002). Furthermore, an independent chairperson could improve corporate transparency by reducing information asymmetry and hence

[53] The education and/or employment connections among executives and directors of an acquirer and target (Ishii and Xuan, 2014)

[54] The difference is due to sample periods and sample construction.

[55] We do not find an evidence supporting the value the independent leadership structure in the case of CEO network centrality.

drive stock prices closer to their intrinsic values. I test whether the positive relationship between the presence of an independent chairperson and acquirer M&A announcement return could be a product of the mode of payment choice, i.e., cash vs. stock. First, I analyze whether independent chairperson-led firms are more likely to use cash as a mode of payment in M&A transactions. Next, I disentangle the effect of a mode of payment from the effects of an independent chair on M&A announcements. In table 2.9 column 1, I use Probit regression, which uses *Cash Deal* dummy as the dependent variable. *Cash Deal* is equal to one for 100% cash-financed deals, and zero otherwise. I find an insignificant coefficient on *Independent Chair* variable, which shows that acquirers with independent chairperson indifferent between using only cash and other modes of payments in acquisitions. I analyze the effect of means of payment on the association between independent chair presence and CAR in column 2 of table 2.9.. I find that the coefficient of *Independent Chair* dummy is positive and statistically significant . However, the coefficient of *Independent Chair * Cash Deal* is insignificant, which indicates that acquirers with an independent chairperson generate higher CAR, not because of the cash offer.[56] These results show that the positive association between independent chair presence and acquirer CAR is not driven by the mode of payment but due to the monitoring effectiveness of the board.

2.4.4 Other Robustness Checks:

Firms can use lead directors, instead of independent chairpersons, as an alternative way to adopt a separate leadership structure. Even though lead directors can act without depending solely on initiatives from a nonindependent chair (Millstein and MacAvoy (1998)), their role is often limited to being a liaison among board members. On the other hand, a board chairperson has a clear mandate and powers to monitor the CEO. I collect data on lead directors from proxy statements. In column 1 of Appendix 2.A5, I include *Lead Director* dummy along with *Independent Chair* dummy

[56] We obtain similar result if we use Stock Deal dummy rather than Cash Deal dummy

and run OLS regressions that are similar to table 2.4. I continue to find a positive and highly significant coefficient of *Independent Chair* variable. However, I find an insignificant coefficient on *Lead Director* variable, suggesting that effective board monitoring structure is valuable in M&As.

Subsequently, I examine whether the performance of an acquirer varies by the affiliation of the board chair. If the separation of board chair from CEO position is good enough to provide adequate monitoring of the M&A process, then I should observe similar effects for affiliated board chairs. Affiliated chairs are those directors that are not current executives but may some business relationship with the firm. I also test the robustness of the results by comparing the effects of independent chairperson-led acquirers with CEO/Chair-led acquirers. To test this hypothesis, I introduce an indicator variable, *Affiliated Chair,* that takes a value of 1 if a firm has an affiliated director as board chair, zero otherwise. I run regressions like those in columns 2 of Table 2.4 and present results in Appendix 2.A5. I continue finding positive and significant coefficients on *Independent Chair* variable. These results provide additional support to this argument that monitoring by an independent board chair is valuable for M&A transactions.[57]

2.5 Conclusion

As more and more firms split CEO-Chair positions and appoint independent directors as board chairs, it is important to understand how this shift impacts the effectiveness of boards. The paper is the first to examine the effect of an independent chairperson on shareholder value in the M&A context. I find that acquirers with an independent chairperson earn higher announcement abnormal returns, synergies, long-run performance than acquirers with a nonindependent chairperson. I document that the results are not driven by the method of acquisition payment, are robust to potential endogeneity issues such as omitted variables, selection biases.

[57] Lastly, in Appendix 2.A6, we rerun the basline regressions as in column 2 of table 4 with different exclusion criteria. The baseline result remains intact.

With the current trends of the rise in shareholder activism for M&A transactions and M&A ligation risks, a board monitoring related to M&As becomes more crucial than ever. The paper sheds new light on the value of independent board leadership on corporate decision-making. In the M&A context where managers can benefit themselves at the expense of shareholder wealth, I show that the independence of the leader of a board director, chairperson, is treasured in preserving and fostering shareholder value.

Chapter 3: Do Independent Executive Directors Mitigate Firm Crash Risk?

3.1 Introduction

Prior literature documents some evidence that entrenched managers tend to hasten the announcement of good news and withhold unpleasant news for an extended period (e.g., Kothari, Shu, and Wysocki, 2009). Unfavorable news accumulation eventually reaches a certain threshold, and the burst of previously hidden negative news to the market creates a crash that tremendously hurts shareholder value. Prior empirical works have identified a collection of firm features that are precursors of stock price crashes, such as firm financial reporting opacity (Hutton, Marcus, and Tehranian, 2009), accounting conservatism (Kim and Zhang, 2016), and CEO equity incentives (Kim, Li, and Zhang, 2011a). Kim, Wang, and Zhang (2016) examine overconfident CEOs who are likely to have illusions about their abilities to deliver unrealistic performance and find that such CEOs can also raise the probability of a stock crash. Since boards are responsible for monitoring managerial behavior and ensure the quality of financial reports to maintain the transparency between managers and shareholders, it is crucial to understand whether effective oversight of directors can mitigate crash risk arising out of entrenched managerial activities. Independent directors are responsible for monitoring CEOs, but they are often ineffective because they may lack firm-specific information, and the cost of information gathering may be too high for them (Duchin, Matsusaka, and Ozbas, 2010). However, the severity of information cost is likely to be smaller for those independent directors who are active executives of other firms (Stein and Zhao, 2019; Duchin et al., 2010). Therefore, I examine whether the presence of independent directors who are active executives lowers the stock crash risk of the appointing firm.

3.2 Hypothesis Developement

Finance scholars have long been fascinated in understanding the causes of the negative skewness in stock returns. A common justification for negative skewness in returns and crash risk is the stashing of bad news (Jin and Myers, 2006). To understand what drives this hoarding of bad news, prior scholars focus on two separate areas: firm characteristics and managerial motivations. Hutton et al. (2009) find a positive association between corporate opaqueness, a function of poor financial reporting quality, and crash risk. Kim, Li, and Zhang (2011b) take a different view of this issue and document that aggressive tax strategies and planning encourage managers to hoard bad news, driving to a higher probability of a stock crash. Additionally, Kim et al. (2016) study personal traits of managers and find that overconfident CEOs, who tend to hold poorly performing negative NPV projects for too long and use different methods such as accounting accruals to convey their unrealistic beliefs to the stock market, can lead to future stock price crashes. Andreou, Louca, and Petrou (2016) suggest that some CEOs in their early careers tend to engage in activities that could drive up stock crash possibilities. While most of the prior literature examines the drivers of stock crash risk, others have recently started to look for mechanisms that are likely to alleviate the risk. Using a diversity perspective, Li and Zeng (2019) find that female CFOs play an important role in reducing stock crash probability. Andreou, Antoniou, Horton, and Louca (2016) examine the relationship between stock price crashes and various governance mechanisms such as institutional ownership, inside ownership, board size, and information opacity. They find that a larger board size reduces the likelihood of a stock crash.

While the board of directors holds a crucial role in alleviating agency conflicts and enhancing corporate governance, it is still unclear which attributes of a board make it more effective in curbing managerial entrenchment and mitigating agency costs. Coles, Daniel, and Naveen (2008) find a positive relationship between firm performance and the presence of outsider directors in complex firms. Duchin et al. (2010) suggest that the cost of acquiring information determines the effectiveness of independent directors in monitoring managers. Coles, Daniel, and Naveen (2014) argue that not all independent directors are effective monitors. They find that the more the number of independent directors appointed after the CEO assumed the office, the less the board's monitoring effectiveness. Sila, Gonzalez, and Hagendorff (2017) find that independent directors with high status incentives can lessen information asymmetry. I expand the understanding of the role of independent directors in monitoring managers in the framework of stock crash risk. I argue that to effectively monitor the bad news hoarding by executives, it is essential for independent directors to be better equipped with the right knowledge, expertise, and incentives. Independent directors who are active executives and important decision agents of other complex organizations have a strong motivation to build their reputation (Fama, 1980) as decision experts by serving as independent directors. Supporting this notion, Boivie, Graffin, and Withers (2016) find that outside directorships can benefit executives in terms of their promotion and higher pay in their home firm. I argue that serving as an effective independent director, an executive can signal her decision quality to the labor market. Together with the reputation-building motivation and the understanding of corporate decision-making likely makes independent executive directors a good candidate for effectively monitoring CEOs and protect shareholders when CEOs are likely to hoard bad news.[58]

However, due to similar background, executives of other firms may not be good monitors of appointing firm's management. Proponents of board diversity argue that directors from similar backgrounds tend to be sympathetic to the management and avoid asking tough questions. Prior studies show that outside directors who are socially linked with managers are less likely to monitor them (Fredrickson, Hambrick, and Baumrin 1988; Bruynseels and Cardinaels 2013; Wang, Xie, and Zhu 2015). Further, sharing similar professional backgrounds with management can subject independent executive directors to groupthink (Faleye, Hoitash, and Hoitash, 2017), making them less likely to challenge the decisions of top managers of the appointing firm. Overall, whether independent executive directors are better monitors than other independent directors and whether they are more effective in mitigating crash risk is an empirical question.

[58] From this point, I refer independent executive directors to independent directors who are currently holding executive positions in other firms.

Using the sizable sample of US public firms from 1996 to 2018, I find that the presence of independent executive directors, measured by a dummy variable or the number of independent executive directors divided by board size, is negatively associated with stock crash risk in the sample. The results indicate that the presence of such directors is associated with a decline in stock crash risk ranging from 2.3% to 9.6% as captured by different alternatives of crash risk. Thus, these results indicate that independent executive directors are better monitors of bad news hoarding behaviors of the appointing firm's managers.

However, I note that this association is likely to be affected by endogeneity, especially reverse causality. Since these directors have a better understanding of the internal setting of potential appointing firms and since these directors are highly reputation sensitive (other independent directors are also sensitive to their reputation, but they may not have a similar understanding of the appointing firm), they may choose to serve on firms with low stock crash risk. Another endogeneity concern in the empirical setting is the matching between low crash risk firms with these directors. For example, it is possible that some unobserved factors (e.g., founders or firm culture) maintain a good information environment, discourage managers from hoarding bad news and maintain good governance, and the hiring of these directors is a part of that culture. So, the negative effects that I observe in the analyses are not due to these directors but are primarily driven by those factors that drive the appointment of these directors. I address these potential endogeneity concerns using three conventional approaches: propensity score matching, firm fixed effects, and difference-in-difference. In an effort to see if the causality runs from the presence of independent executive directors to the decrease in stock crash risk and not vice-versa, I use the sudden departure of independent directors due to death and compare how stock crash risk varies with the death of independent executive directors with that of non-independent executive directors. Using a difference-in-difference approach around these deaths, I find that the demise of independent executive directors leads to an increase in crash risk, but the death of non-independent executive directors does not change the post-death crash risk of the affected firm. These tests indicate that the results are unlikely to be driven by endogenous matching of independent executive directors and low stock crash risk firms.

To better understand the association between independent executive directors and stock crash risk, I further perform additional analyses. First, I analyze sub-samples based on firms' governance quality and find that the negative association between independent executive directors and crash risk is significant for firms that have weaker corporate governance, poorer institutional monitoring, and higher information asymmetry. Second, the results remain vigorous after controlling for the compensation incentive (Kim, Li, and Zhang, 2011), CEO age (Andreou, Louca, and Petrou, 2017), CEO overconfidence (Kim, Wang, and Zhang, 2016), female CFO (Li and Zeng, 2019), independent director reputation incentive (Sila, Gonzalez, Hagendorff, 2017), corporate governance strength (Baker and Wurgler, 2012).

Thus, work contributes to two separate yet related strands of literature. First, I advance the understanding of stock price crash risk. Prior studies link managerial bad news hoarding decisions with firm and managerial characteristics such as corporate financial opaqueness (Hutton et al., 2009), CFO option sensitivity, tax avoidance ((Kim et al., 2011a; Kim et al., 2011b), corporate social responsibility (Kim, Li, and Li, 2014), institutional investor stability (Callen and Fang, 2013), mandatory IFRS adoption (DeFond, Hung, Li, Li, 2015), CEO age and overconfidence (Andreou et al., 2016; Kim et al., 2016), and CFO gender (Li and Zeng, 2019). However, there is a paucity of literature on whether boards affect crash risk. I add to the literature on director background and stock price crash risk by revealing the mitigating effect of independent executive directors on bad news hoarding activities of managers.

I also contribute to the literature on board attributes. I understand that it is the board’s responsibility to ensure transparency between insiders and external investors, but prior literature shows that certain characteristics of boards make them more effective in carrying out these responsibilities. Recent efforts toward increasing the independence of boards from the management have led to the employing of directors from various backgrounds, including gender. Due to the greater demand for independent directors, they are increasingly drawn from a variety of non-traditional professional backgrounds such as law, non-profits, academia, retirees, and consulting (Linck. Netter, and Yang, 2009). Duchin et al. (2010) and Stein and Zhao (2019) argue that many of these independent directors may not have a similar understanding of corporate practices as the independent directors who are executives of other firms. Extending this line of work, I show that independent executive directors are better monitors of stock crash risk.

The paper is organized as follows. In Section II, I define the data. In section III, I present the base results and robustness checks. In section IV, I summarize the main findings.

3.3 Data and Variables:

3.3.1 Data:

I begin by examining firms covered by Institutional Shareholder Services (ISS, formerly Risk Metrics) and collect information on firms' board composition covered by this database. First, I identify independent directors using "*classification"* variable of ISS, which categorizes directors into the independent outside, affiliated outside, and inside directors. I concentrate on independent directors who are currently holding an executive position in other public[59] firms because they are likely to be more effective monitors due to the maximum benefits of a reputation as an effective independent director. I collect background information about whether an independent director is holding top executive positions (e.g., CEO, COO, CFO) in other public firms from three sources, including ISS, Boardex, and Execucomp. Coles, Daniel, and Naveen (2014) describe that the ISS database uses two separate coding methods for director ids (legacy_director_id and director_detail_id), which introduces an error in identifying individual directors and hence could

[59] We only consider public firms for the verification purpose.

lead to problems in calculating board size, board independence, and other variables. To address this issue, Coles et al. (2014) manually matched directors. I use their methodology to clean the data from ISS. Boardex database contains detailed information about individuals' employment backgrounds. Third, Execucomp covers information on the top five highest pay executives. As a result, I match ISS directors, Boardex directors/executives, and Execucomp executives to form comprehensive data.[60] I collect data on firm return and volatility from CRSP, firm characteristics from Compustat, CEO characteristics from Execucomp, and financial analyst data from the Institutional Brokers' Estimate System (I/B/E/S). Because of the differences in corporate governance and regulation, I exclude utility and financial firms. After merging all these databases, I obtain 19,468 firm-year observations of US public firms from 1996 to 2018.

3.3.2 Variables

Following prior literature to explore the effect of independent executive directors on firm future crash risk, I assemble three firm-specific measures of stock price crash risk for each firm-year observation (e.g., Hutton et al. 2009; Kim et al., 2011a,b).

- *Ncskew*: the negative skewness of firm-specific weekly returns over the fiscal year period

$$Ncskew = -\frac{n(n-1)^{3/2}\sum w_{j,\tau}^{3}}{(n-1)(n-2)\left(\sum w_{j,\tau}^{2}\right)^{3/2}}$$

  - ✓ n: number of firm-specific weekly returns
  - ✓ $w_{j,\tau}$: firm-specific weekly return which is equal to $\ln(1+ e_{j,\tau})$ where $e_{j,\tau}$ is the residual from the below regression model of Chen et al. (2001)

$$r_{j,\tau} = \alpha_j + \beta_{1j} r_{m,\tau-2} + \beta_{2j} r_{m,\tau-1} + \beta_{3j} r_{m,\tau} + \beta_{4j} r_{m,\tau+1} + \beta_{5j} r_{m,\tau+2} + \varepsilon_{j,\tau}$$

[60] We start the sample with ISS instead of Boardex because the director classification of ISS is uniform and consistent while Boardex database classification relies on firm self-reporting and it does not distinguish between independent director and affiliated outside directors.

- *Duvol*: the natural log of the ratio of the standard deviation of firm-specific weekly returns for down weeks to the standard deviation of firm-specific weekly returns for up weeks

$$Duvol = \ln\left(\frac{(n_u-1)\sum_{Down} w_{j,\tau}^2}{(n_d-1)\sum_{Up} w_{j,\tau}^2}\right)$$

- *Crash*: An dummy variable that equals one if a firm has one or more firm-specific weekly returns exceeding 3.20 standard deviations below the mean firm-specific weekly returns over the fiscal year and zero otherwise. (Kim et al., 2011a; Li and Zeng, 2019).

The primary variable of interest is the existence of independent executive directors. To capture the presence of independent executive directors, I use the ratio of these directors (the number of independent executive directors divided by board size), "***IEB***", as well as a dummy variable, "***IED***", which equals one if a firm has at least one independent executive director and 0 otherwise.

3.4 Univariate and Multivariate Analysis

3.4.1 Univariate Statistics:

In Table 3.1, I report summary statistics of crash risk variables, the number of independent executive directors divided by board size (IEB), independent executive dummy (IED), and the other variables used in the empirical tests. In the sample, the mean values of *Ncskew*, *Duvol*, and *Crash* are 0.13, 0.09, and 0.228, respectively. The means of the crash risk measures are similar to those reported in previous studies of stock crash risk (e.g., Kim et al., 2011a, 2016; Andreou et al., 2016; Li and Zeng (2019)). 65.3% of firms have at least one independent executive director on their boards. On average, a firm has 9 directors[61], of which 72% is independent directors, 7% are busy

[61] $e^{2.174} \approx 9$ with 2.174 is the average of ln(board size)

independent directors[62], 11% are high ranked independent directors[63], and 14.3% is independent executive directors. These figures are consistent with those reported by recent literature (e.g., Masulis and Mobbs (2014); Sila, Gonzalez, Hagendorff (2017); Stein and Zhao (2019)). The distribution of the other control variables is consistent with those reported in earlier studies.

3.4.2 Multivariate Analysis

3.4.2.1 Baseline empirical results:

In this part, I investigate the influence of independent executive directors on firm future stock price crash risk. Using two proxies for the presence of independent executive directors, IEB and IED, I use the baseline panel model given below:

$$\text{Crash Risk}_{j,\,t+1} = \beta_{10} + \beta_{11}\,\text{IEB}_{j,\,t} + \theta_{12}\,X_{j,\,t} + \lambda_i + \varphi_t + \varepsilon_{j,\,t} \quad (1)$$

$$\text{Crash Risk}_{j,\,t+1} = \beta_{20} + \beta_{21}\,\text{IED}_{j,\,t} + \theta_{22}\,X_{j,\,t} + \lambda_i + \varphi_t + \varepsilon_{j,\,t} \quad (2)$$

- Crash $\text{Risk}_{j,\,t+1}$ is measured by one of Ncskew_{t+1} , $\text{Duvol}_{\,t+1}$, Crash_{t+1}
- IEB: the number of independent executive director divided by board size
- IED: an indicator variable that equals one if a firm has at least one independent executive director and 0 otherwise
- $X_{j,t}$: control variables
- λ_i: Industry fixed effects (two-digit SIC dummies)
- φ_t : time fixed effects (fiscal year dummies)
- $\varepsilon_{j,t}$: error term
- Standard errors are clustered at the firm level[64]

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[62] Busy director ratio: Proportion of independent directors who hold three or more directorship at other public firms.

[63] High ranked director ratio: Proportion of directors who are independent, as classified by the Institutional Shareholder Services, and for whom this directorship is at least 10% larger than their smallest directorship. (Masulis and Mobbs, 2014; Sila, Gonzalez, Hagendorff, 2017)

[64] The results are similar when t-values are corrected for clustering the regression residuals at the firm and year level (Petersen, 2009). See more in Appendix 2.A3.

Columns (1), (3), and (5) of Table 3.2 show the results of equation 1, and columns (2), (4), and (6) present the result of equation 2. The coefficients of *IEB* and *IED* are negative and statistically significant across all the columns in Table 3.2. The coefficients on *IEB* vary from -0.104 (significant at 1% level) in column 2 to -0.340 (significant at 1% level) in column 5. The coefficients on *IED* vary from -0.023 (significant at 5% level) in column 4 to -0.096 (significant at 1% level) in column 6. These results indicate that the presence of independent executive directors is associated with lower 1-year future firm-specific crash risk.

The results are not only statistically significant, but they also show that the presence of independent executive directors is associated with a significant drop in crash risk probabilities of appointing firm. For example, in columns 5 and 6, I follow Hutton et al. (2009) and Callen and Fang (2015) and estimate the marginal effect of *IEB* on $Crash_{t+1}$ in the logit regression. The marginal effect of having at least an independent executive director on the board (*IED*) is -1.7%, meaning that an independent executive director can lead to a 1.7% lower probability of crash than those without any independent executive director. From an economic perspective, an independent executive director leads to a drop of crash risk by 7.5% (0.017/0.228)[65] , a 34.62% (0.045/0.13)[66] decrease in *Ncskew* at the mean, and a 25.56% (0.023/0.09)[67] decrease in *Duvol* at the mean. Therefore, the effect of independent executive directors on future stock price crash risk is both economically and statistically significant.

I note that I control for board independence ratio, which is the ratio of independent directors to board size. The coefficients on this variable are either insignificant or marginally positive, indicating that the independent directors on average either do not affect crash risk or might even raise it marginally. Thus, the negative effects that I observe for executive directors is not coming

[65] 0.228 is the unconditional probability of crash in table 1 (mean of $Crash_{t+1}$)

[66] 0.045 is the magnitude of IED coefficient in column 2; 0.13 is the mean of $Nckew_{t+1}$

[67] 0.023 is the magnitude of IED coefficient in column 4; 0.09 is the mean of $Duvol_{t+1}$

from their being independent. The estimated coefficients of other control variables are generally analogous to previous studies. For example, future stock price crash risk is greater for firms with higher previous year stock return volatility (Sigma), previous year return (Ret), operating performance (ROA) (Li and Zeng, 2019).

3.4.2.2 Propensity Score Matching:

The empirical results in Table 3.2 indicate that independent executive directors are associated with lower future stock price crash risk. However, I note that there are endogeneity concerns that may arise due to unobservable factors that both affect the hiring of independent executive directors and reduction in stock crash risk. On the one hand, less risky firms may favor executive candidates to be a part of their boards, which creates the reverse causality. On the other hand, executive nominees may be attracted to firms with a good reputation to polish their resumes. These factors could affect the matching between firms with lower stock crash risk and independent executive directors. I attempt to alleviate these endogeneity issues by using current independent executive directors (IEB_t and IED_t) to predict future stock price crash risk ($Ncskew_{t+1}$, $Duvol_{t+1,}$ and $Crash_{t+1}$) and by also by controlling for industry fixed effects, yet the apprehension of reverse causality and simultaneity still remain to be addressed. To address these concerns, I adopt propensity score matching, firm fixed effect, the difference-in-difference.

If the firm attributes affecting whether or not independent executive directors are selected to be a board member, then the negative relation between independent executive directors and firm crash risk may not be primarily driven by the presence of independent executive directors per se. To mitigate this possibility, I utilize a PSM procedure (Rosenbaum and Rubin, 1983) and estimate the treatment effect of the presence of independent executive directors on firm crash risk. I estimate a probit regression where the dependent variable is *IED* (Independent Executive Dummy), and independent variables are variables used in table 3.2, including intercept, industry, and time fixed effects. After obtaining the estimated propensity score, I use the nearest neighbor matching approach (1:1) and pair each firm in the control group with each firm in the treatment group. To ensure the balance of the matched sample, I require the caliper to be less than 0.003%. In panel A of Table 3.3, I present a diagnostic analysis evaluating the effectiveness of this matching. The t-statistic values of control variables are consistently less than 1.83, which indicates a good balance of control and treatment group in the post-match sample. I run the primary regressions (equations 1 & 2) using the matched sample with the same control variables as in table 3.2 and present the results in panel B of Table 3.3. The coefficient of *IED* continues to be negative and highly significant at 1% level, which is consistent with the results of the baseline regressions. It is interesting to note that the coefficients on IED in this sample are generally larger in magnitude than those in Table 3.2, which indicates that the strength of the negative association between the stock crash risk and the presence of independent executive directors is not driven by the endogenous matching.

3.4.2.3 Firm Fixed Effects:

If the association between independent executive directors and stock crash risk is influenced by unobservable firm features that can not be accounted for in the PSM procedure, then any unobserved bias due to hidden variables may still affect the coefficients on independent executive director variables. I address the issue of time-invariant unobservable heterogeneity by using firm fixed effects. I re-estimate equations 1 & 2 by replacing industry fixed effects with firm fixed effects and present results from these analyses in Table 3.4. In Table 3.4, the coefficients of *IEB* and *IED* are negative and highly significant at 1% level (columns 1,2,3, and 5) and 5% level for columns 4 and 5).

3.4.2.4 Difference In Difference:

The third approach to address endogeneity issues is to use a difference-in-differences framework by using the unexpected departure of independent directors due to death and to identify the effects of losing such directors on future stock price crash risk. Using Boardex announcement data, I identify firms that suffered deaths of independent directors and compare their stock price crash risk before and after such unexpected director deaths. Thus, I limit this analysis to only those firms that suffered at least one such event. Treatment firms are those that experience the death of an independent executive director, and control firms are those who experience the death of independent *non-executive* directors. Because the death of a director is unexpected, any difference in the changes in future crash risk before and after the death is more likely due to the death of independent directors. I create an indicator variable *Director Death* which takes a value of 1 if firm experiences loss of an independent executive director due to death, zero if a firm suffers loss of an independent but *non-executive* director. I construct a difference-in-differences sample as firm-year observations three years before and three years after the death year, not including the death year. Below is the difference-in-differences model:

$$\text{Crash Risk}_{t+1} = \beta_{30} + \beta_{31}\,\text{Post}_{j,\,t+1} + \beta_{32}\,\text{Director Death}_j + \beta_{33}\,\text{Director Death}_j * \text{Post}_{j,\,t+1} + \theta_{12}\,X_{j,\,t} + \gamma_j + \varphi_t + \varepsilon_{j,\,t} \qquad (3)$$

- ✓ $\text{Post}_{j,\,t+1}$: An indicator variable that equals one if firm-year t + 1 is after the director decease and zero otherwise.
- ✓ Pass_Away_j: An indicator variable that equals one if a firm experiences an unexpected decease of an independent executive director and zero if a firm experiences an unexpected decease of an independent non-executive director.
- ✓ $X_{j,t}$: control variables used in table 3.2
- ✓ γ_j: Firm fixed effects
- ✓ φ_t : Time fixed effects (fiscal year dummies)
- ✓ $\varepsilon_{j,t}$: error term

If an independent executive director is effective in mitigating firm crash risk, her/his unexpected departure means less monitoring of managers, which can escalate the future stock price crash risk. I use all three measures of stock crash risk as a dependent variable and present the estimation results of equation 3 in Table 3.5. I find that the coefficients of the interaction term, *Director Death * Post* are positive and highly significant across all the columns of Table 3.5. On the other hand, the coefficients on *Director Death* are insignificant. These results indicate that firms experience higher stock crash risk after the decease of an independent executive director.

Consistent with Stein and Zhao (2019), I use another difference-in-difference setting in which independent executive directors get distracted when their primary employer firm experiences a poor performance. Following Stein and Zhao (2019), I identify distracted independent executive directors if their primary employer's annual stock return is in the bottom quintile of the sample. I create an indicator variable *Treatment* that equals one if a firm has at least one distracted independent executive director in year t and no distracted independent executive director in year t-1, and zero if a firm has no distracted independent executive director in year t and t-1. I then match each treatment firm with a control firm that is in the same year, the same three-digit SIC industry has total assets within 50% of the treatment firm and has the closest risk (Sigma) in year t compared to its treatment firm. I then construct a sample with firm-year observations 3 years before and 3 years after the distracted year.[68] I use this sample to run a difference-in-differences analysis. Thus, the treatment firms are those that have an independent executive director who is distracted at period t, and control firms are others that do not have such a director but are similar. To capture the timing of the distracted director's presence, I create another indicator variable, *After* which is one for years t (the year when a director is distracted) and afterward, and zero otherwise.

I use all three proxies of stock crash risk as a dependent variable and present results from this analysis in Table 3.6. Results in Table 3.6 indicate that firms with independent executive directors have lower stock crash risk before these directors become distracted. This is clear from

[68] I find consistent results if I use 1-year window.

the coefficients on Treatment that are negative and significant at 5% or 1% levels and positive and significant coefficients on the interaction term. Consistent with the results in Table 3.5 , the coefficients on the interaction term, $Treatment_j \ x \ After_t$, are positive and significant at the 1% or 5% levels, which indicates a higher crash risk after independent executive directors getting distracted. Overall, results from these analyses indicate that the association between independent executive directors and lower crash risk is more likely to be causal.

3.4.2.5 When Are Executive Independent Directors More Effective? Effects of Corporate Governance, Institutional Ownership, and Information Asymmetry

In this section, I consider whether the effect of independent directors is related to corporate governance value, institutional monitoring, and information asymmetry (Li and Zeng, 2019). According to agency theory, managerial unpleasant news hoarding activities are more likely to occur when a firm suffers from weak corporate governance systems and poor quality monitoring. Hence, I postulate that the kith and kin between independent executive directors and future stock price crash risk should be stronger for firms with weaker corporate governance, institutional monitoring, and high information asymmetry. I use E-Index, institutional ownership, and the number of analysts following as proxies for corporate governance quality, institutional monitoring, and information asymmetry, respectively. E-Index is the managerial entrenchment index comprised by the six most crucial anti-takeover provisions (Bebchuk et al., 2009). A higher E-Index indicates poorer corporate governance. Institutional ownership is measured by the percentage of outstanding shares held by dedicated and quasi-index institutional investors[69] at the end of the fiscal year (Bushee,1998; Chen, Harford, and Li (2007). Higher institutional ownership indicates stronger supervising from institutions. A larger number of analysts who cover a firm indicates lower information asymmetry between shareholders and managers.

[69] The data to categorize institutional investors is from professor Bushee (see more at https://accounting-faculty.wharton.upenn.edu/bushee/)

In Table 3.7, I create sub-samples of firms into High and Low groups based on the median of E-Index, Institutional Ownership, and the natural log of one plus number of analysts. The high (low) groups contain firm-year observations with the above(below)-median of the corresponding variables. I separately re-estimate equations 1 & 2 using these sub-samples. Results for managerial entrenchment (E-Index) sub-samples are presented in Panel A, for institutional monitoring are presented in Panel B and for analysts following are presented in Panel C. I use all the three proxies of stock crash risk and both measures that capture the presence of independent executive directors. I find that *IEB* and *IED* coefficients are negative and significant in "High" group of firms based on E-Index in Panel A but they are insignificant for the firms that have "Low" E-Index. These results indicate that independent executive directors are more effective in lowering stock crash risk in firms that have a higher likelihood of managerial entrenchment. I find similar results in Panels B and C. In panel B, I find that *IEB* and *IED* coefficients are negative and significant only in "Low" group of institutional ownership and in "Low" group of Ln(1+number of analysts) in Panel C but are insignificant for others groups, suggesting that the effect of independent executive directors is more pronounced in firms that have corporate mechanisms allowing CEOs to exploit shareholder value (high entrenchment index, low institutional monitoring and high information asymmetry).

3.4.3 Other robustness checks:

So far, I find a negative effect of independent executive directors on stock price crash risk, which does not appear to be driven by some endogenous matching of these directors with firms that have a lower crash risk. However, it is also plausible that the effects that I are capturing may simply be a manifestation of other firm and board attributes, as shown by prior studies. In this section, I conduct additional analysis to show that the results are not proxies of previous findings in stock crash risk literature and board structure. Kim et al. (2016) find that CEO overconfidence is positively associated with future crash risk. Andreou et al. (2016) show that firms with younger CEOs are more likely to experience future stock price crashes. To rule out the possibility that the results are driven by CEO overconfidence, CEO age, or CEO option incentive, I introduce additional controls for CEO overconfident using Kim et al. (2016) definition, CEO age, and CEO option incentive in equation (1) and (2).[70] For the more effective board structure, Masulis and Mobbs (2014) find that an independent director on average spends more time and effort in firms where they can achieve the most reputation incentive. Sila, Gonzalez, Hagendorff (2017) show that when independent directors with high-rank directorship could reduce information asymmetry and lower crash risk. I follow the methodology of Masulis and Mobbs (2014) and Sila et al. (2017) to create the ratio of high-ranked director to board size (*High Ranked Director Ratio*) and include it in the equation (1) and (2). Another aspect of the board structure is busy independent directors. Busy directors can be ineffective in monitoring CEOs (Fich and Shivdasani (2006)). In the context of IPOs, Field, Lowry, and Mkrtchyan (2013) find that busy directors add positively to firm value. To ensure the finding is not proxied for those board structure, I include the ratio of busy independent directors to board size and high ranked director ratio into equation (1) and (2). In table 3.8, I find that the primary findings still hold after controlling those new variables.[71]

3.5 Conclusion

The bad news hoarding behavior can tremendously hurt shareholder value and raise the cost of subsequent equity financing. Such behaviors are often driven by managerial entrenchment or an opaque information environment around firms. Investors react extremely negatively when the hoarding of bad news in these firms reaches a certain point which is captured by stock price crash risk. I argue that effective board oversight can restrain such behaviors and thus mitigate these risks. However, to be able to effectively mitigate these risks, directors need to have the right expertise and motivation. In this paper, I argue that independent board members who are executives of other

[70] We find that the coefficients of IEB and IED are still negative and significant if we control for CEO Payslice, CFO gender, CFO option incentive, and accounting conservatism in the equation (1) and (2)

[71] We document similar results when including co-opted board ratio (Coles, Daniel, and Naveen, 2014)

firms have that expertise and motivation and therefore can monitor such behaviors more effectively and reduce stock price crash risk of appointing firms. Using a large sample of US public firms from 1996 to 2018, empirical results show a negative association between the presence of independent executive directors and future stock crash risk. The results are robust after I apply econometric approaches that address potential endogeneity issues. I further find that the positive effect of independent executive directors is mostly concentrated in firms with high managerial entrenchment, low monitoring of institutions, and high information asymmetry. These are the firms that are more likely to benefit from the effective monitoring of boards.

Table 1.1: Distribution of Firm-Years by Industry:
This table presents the distribution of family & nonfamily firms by industry as defined by 2-digit SIC code. Family firms are those in which one or more family members are officers or directors, or own 5% or more of the firm's equity, either individually or as a group. The sample comprises firm-year observations from S&P 1500 firms during 1998–2010.

SIC Code	Industry name	Nonfamily	Family	% Families in Industry
1	Agricultural Production	7	0	0.0%
10	Metal Mining	37	0	0.0%
12	Coal Mining	9	0	0.0%
13	Oil and Gas Extraction	278	123	30.7%
14	Mining and Quarrying of Nonmetallic Minerals, Except Fuels	26	11	29.7%
15	Building Construction General Contractors and Operative Builders	33	77	70.0%
16	Heavy Construction Other than Building Construction Contractors	50	9	15.3%
17	Construction Special Trade Contractors	9	0	0.0%
20	Food and Kindred Products	199	190	48.8%
21	Tobacco Products	33	0	0.0%
22	Textile Mill Products	16	41	71.9%
23	Apparel and Other Finished Products Made from Fabrics and Similar Materials	44	65	59.6%
24	Lumber and Wood Products, Except Furniture	56	31	35.6%
25	Furniture and Fixtures	68	44	39.3%
26	Paper and Allied Products	120	85	41.5%
27	Printing, Publishing, and Allied Industries	66	122	64.9%
28	Chemical and Allied Products	632	323	33.8%
29	Petroleum Refining and Related Industries	93	11	10.6%
30	Rubber and Miscellaneous Plastics Products	55	61	52.6%
31	Leather & Leather Products	31	21	40.4%
32	Stone, Clay, and Glass Products	19	26	57.8%
33	Primary Metal Industries	147	73	33.2%
34	Fabricated Metal Products, Except Machinery and Transportation Equipment	103	121	54.0%

35	Industrial and Commercial Machinery and Computer Equipment	599	270	31.1%
36	Electronic and Other Electrical Equipment and Components, Except Computer Equipment	468	503	51.8%
37	Transportation Equipment	274	131	32.3%
38	Measuring, Analyzing and Controlling Instruments	418	197	32.0%
39	Miscellaneous Manufacturing Industries	53	54	50.5%
40	Railroad Transportation	60	0	0.0%
41	Local & Interurban Passenger Transit	0	3	100.0%
42	Motor Freight Transportation and Warehousing	48	49	50.5%
44	Water Transportation	23	19	45.2%
45	Transportation by Air	43	41	48.8%
47	Transportation Services	13	18	58.1%
48	Communications	57	148	72.2%
50	Wholesale Trade, Durable Goods	135	166	55.1%
51	Wholesale Trade, Nondurable Goods	100	47	32.0%
52	Building Materials, Hardware, Garden Supply, and Mobile Home Dealers	25	10	28.6%
53	General Merchandise Stores	105	80	43.2%
54	Food Stores	36	50	58.1%
55	Automotive Dealers and Gasoline Service Stations	22	41	65.1%
56	Apparel and Accessory Stores	87	122	58.4%
57	Home Furniture, Furnishings, and Equipment Stores	31	36	53.7%
58	Eating and Drinking Places	123	88	41.7%
59	Miscellaneous Retail	125	69	35.6%
70	Hotels, Rooming Houses, Camps, and Other Lodging Places	9	26	74.3%
72	Personal Services	24	52	68.4%
73	Business Services	523	530	50.3%
75	Automotive Repair, Services, and Parking	24	2	7.7%
78	Motion Pictures	0	9	100.0%
79	Amusement and Recreation Services	53	5	8.6%
80	Health Services	102	55	35.0%
82	Educational services	6	23	79.3%

83	Social Services	0	5	100.0%
87	Engineering, Accounting, Research, Management, and Related Services	82	70	46.1%
99	No classifiable Establishments	26	3	10.3%
Total		5825	4356	42.8%

Table 1.2: Descriptive Statistics:

Panel A: This panel presents descriptive statistics for dependent and independent variables that I use in this study. The sample comprises firms from the S&P 1500 during 1998–2010. Family firms are defined as those in which one or more family members are officers or directors, and/or own 5% or more of the firm's equity, either individually or as a group. Hired CEO equals one when the CEO is a nonfamily member in a family firm and zero otherwise. Founder CEO equals one if the CEO is the founder of the firm and zero otherwise. Descendant CEO equals one if the CEO is a founders' descendant and zero otherwise. Appendix 1.A1 contains all other variable definitions.

Variables	Number of observations	Mean	Std Dev	25th percentile	Median	75th percentile
Tobin's Q	10181	2.015	1.245	1.240	1.612	2.307
ROA	10181	0.163	0.100	0.101	0.153	0.217
Family Firm	10181	0.428	0.495	0.000	0.000	1.000
Family Ownership (%)	10181	5.510	12.103	0.000	0.000	4.500
Founder CEO	10181	0.149	0.356	0.000	0.000	0.000
Descendant CEO	10181	0.077	0.267	0.000	0.000	0.000
Hired CEO	10181	0.202	0.401	0.000	0.000	0.000
Board Independence Ratio	10181	0.695	0.164	0.583	0.714	0.833
Ln(Board Size)	10181	2.196	0.252	2.079	2.197	2.398
E Index	10181	2.098	1.435	1.000	2.000	3.000
Dual Class	10181	0.089	0.285	0.000	0.000	0.000
R&D/Total Assets	10181	0.030	0.049	0.000	0.005	0.041
Capex/Total Sales	10181	0.065	0.095	0.022	0.038	0.066
Ln(Sales)	10181	7.609	1.463	6.600	7.473	8.551
Ln(Firm Age)	10181	3.757	0.782	3.178	3.807	4.419
Diversification	10181	0.870	0.686	0.000	1.099	1.386
Leverage	10181	0.217	0.162	0.078	0.212	0.323
CEO Compensation	10181	0.589	0.276	0.427	0.655	0.812
Ln(CEO Age)	10181	4.012	0.128	3.932	4.025	4.094
Ln(CEO Tenure)	10181	1.618	0.932	1.099	1.609	2.303
Firm Market Risk	10181	1.117	0.701	0.623	0.980	1.477
Patents/R&D expenses	4252	0.333	0.381	0.078	0.208	0.435
Citations/R&D expenses	4325	3.101	5.577	0.209	1.028	3.317
Transparency	9945	2.262	0.809	1.792	2.398	2.833
Forced CEO Turnover	10181	0.044	0.206	0.000	0.000	0.000

Table 1.2:

Panel B: Correlation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Tobin's Q (1)	1												
ROA (2)	0.50[a]	1											
Family Firm (3)	0.19[a]	-0.01	1										
Founder CEO (4)	0.19[a]	-0.03[b]	0.53[a]	1									
Descendant CEO (5)	-0.08[a]	-0.03[c]	0.25[a]	-0.07[a]	1								
Hired CEO (6)	0.11[a]	0.03[b]	0.65[a]	-0.18[a]	-0.09[a]	1							
Board Independence Ratio (7)	-0.14[a]	-0.06[a]	-0.34[a]	-0.20[a]	-0.07[a]	-0.21[a]	1						
Ln(Board Size) (8)	-0.12[a]	0.10[a]	-0.16[a]	-0.27[a]	0.08[a]	0.00	0.18[a]	1					
E Index (9)	-0.17[a]	-0.03[c]	-0.14[a]	-0.13[a]	0.03[c]	-0.07[a]	0.26[a]	0.11[a]	1				
R&D/Total Assets (10)	0.34[a]	-0.14[a]	0.20[a]	0.22[a]	-0.08[a]	0.09[a]	-0.09[a]	-0.34[a]	-0.09[a]	1			
Ln(Sales) (11)	-0.03[b]	0.23[a]	-0.19[a]	-0.23[a]	0.04[a]	-0.05[a]	0.24[a]	0.63[a]	0.01	-0.34[a]	1		
Ln(Firm Age) (12)	-0.27[a]	0.09[a]	-0.29[a]	-0.35[a]	0.08[a]	-0.09[a]	0.22[a]	0.42[a]	0.16[a]	-0.47[a]	0.42[a]	1	
CEO Compensation (13)	0.10[a]	0.05[a]	-0.09[a]	-0.11[a]	-0.06[a]	0.01	0.20[a]	0.15[a]	0.19[a]	0.08[a]	0.24[a]	0.02	1

In this panel, the significance levels at 1%, 5%, and 10% are denoted by a, b, and c, respectively

Table 1.3: Comparison of Variable Means for Noncompliant/Compliant Family and Non-family Firms Pre- and Post-SOX Periods

This Panel presents differences in means of firm characteristics for noncompliant family and complaint family Firms from pre to post-SOX period. Variable definitions are in Appendix 1.A1. The significance levels at 1%, 5%, and 10% are denoted by ***, **. and *, respectively.

	Firm Type		Tobin's Q	ROA	Board Independence Ratio	Ln(Board Size)	Family Members in a board/Board size
			(1)	(2)	(3)	(4)	(5)
1998-2001	Noncompliant Family	(a)	2.546	0.190	0.545	2.153	0.110
	Compliant Family	(b)	2.194	0.163	0.756	2.256	0.041
	Noncompliant Nonfamily	(c)	2.044	0.177	0.661	2.197	
	Compliant Nonfamily	(d)	2.049	0.168	0.815	2.291	
2002-2010	Noncompliant Family	(e)	1.973	0.157	0.659	2.179	0.101
	Compliant Family	(f)	2.210	0.141	0.752	2.290	0.042
	Noncompliant Nonfamily	(g)	1.849	0.155	0.766	2.200	
	Compliant Nonfamily	(h)	1.685	0.140	0.831	2.289	
		(a)-(c)	0.502***	0.013***	-0.116***	-0.044***	
		(e)-(g)	0.124***	0.002	-0.107***	-0.021***	
		(e)-(a)	-0.574***	-0.032***	0.114***	0.026***	-0.009**
		(g)-(c)	-0.195***	-0.022***	0.105***	0.003	
		[(e)-(g)]-[(a)-(c)]	-0.378***	-0.011**	0.009	0.023**	

Table 1.3 Cont.:

Period	Firm Type		Ln(Firm Age)	Firm Size	R&D Intensity	Ln(1+ number of patents)	Ln(1+ number of citations)	Number of patents/R&D expenses	Number of citations/R&D expenses
			(6)	(7)	(8)	(9)	(10)	(11)	(12)
1998-2001	Noncompliant Family	(a)	3.444	7.107	0.032	2.449	4.721	0.358	5.980
	Compliant Family	(b)	3.810	7.727	0.025	2.686	5.018	0.426	6.003
	Noncompliant Nonfamily	(c)	3.784	7.494	0.027	2.664	4.827	0.374	5.350
	Compliant Nonfamily	(d)	4.114	8.005	0.034	3.218	5.475	0.418	5.572
2002-2010	Noncompliant Family	(e)	3.638	7.529	0.032	2.623	3.619	0.279	1.838
	Compliant Family	(f)	3.869	7.823	0.027	1.876	2.743	0.296	1.467
	Noncompliant Nonfamily	(g)	3.871	7.775	0.030	2.788	3.673	0.331	2.004
	Compliant Nonfamily	(h)	4.158	8.326	0.034	3.278	4.203	0.335	1.841
		(a)-(c)	-0.340***	-0.387***	0.005***	-0.215**	-0.106	-0.017	0.630
		(e)-(g)	-0.233***	-0.246***	0.002	-0.165***	-0.054	-0.051***	-0.167
		(e)-(a)	0.195***	0.423***	-0.001	0.174**	-1.102***	-0.078***	-4.143***
		(g)-(c)	0.087***	0.282***	0.002	0.124*	-1.154***	-0.044**	-3.346***
		[(e)-(g)]-[(a)-(c)]	0.107***	0.141**	-0.003	0.050	0.052	-0.035	-0.797**

Table 3 Cont: Comparison of Variable Means for Noncompliant/Compliant Family and Non-family Firms Pre- and Post-SOX Period

	Firm Type		Total Risk	Market Risk	Leverage	Credit Rating	Forced CEO Turnover	Transparency	Number of M&As
			(13)	(14)	(15)	(16)	(17)	(18)	(19)
1998-2001	Noncompliant Family	(a)	0.134	1.078	0.208	13.785	0.036	2.224	0.541
	Compliant Family	(b)	0.104	0.811	0.242	15.622	0.050	2.293	0.467
	Noncompliant Nonfamily	(c)	0.123	0.978	0.264	14.327	0.046	2.188	0.561
	Compliant Nonfamily	(d)	0.11	0.881	0.281	15.165	0.035	2.366	0.588
2002-2010	Noncompliant Family	(e)	0.125	1.212	0.179	13.222	0.040	2.273	0.386
	Compliant Family	(f)	0.108	1.01	0.205	14.967	0.028	2.303	0.370
	Noncompliant Nonfamily	(g)	0.117	1.162	0.22	13.584	0.053	2.283	0.428
	Compliant Nonfamily	(h)	0.105	1.04	0.249	14.322	0.041	2.316	0.511
		(a)-(c)	0.011***	0.100***	-0.056***	-0.542***	-0.010	0.035	-0.021
		(e)-(g)	0.008***	0.050***	-0.041***	-0.362***	-0.013**	-0.010	-0.042**
		(e)-(a)	-0.009***	0.134***	-0.029***	-0.563***	0.004	0.049*	-0.155***
		(g)-(c)	-0.006***	0.184***	-0.044***	-0.743***	0.007	0.095***	-0.134***
		[(e)-(g)]-[(a)-(c)]	-0.003	-0.05	0.015**	0.18	-0.003	-0.046	-0.021

Table 1.4: Difference in Difference: Family Firms, SOX and Noncompliance.
This table presents the impact of SOX on groups of firms. Family Firm is 1 when one or more family members are officers and/or directors and/or own 5% or more of the firm's equity either individually or as a group and zero otherwise. Compliant firms are firms that satisfy all three requirements (the majority of board independent, fully independent audit and nominating committee) in all years from 1998-2001. Noncompliant firms are firms that do not satisfy any one of the three requirements in any year from 1998 to 2001. Appendix 1.A1 contains all other variable definitions. Standard errors are clustered at the firm and year level (Petersen, 2009) and adjusted for heteroscedasticity (White, 1980). The significance levels at 1%, 5%, and 10% are denoted by ***, **. and *, respectively.

Dependent Variable: Tobin's Q	1998-2010	1998-2005
	(1)	(2)
a_1: Family Firm	0.236	0.193
	(0.201)	(0.201)
b_1: SOX	-0.258*	-0.142
	(0.136)	(0.112)
c_1: Noncompliant	0.110	0.116
	(0.131)	(0.130)
d_1: Family Firm * SOX	0.332**	0.244**
	(0.153)	(0.108)
e_1: Family Firm * Noncompliant	0.142	0.135
	(0.212)	(0.212)
f_1: SOX * Noncompliant	0.167	0.144
	(0.125)	(0.111)
g_1: Family Firm * SOX * Noncompliant	**-0.648*** **	**-0.524*** **
	(0.170)	**(0.124)**
Ln(Board Size)	-0.186	-0.179
	(0.119)	(0.128)
E-Index	-0.067***	-0.090***
	(0.022)	(0.022)
Dual Class	-0.255***	-0.263***
	(0.084)	(0.085)
R&D/Total Assets	6.000***	6.811***
	(0.950)	(1.255)
Capex/Total Sales	0.309	0.394
	(0.257)	(0.261)
Ln(Sales)	0.143***	0.181***
	(0.031)	(0.036)
Ln(Firm Age)	-0.060	-0.095**
	(0.041)	(0.046)

Diversification	-0.224***	-0.270***
	(0.044)	(0.054)
Leverage	-1.494***	-1.899***
	(0.291)	(0.279)
CEO Compensation	0.370***	0.330***
	(0.085)	(0.084)
Ln(CEO Tenure)	0.076***	0.083***
	(0.024)	(0.031)
Ln(CEO Age)	-0.490***	-0.500**
	(0.180)	(0.225)
Firm Market Risk	-0.119**	-0.146**
	(0.050)	(0.057)
Intercept	Yes	Yes
Fixed Effect	Industry and Year	Industry and Year
Adjusted R-squared	0.288	0.306
Observations	10181	6925

Table 1.5: Firm Fixed Effect, Random Effect, GMM, and Erickson-Whited Linear Errors-in-Variables

This table presents the impact of SOX on firms using firm fixed effect, random effect, GMM, and EW linear errors-in-variables for the full sample from 1998-2010. I include same control variables as in Table 4, but do not report for brevity. Appendix 1.A1 contains all variable definitions. Standard errors are clustered at the firm and year level and adjusted for heteroscedasticity.

Dependent Variable: Tobin's Q	FFE	RE	GMM	EW
	(1)	(2)	(3)	(4)
Family Firm	-0.523	-0.268	0.049	-0.406***
	(0.435)	(0.301)	(0.477)	(0.033)
SOX	-0.688***	-0.341**	-0.792***	-0.314**
	(0.130)	(0.150)	(0.211)	(0.123)
Noncompliant		-0.092	0.160	1.079
		(0.155)	(0.322)	(2.222)
Family Firm * SOX	0.407**	0.327**	0.317	0.694***
	(0.167)	(0.164)	(0.257)	(0.033)
Family Firm * Noncompliant	0.846*	0.639**	0.534	0.456***
	(0.451)	(0.314)	(0.496)	(0.059)
SOX * Noncompliant	0.158	0.122	0.150	0.046
	(0.135)	(0.133)	(0.165)	(0.125)
Family Firm * SOX * Noncompliant	**-0.659*** **	**-0.628*** **	**-0.659** **	**-0.646*** **
	(0.187)	**(0.187)**	**(0.268)**	**(0.052**
Intercept	Yes	Yes	Yes	Yes
Fixed Effect	Firm, Year	Year	Industry, Year	Industry, Year
Control Variables	Yes	Yes	Yes	Yes
Overall R-squared	0.188	0.214		
Hansen Test of Over-Identification (Chi-squared)			998.503	
Diff-in-Hansen Tests of Exogeneity (Chi-squared)			6.021	
Wald Chi-squared			1012.570	
Rho Squared				0.080
Observations	10181	10181	10181	10181

Table 1.6: Propensity Score Matching (PSM).

This table presents results using PSM methodology for the full sample from 1998-2010. I use all control variables, including year and industry dummies, to match non-compliant family firms (treated) and non-compliant nonfamily firms (control). For both methods, I require caliper to be less than or equal 0.00015 to obtain a balanced matched sample. Panel A and B presents the balance diagnosis of the matched sample for the nearest neighbor method and radius method respectively. After the matching, I run multivariate regressions with the matched samples. NF_NNF is a dummy which equals 1 when a firm is a non-compliant family firm, and 0 when a firm is a non-compliant nonfamily firm. I use the nearest neighbor and radius method for columns 1 and 2, respectively. In Panel C, I include the same control variables as in Table 4, but do not report for brevity. Standard errors are clustered at the firm and year level (Petersen, 2009) and adjusted for heteroscedasticity (White, 1980). The significance levels at 1%, 5%, and 10% are denoted by ***, **. and *, respectively.

Panel A: Comparison of Variables from Treated and Control Groups for The Nearest Neighbor Method.

Covariates	Mean Value (Treated)	Mean Value (Control)	t value (Treated – Control)
	(1)	(2)	(3)
Ln(Board Size)	2.17	2.18	-0.25
E-Index	2.04	2.09	-1.32
Dual Class	0.08	0.08	-0.45
R&D/Total Assets	0.03	0.04	-0.91
Capex/Total Sales	0.07	0.06	0.91
Ln(Sales)	7.45	7.43	0.32
Ln(Firm Age)	3.62	3.62	-0.39
Diversification	0.80	0.80	0.02
Leverage	0.20	0.19	1.66
CEO Compensation	0.58	0.59	-1.27
Ln(CEO Tenure)	1.65	1.65	0.19
Ln(CEO Age)	4.01	4.01	0.12
Firm Market Risk	1.17	1.18	-0.52

Panel B: Comparison of Variables from Treated and Control Groups for the Radius Method

Covariates	Mean Value (Treated)	Mean Value (Control)	t value (Treated – Control)

	(1)	(2)	(3)
Ln(Board Size)	2.17	2.18	-0.57
E-Index	2.04	2.08	-1.11
Dual Class	0.08	0.08	-0.22
R&D/Total Assets	0.03	0.04	-0.60
Capex/Total Sales	0.07	0.07	0.06
Ln(Sales)	7.45	7.43	0.34
Ln(Firm Age)	3.62	3.62	-0.07
Diversification	0.80	0.81	-0.48
Leverage	0.20	0.19	0.92
CEO Compensation	0.58	0.59	-0.79
Ln(CEO Tenure)	1.65	1.64	0.56
Ln(CEO Age)	4.01	4.01	0.22
Firm Market Risk	1.17	1.18	-0.35

Panel C: Multivariate Regressions with matched samples.

	Nearest Neighbor	Radius
	(1)	(2)
NF_NNF	0.330***	0.322***
	(0.078)	(0.080)
NF_NNF * SOX	-0.251***	-0.253***
	(0.079)	(0.080)
SOX	-0.174**	-0.157*
	(0.088)	(0.083)
Intercept	Yes	Yes
Fixed Effect	Industry and Year	Industry and Year
Control Variables	Yes	Yes
Adjusted R-squared	0.300	0.303
Observations	4414	5766

Table 1.7: Censoring

This Table presents the impact of SOX on firms using sample with different censoring. I include the same control variables as in Table 4 but do not report them for brevity. Appendix 1.A1 contains all other variable definitions. Standard errors are clustered at the firm and year level (Petersen, 2009) and adjusted for heteroscedasticity (White, 1980) and the time level identifier.

Dependent Variable: Tobin's Q					
	(1)	(2)	(3)	(4)	(5)
Family Firm	0.601**	0.241	0.308	0.243	0.684***
	(0.236)	(0.199)	(0.216)	(0.201)	(0.234)
SOX	-0.169	-0.254*	-0.266*	-0.252*	-0.160
	(0.123)	(0.136)	(0.138)	(0.138)	(0.120)
Noncompliant	0.198*	0.123	0.155	0.111	0.272**
	(0.118)	(0.132)	(0.136)	(0.132)	(0.120)
Family Firm * SOX	0.151	0.324**	0.295*	0.327**	0.115
	(0.188)	(0.154)	(0.161)	(0.153)	(0.189)
Family Firm * Noncompliant	-0.164	0.122	0.048	0.135	-0.308
	(0.235)	(0.209)	(0.226)	(0.212)	(0.236)
SOX * Noncompliant	0.091	0.148	0.151	0.166	0.044
	(0.112)	(0.125)	(0.125)	(0.126)	(0.107)
Family Firm * SOX * Noncompliant	**-0.514*** **	**-0.628*** **	**-0.572*** **	**-0.644*** **	**-0.404** **
	(0.191)	**(0.170)**	**(0.177)**	**(0.169)**	**(0.195)**
Intercept	Yes	Yes	Yes	Yes	Yes
Fixed Effect	Industry and Year	Industry and Year	Industry and Year	Industry and Year	Industry and Year
Control Variables	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.299	0.285	0.288	0.289	0.299
Observations	8834	9968	9419	10181	7940

Table 1.8 : Placebo Tests

For the purpose of the placebo tests, in column 1, I use three years of data from 1998 to 2000; I assume that SOX was implemented in 2000 and define SOX_2000=1 if the year equals 2000, and 0 if the year is before 2000. I apply the same approach in columns 2 to column 5 assuming SOX was implemented in year 2001,2002, 2003 and 2004. I exclude family firms that become nonfamily firms during indicated periods of each column. I use same control variables as in the baseline regressions in Table 4. Appendix 1.A1 contains all other variable definitions. Standard errors are clustered at the firm and year level (Petersen, 2009) and adjusted for heteroscedasticity (White, 1980). The significance levels at 1%, 5%, and 10% are denoted by ***, **. and *, respectively.

Dependent Variable: Tobin's Q	SOX=1 if year =2000	SOX=1 if year =2001	SOX=1 if year =2002	SOX=1 if year =2003	SOX=1 if year =2004
Data Year	1998-2000	1999-2001	2000-2002	2001-2003	2002-2004
	(1)	(2)	(3)	(4)	(5)
Family Firm * SOX_2000 * Noncompliant	0.022				
	(0.057)				
Family Firm * SOX_2001 * Noncompliant		-0.071			
		(0.055)			
Family Firm * SOX_2002 * Noncompliant			-0.105***		
			(0.033)		
Family Firm * SOX_2003 * Noncompliant				-0.068	
				(0.084)	
Family Firm * SOX_2004 * Noncompliant					-0.062
					(0.048)
Intercept	Yes	Yes	Yes	Yes	Yes
Fixed Effect	Industry and Year	Industry and Year	Industry and Year	Industry and Year	Industry and Year
Control Variables	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.385	0.395	0.326	0.279	0.244
Observations	2022	2217	2397	2484	2427

Table 1.9: Founder CEO Led Firms, Descendant CEO Led Firms, Hired CEO Led Firms, and Lone Founder Firms.

This table presents the impact of SOX on Founder CEO led firms, Descendant CEO led firms, Hired CEO led firms, and Lone-founder firms for the full sample from 1998-2010. Founder CEO equals one if the CEO is the founder of the firm and zero otherwise. Descendant CEO equals one if the CEO is a founders' descendant and zero otherwise. Hired CEO equals one when the CEO is a non-family member in a family firm and zero otherwise. Lone founder firm equals one if an individual is one of the company's founders with no other family members involved and zero otherwise. Compliant firms are firms that satisfy all three requirements (the majority of board independent, fully independent audit and nominating committee) in all years from 1998-2001. Noncompliant firms are firms that do not satisfy any one of the three requirements in any year from 1998 to 2001. Appendix 1.A1 contains all other variable definitions. I include same control variables as in Table 4, but do not report for brevity. Standard errors are clustered at the firm and year level (Petersen, 2009) and adjusted for heteroscedasticity (White, 1980). The significance levels at 1%, 5%, and 10% are denoted by ***, **. and *, respectively.

Dependent Variable: Tobin's Q

	(1)	(2)	(3)	(4)
Founder CEO * SOX * Noncompliant	-1.068***			
	(0.186)			
Descendant CEO * SOX * Noncompliant		-0.153		
		(0.461)		
Hired CEO * SOX * Noncompliant			-0.550**	
			(0.252)	
Lone Founder * SOX * Noncompliant				-1.237***
				(0.227)
Intercept	Yes	Yes	Yes	Yes
Fixed Effect	Industry and Year	Industry and Year	Industry and Year	Industry and Year
Control Variables	Yes	Yes	Yes	Yes
Adjusted R-squared	0.285	0.253	0.275	0.301
Observations	7340	6614	7877	8096

Table 1.10: Other Measures

This table presents the impact of SOX on firms using other measures of firm valuation for the full sample from 1998-2010. In column 1 I report results for ROA (operating income before depreciation and amortization divided by total assets), in column 2 I use Peters and Taylor Total Q and in column 3, I report results for TCAR (the total cumulative abnormal returns around announcement dates of board requirements). Abnormal returns are measured based on the Fama-French 3 factors model. In column 4, I use Annual Return as dependent variable which is a firm's annual return obtained from CRSP. I include the same control variables as in Table 4 but do not report them for brevity. Appendix 1.A1 contains all other variable definitions. Standard errors are clustered at the firm and year level (Petersen, 2009) and adjusted for heteroscedasticity (White, 1980) and the time level identifier.

Dependent Variable	ROA	Peters and Taylor Q	TCAR	Annual Return
	(1)	(2)	(3)	(4)
Family Firm	-0.006	0.203	6.231	0.022
	(0.019)	(0.274)	(4.055)	(0.038)
SOX	0.010	-0.356**		0.141***
	(0.007)	(0.147)		(0.027)
Noncompliant	0.015**	0.209	0.343	0.024
	(0.007)	(0.153)	(1.564)	(0.022)
Family Firm * SOX	0.012*	0.229		0.069
	(0.007)	(0.170)		(0.057)
Family Firm * Noncompliant	0.016	0.486*	-6.887*	0.027
	(0.020)	(0.282)	(4.115)	(0.043)
SOX * Noncompliant	0.008	0.060		-0.009
	(0.006)	(0.135)		(0.025)
Family Firm * SOX * Noncompliant	-0.022***	-0.739***		-0.114*
	(0.007)	(0.193)		(0.063)
Intercept	Yes	Yes	Yes	Yes
Fixed Effect	Industry, Year	Industry, Year	Industry	Industry, Year
Control Variables	Yes	Yes	Yes	Yes
Adjusted R-squared	0.227	0.236	0.402	0.190
Observations	10181	10137	949	10181

Table 1.11: Channels

This table presents channels on which SOX affects firms for the full sample from 1998 to 2010. To ensure that the findings capture changes of family firms post-SOX, I exclude family firms that become nonfamily firms after the passage of SOX. Appendix 1.A1 contains all other variable definitions. Standard errors are clustered at the firm and year level (Petersen, 2009) and adjusted for heteroscedasticity (White, 1980) and the time level identifier.

Dependent Variable	RD Intensity	Ln(1+ number of patents)	Ln(1+ number of citations)	Number of patents/R&D expenses	Number of citations/R&D expenses
	(1)	(2)	(3)	(4)	(5)
Family Firm	-0.007	0.443	0.420	-0.086	-2.064***
	(0.470)	(0.408)	(0.589)	(0.314)	(0.008)
SOX	-0.007***	-0.458***	-3.722***	-0.132***	-5.384***
	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
Noncompliant	-0.004	-0.212	-0.409**	-0.048	-0.606
	(0.397)	(0.118)	(0.025)	(0.428)	(0.498)
Family Firm * SOX	0.009***	-0.658	-0.792	0.148**	2.835***
	(0.009)	(0.121)	(0.178)	(0.032)	(0.000)
Family Firm * Noncompliant	0.007	-0.375	-0.219	0.086	2.737***
	(0.455)	(0.497)	(0.790)	(0.309)	(0.007)
SOX * Noncompliant	0.001	0.034	0.105	0.045*	0.556
	(0.269)	(0.650)	(0.386)	(0.081)	(0.398)
Family Firm * SOX * Noncompliant	-0.007**	0.677	0.743	-0.171**	-3.403***
	(0.031)	(0.118)	(0.243)	(0.019)	(0.000)
ROA t-1	-0.024**	-1.679***	-1.562***	-0.265***	-3.345**
	(0.040)	(0.000)	(0.001)	(0.001)	(0.030)
Ln(Board Size)	0.001	0.074	-0.131	-0.057	-1.362**
	(0.909)	(0.679)	(0.597)	(0.321)	(0.049)
Board Independence Ratio	0.023***	0.909***	0.975**	0.139*	0.801
	(0.000)	(0.001)	(0.032)	(0.084)	(0.462)

E-Index	-0.001	-0.052	-0.027	0.012	0.220
	(0.123)	(0.212)	(0.648)	(0.394)	(0.231)
Dual Class	-0.005	-0.067	-0.989***	-0.006	-0.848
	(0.172)	(0.731)	(0.004)	(0.921)	(0.133)
Ln(Sales)	-0.003**	0.674***	0.766***	-0.025**	-0.044
	(0.014)	(0.000)	(0.000)	(0.035)	(0.734)
Ln(Firm Age)	-0.013***	-0.150*	-0.274***	0.059***	0.272
	(0.000)	(0.063)	(0.009)	(0.003)	(0.192)
Current Ratio	-0.006**	0.034	0.132	0.033	0.329
	(0.038)	(0.779)	(0.401)	(0.342)	(0.446)
Leverage	-0.044***	-0.791***	-0.983**	-0.023	-1.359
	(0.000)	(0.005)	(0.014)	(0.760)	(0.226)
International Sale/Total Sale	0.017***	1.021***	1.288***	-0.017	0.308
	(0.001)	(0.000)	(0.000)	(0.785)	(0.643)
Firm Market Risk	0.010***	0.110	0.271***	-0.057***	-0.284
	(0.000)	(0.114)	(0.003)	(0.010)	(0.269)
Ln(CEO Age)	-0.010	-0.060	-0.439	0.074	-0.451
	(0.161)	(0.841)	(0.289)	(0.352)	(0.701)
Ln(CEO Tenure)	0.001	-0.030	-0.003	-0.015	-0.092
	(0.187)	(0.389)	(0.944)	(0.109)	(0.420)
Intercept	Yes	Yes	Yes	Yes	Yes
Fixed Effect	Industry and Year	Industry and Year	Industry and Year	Industry and Year	Industry and Year
Adjusted/Pseudo R-squared	0.438	0.536	0.512	0.215	0.287
Observations	8108	4024	4106	3439	3498

Table 1.11. Cont.:Channels

This table presents channels on which SOX affects firms for the full sample from 1998 to 2010 . To ensure that the findings capture changes of family firms post-SOX, I exclude family firms that become nonfamily firms after the passage of SOX. Appendix 1.A1 contains all other variable definitions. Standard errors are clustered at the firm and year level (Petersen, 2009) and adjusted for heteroscedasticity (White, 1980) and the time level identifier.

Dependent Variable	Total Risk	Market Risk	Firm-specific Risk	Leverage	Credit Rating	Forced CEO Turnover	Ln(1+Number of M&As)
	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Family Firm	-0.005	0.044	-0.005	-0.064***	1.820***	-0.058	-0.035
	(0.414)	(0.591)	(0.320)	(0.004)	(0.005)	(0.891)	(0.444)
SOX	-0.017***	0.330***	-0.028***	-0.063***	-0.477**	0.535***	-0.027
	(0.000)	(0.000)	(0.000)	(0.000)	(0.034)	(0.005)	(0.506)
Noncompliant	0.007**	0.077*	0.006*	-0.009	-0.096	0.146	-0.007
	(0.049)	(0.087)	(0.067)	(0.554)	(0.654)	(0.101)	(0.823)
Family Firm * SOX	0.006	0.136	0.003	0.020	0.824***	-0.457	0.015
	(0.297)	(0.295)	(0.492)	(0.521)	(0.000)	(0.458)	(0.765)
Family Firm * Noncompliant	0.009	-0.011	0.009*	0.042*	-1.958***	-0.131	0.049
	(0.127)	(0.888)	(0.099)	(0.065)	(0.004)	(0.795)	(0.331)
SOX * Noncompliant	-0.003	-0.015	-0.003	-0.004	-0.033	-0.091	0.001
	(0.377)	(0.756)	(0.264)	(0.712)	(0.844)	(0.617)	(0.985)
Family Firm * SOX * Noncompliant	-0.010	-0.162	-0.006	-0.016	-0.643**	0.407	-0.037
	(0.138)	(0.267)	(0.131)	(0.627)	(0.027)	(0.563)	(0.492)
ROA t-1	-0.087***	-1.115***	-0.069***	-0.101**	7.710***	-0.253	0.361***
	(0.000)	(0.000)	(0.000)	(0.042)	(0.000)	(0.459)	(0.000)
Ln(Board Size)	-0.015***	-0.165***	-0.013***	0.044***	1.236***	-0.030	-0.007
	(0.000)	(0.002)	(0.001)	(0.008)	(0.000)	(0.810)	(0.837)
Board Independence Ratio	-0.004	-0.035	-0.003	0.022	-0.015	-0.217	-0.081*

	(0.479)	(0.657)	(0.575)	(0.361)	(0.967)	(0.376)	(0.067)
E-Index	-0.001*	-0.020	-0.001	0.001	-0.042	-0.053**	-0.003
	(0.080)	(0.109)	(0.112)	(0.689)	(0.477)	(0.014)	(0.612)
Dual Class	-0.009***	-0.140***	-0.006***	0.002	0.055	-0.178	-0.052*
	(0.001)	(0.000)	(0.006)	(0.867)	(0.864)	(0.217)	(0.067)
R&D/Total Assets	0.185***	2.242***	0.148***	-0.520***	1.584	0.375	0.713***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.441)	(0.675)	(0.000)
Ln(Sales)	-0.007***	-0.025**	-0.007***	0.002	0.756***	-0.019	0.070***
	(0.000)	(0.026)	(0.000)	(0.552)	(0.000)	(0.460)	(0.000)
Ln(Firm Age)	-0.013***	-0.129***	-0.011***	-0.003	0.636***	-0.044	-0.021*
	(0.000)	(0.000)	(0.000)	(0.642)	(0.000)	(0.272)	(0.061)
Current Ratio	0.006**	0.058*	0.005**	0.001	0.170	-0.094	0.023
	(0.026)	(0.078)	(0.036)	(0.899)	(0.331)	(0.320)	(0.269)
Leverage	0.023***	0.167	0.020***		-4.154***	0.357*	0.042
	(0.000)	(0.123)	(0.000)		(0.000)	(0.084)	(0.375)
International Sale/Total Sale	0.005	0.278***	-0.001	-0.010	0.769**	-0.041	-0.033
	(0.204)	(0.000)	(0.711)	(0.566)	(0.012)	(0.734)	(0.339)
Coverage				-0.000***	-0.001	0.000	-0.000
				(0.000)	(0.615)	(0.873)	(0.201)
Firm Market Risk				0.014**	-1.323***	0.102**	0.002
				(0.041)	(0.000)	(0.024)	(0.910)
Ln(CEO Age)	-0.041***	-0.496***	-0.033***	-0.015	0.251	-0.216	-0.114**
	(0.000)	(0.000)	(0.000)	(0.560)	(0.651)	(0.482)	(0.031)
Ln(CEO Tenure)	0.002***	0.034***	0.002***	-0.000	-0.069	-0.064	0.002
	(0.003)	(0.005)	(0.004)	(0.924)	(0.248)	(0.268)	(0.712)
Transparency					0.802***		
					(0.000)		
Intercept	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Fixed Effect	Industry, Year	Industry, Year	Industry, Year	Industry, Year	Industry, Year	Industry, Year	Industry, Year
Adjusted/Pseudo R-squared	0.556	0.403	0.570	0.289	0.669	0.051	0.105
Observations	8108	8108	8108	7391	4597	6981	8524

Table 5

Key events associated with the passage of SOX and the new exchange listing requirements

Date	Event
Panel A: events associated with the passage of new exchange listing requirements	
02/13/2002	SEC asks NYSE and NASDAQ to review their corporate governance requirements
04/12/2002	NASDAQ executive committee approves first round of new corporate governance proposals
05/22/2002	NASDAQ board approves the proposals
06/06/2002	NYSE committee unveils its governance rule proposal with the following main provisions: (1) Majority of independent directors on boards; (2) Stricter definition of independence; (3) Existence of three main committees and their independence; (4) Executive sessions without management
07/24/2002	NASDAQ board approves second round of proposals
08/01/2002	NYSE board approves proposals

Figure 1: Key events associated with the passage of SOX and the new exchange listing requirements as identified by (Wintoki 2007)

Table 2.1: M&A deals by acquirers with independent chairpersons and nonindependent chairpersons

This table presents yearly distribution of the number of M&A deals by firms that have an independent and nonindependent chairperson. The percentages are calculated as the total number of a given group scaled by the total number of M&As in a year.

Year	Full Sample	M&As with Independent Chairpersons		M&As with Non-independent Chairpersons	
		N	%	N	%
	(1)	(2)	(3)	(4)	(5)
1997	350	9	2.6	341	97.4
1998	510	15	2.9	495	97.1
1999	547	61	11.2	486	88.8
2000	460	63	13.7	397	86.3
2001	415	38	9.2	377	90.8
2002	387	40	10.3	347	89.7
2003	402	53	13.2	349	86.8
2004	456	58	12.7	398	87.3
2005	474	78	16.5	396	83.5
2006	412	69	16.7	343	83.3
2007	437	77	17.6	360	82.4
2008	330	73	22.1	257	77.9
2009	238	44	18.5	194	81.5
2010	377	66	17.5	311	82.5
2011	375	87	23.2	288	76.8
2012	391	66	16.9	325	83.1
2013	318	58	18.2	260	81.8
2014	384	82	21.4	302	78.6
2015	258	48	18.6	210	81.4
2016	192	39	20.3	153	79.7
2017	180	49	27.2	131	72.8
2018	200	73	36.5	127	63.5
2019	140	52	37.1	88	62.9
Total	8233	1298	15.8	6935	84.2

Table 2.2: Descriptive Statistics

This table presents the descriptive statistics for the variables used in the empirical tests. The sample period is from 1997 to 2019. Variable definitions are in Appendix 1.A1.

	N	Mean	Std Dev	25th percentile	Median	75th percentile
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Measures of Acquisition Performance						
CAR[-2:2] (%)	8233	0.25	6.10	-2.43	0.12	2.92
PCAR[-2:2] (%)	1504	1.04	6.16	-2.03	0.55	3.69
DROA 3 Years (%)	1391	-1.84	8.94	-4.68	-0.57	1.41
Buy & Hold Abnormal Return 3 Years (BHAR) (%)	1425	0.48	57.52	-38.22	-3.69	31.30
Bid Premium	1405	0.43	0.41	0.20	0.35	0.56
Large Loss (0/1)	8233	0.11	0.32	0.00	0.00	0.00
Panel B: Acquirer Characteristics						
Ln(Board Size)	8233	2.25	0.28	2.08	2.20	2.40
Board Independence Ratio	8233	0.72	0.16	0.63	0.75	0.86
Ln(Tobin's Q)	8233	0.61	0.51	0.21	0.52	0.88
ROA	8233	0.16	0.11	0.09	0.15	0.21
Prior-year Excess Return	8233	0.07	0.36	-0.13	0.02	0.20
Firm Size (Ln(Sales))	8233	7.89	1.58	6.70	7.74	9.02
Ln(Firm Age (Year))	8233	2.93	0.89	2.40	3.00	3.58
Book Leverage Ratio	8233	0.21	0.16	0.08	0.20	0.31
Free Cash Flow	8233	0.05	0.07	0.02	0.05	0.09
E-Index	7962	2.53	1.59	1.00	3.00	4.00
Ln(CEO Tenure)	8233	1.60	0.90	1.10	1.61	2.20
CEO Compensation	8233	0.65	0.26	0.52	0.73	0.86
CEO Ownership (%)	8026	1.41	3.79	0.07	0.23	0.79

Average Connection	1158	0.12	0.22	0.00	0.03	0.17
Panel C: Deal Characteristics						
Relative Deal Size	8233	0.13	0.29	0.01	0.04	0.12
Stock Deal	8233	0.23	0.42	0.00	0.00	0.00
Cash Deal	8233	0.40	0.49	0.00	0.00	1.00
Diversifying M&A	8233	0.42	0.49	0.00	0.00	1.00
Tender Offer	8233	0.05	0.23	0.00	0.00	0.00
Friendly Offer	8233	0.99	0.11	1.00	1.00	1.00
Target is a Public Firm	8233	0.25	0.43	0.00	0.00	0.00
Target is a Private Firm	8233	0.40	0.49	0.00	0.00	1.00
Panel D: Target Characteristics						
ROA	1504	0.07	0.22	0.02	0.09	0.17
Prior-year Excess Return	1504	0.05	0.49	-0.23	-0.03	0.25
Firm Size (Ln(Sales))	1504	5.63	1.83	4.31	5.48	6.86
Free Cash Flow	1504	-0.02	0.17	-0.01	0.02	0.06

Table 2.3: Univariate Analysis
This table presents the univariate analysis between two groups of acquirers. The sample period is from 1997 to 2019. Variable definitions are in Appendix 1.A1.

	Acquirers with Independent Chairperson	Acquirers with Nonindependent Chairperson	Difference
	Mean	Mean	
	(1)	(2)	(1) -(2)
Panel A: Measures of Acquisition Performance			
CAR[-2:2] (%)	1.710	-0.027	1.736***
PCAR[-2:2] (%)	2.452	0.813	1.639***
ΔROA 3 Years (%)	-0.737	-1.999	1.262*
Buy & Hold Abnormal Return 3 Years (BHAR 3 Years) (%)	8.412	-0.679	9.091**
Bid Premium	0.352	0.445	-0.093***
Large Loss (0/1)	0.059	0.122	-0.063***
Panel B: Acquirer Characteristics			
Ln(Board Size)	2.219	2.262	-0.043***
Board Independence Ratio	0.790	0.709	0.081***
Ln(Tobin's Q)	0.575	0.622	-0.047***
ROA	0.144	0.162	-0.018***
Firm Size	7.615	7.942	-0.326***
Panel C: Deal Characteristics			
Relative Deal Size	0.155	0.129	0.026***
Stock Deal	0.223	0.229	-0.006
Cash Deal	0.435	0.399	0.036**
Diversifying M&A	0.392	0.420	-0.028*
Target is a Public Firm	0.229	0.248	-0.019
Panel D: Target Characteristics			

ROA	0.064	0.068	-0.004
Firm Size	5.771	5.602	0.169
Free Cash Flow	-0.011	-0.016	0.005

Table 2.4: Independent Leadership Structure and M&A Returns

This table presents the results of OLS regressions in which the dependent variable is CAR [-2:2] (%) for acquirers. Standard errors are clustered at the acquirer level and adjusted for heteroscedasticity (White, 1980). The coefficients of the intercept, year, and industry dummies are omitted for brevity. Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

Dependent Variable: CAR[-2:2] (%)	(1)	(2)	(3)
Independent Chair	1.886***	1.895***	1.609***
	(0.205)	(0.204)	(0.542)
Acquirer Characteristics			
Ln(Board Size)	-0.776**	-0.740**	-0.639
	(0.364)	(0.359)	(0.801)
Board Independence Ratio	-0.731	-0.657	0.831
	(0.561)	(0.555)	(1.276)
ROA	0.932	1.136	3.261
	(1.213)	(1.208)	(3.761)
Prior-year Excess Return	-1.838***	-1.761***	-1.584***
	(0.272)	(0.271)	(0.612)
Ln(Sale)	-0.079	-0.057	0.178
	(0.060)	(0.062)	(0.174)
Ln(Firm Age)	0.035	0.062	0.055
	(0.102)	(0.101)	(0.259)
Book Leverage Ratio	1.023*	0.924	1.124
	(0.609)	(0.606)	(1.703)
Free Cash Flow	-0.187	-0.378	-1.236
	(2.079)	(2.056)	(7.466)
CEO Compensation	-0.505	-0.404	-1.827**
	(0.318)	(0.314)	(0.736)
Deal Characteristics			
Relative Deal Size		0.029	-2.185***
		(0.412)	(0.772)
Stock Deal		-0.636***	-2.183***
		(0.234)	(0.429)
Diversifying M&A		-0.239	-0.381
		(0.149)	(0.399)
Tender Offer		0.471	-0.515
		(0.329)	(0.425)
Friendly Offer		0.451	-0.481
		(0.580)	(0.980)
Target's a Public Firm		-1.409***	

		(0.213)	
Target Characteristics			
Target ROA			-0.493
			(1.215)
Target Prior-year Excess Return			0.405
			(0.382)
Target Ln(Sale)			-0.292*
			(0.152)
Target Free Cash Flow			0.509
			(1.425)
Adjusted R-squared	0.038	0.049	0.132
Observations	8233	8233	1504
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Intercept	Yes	Yes	Yes

Table 2.5: Endogeneity

This table presents results from addressing endogeneity issues. In column 1, I include industry dummies, year dummies, and interactions between year and industry dummies. In column 2, I include year and firm dummies. In column 3, I include year and CEO dummies. In column 4, I include year and Chairperson dummies. In column 5, I include year, CEO, and Chairperson dummies. Standard errors are clustered at the acquirer level and adjusted for heteroscedasticity (White, 1980). The coefficients of the constant, year dummies, industry dummies, firm dummies, CEO dummies, and Chairperson dummies are omitted for brevity. Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

Dependent Variable: CAR[-2:2] (%)	(1)	(2)	(3)	(4)	(5)
Independent Chair	1.808***	2.152***	2.799***	2.551***	4.400***
	(0.223)	(0.283)	(0.391)	(0.481)	(1.704)
Acquirer Characteristics					
Ln(Board Size)	-0.527	-0.294	-0.733	-1.750**	-1.751
	(0.384)	(0.654)	(0.920)	(0.889)	(1.209)
Board Independence Ratio	-0.701	0.161	0.507	0.654	1.074
	(0.601)	(0.963)	(1.397)	(1.414)	(1.871)
ROA	1.262	0.505	-0.921	-2.307	-3.690
	(1.309)	(1.722)	(2.439)	(2.497)	(3.261)
Prior-year Excess Return	-2.136***	-1.792***	-2.139***	-2.369***	-2.503***
	(0.302)	(0.312)	(0.401)	(0.385)	(0.459)
Ln(Sale)	-0.042	-0.543*	-0.728*	-0.084	-0.203
	(0.066)	(0.292)	(0.401)	(0.267)	(0.549)
Ln(Firm Age)	0.037	-0.186	-0.465	-0.082	-0.468
	(0.107)	(0.394)	(0.470)	(0.282)	(0.650)
Book Leverage Ratio	0.742	-0.170	-1.328	-0.050	-0.930
	(0.657)	(1.066)	(1.587)	(1.487)	(2.064)
Free Cash Flow	-0.250	0.096	-2.126	-0.271	0.429

	(2.143)	(2.865)	(4.332)	(4.144)	(5.260)
CEO Compensation	-0.485	0.331	0.267	0.268	0.415
	(0.347)	(0.401)	(0.598)	(0.587)	(0.757)
Deal Characteristics					
Relative Deal Size	-0.112	-0.530	-0.538	-0.674	-0.460
	(0.447)	(0.454)	(0.615)	(0.627)	(0.729)
Stock Deal	-0.717***	-0.788***	-0.735**	-0.731**	-0.807*
	(0.251)	(0.267)	(0.356)	(0.368)	(0.414)
Diversifying M&A	-0.201	-0.165	-0.234	-0.112	-0.232
	(0.162)	(0.178)	(0.241)	(0.243)	(0.277)
Tender Offer	0.551	0.661*	0.763*	0.452	0.725
	(0.367)	(0.349)	(0.450)	(0.466)	(0.509)
Friendly Offer	0.626	0.635	0.607	0.614	0.588
	(0.635)	(0.565)	(0.774)	(0.797)	(0.897)
Target's a Public Firm	-1.414***	-1.192***	-1.165***	-1.142***	-1.120***
	(0.229)	(0.233)	(0.303)	(0.311)	(0.347)
Adjusted R-squared	0.071	0.038	0.208	0.189	0.214
Observations	8233	8233	8233	8233	8233
Industry Dummies * Year Dummies	Yes	No	No	No	No
Year Dummies	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	No	No	No	No
Firm Dummies	No	Yes	No	No	No
CEO Dummies	No	No	Yes	No	Yes
Chairperson Dummies	No	No	No	Yes	Yes
Intercept	Yes	Yes	Yes	Yes	Yes

Table 2.5: Endogeneity (Cont.)

This table presents results from addressing endogeneity issues using two-stage least squares (2SLS), Heckman, and propensity score matching method. In column 1, I run a probit regression with *Independent Chair* dummy being a dependent variable. After running the regression, I obtain *Predicted Independent Chair* and include it in the column 2. Column 3 presents Heckman selection model. In column 4, I use the propensity score matching approach to match acquirers with independent chairperson with acquirers with no independent chairperson. I use the nearest neighbor (1:1) to match samples using acquirer and deal characteristics. I present the balance test of treated and control groups in Appendix 2.A4. Standard errors are clustered at the acquirer level and adjusted for heteroscedasticity (White, 1980). The coefficients of the constant, year, and industry dummies are omitted for brevity. Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

Dependent Variable: CAR[-2:2] (%)	(1)	(2)	(3)	(4)
	1st Stage	2SLS	Heckman	Matched Sample
Independent Chair			1.891***	1.803***
			(0.203)	(0.281)
Predicted Independent Chair		3.848***		
		(1.352)		
County Independent Chair Ratio	0.785***			
	(0.145)			
IMR			-0.024	
			(0.580)	
Acquirer Characteristics				
Ln(Board Size)	-0.151	-0.688*	-0.737**	-1.289*
	(0.164)	(0.356)	(0.363)	(0.781)
Board Independence Ratio	1.934***	-1.240*	-0.634	-0.884
	(0.255)	(0.713)	(1.096)	(1.282)
ROA	-0.420	1.247	1.109	2.790
	(0.375)	(1.212)	(1.239)	(2.623)
Prior-year Excess Return	-0.054	-1.731***	-1.754***	-1.502***
	(0.062)	(0.272)	(0.271)	(0.569)
Ln(Sale)	-0.095***	-0.015	-0.054	-0.051
	(0.029)	(0.067)	(0.076)	(0.128)
Ln(Firm Age)	-0.030	0.077	0.061	-0.172
	(0.038)	(0.102)	(0.105)	(0.204)
Book Leverage Ratio	0.223	0.826	0.905	0.171
	(0.217)	(0.615)	(0.626)	(1.133)
Free Cash Flow	0.286	-0.336	-0.246	-2.420
	(0.514)	(2.077)	(2.078)	(4.636)
CEO Compensation	0.049	-0.437	-0.417	-0.328

	(0.122)	(0.316)	(0.316)	(0.664)
Deal Characteristics				
Relative Deal Size	0.108	-0.027	0.028	1.638
	(0.067)	(0.418)	(0.421)	(1.006)
Stock Deal	-0.045	-0.621***	-0.638***	-0.747
	(0.059)	(0.236)	(0.235)	(0.471)
Diversifying M&A	-0.060	-0.214	-0.237	-0.554*
	(0.049)	(0.151)	(0.152)	(0.306)
Tender Offer	-0.062	0.478	0.447	0.406
	(0.100)	(0.331)	(0.334)	(0.744)
Friendly Offer	0.016	0.418	0.430	0.997
	(0.156)	(0.583)	(0.584)	(1.078)
Target's a Public Firm	0.008	-1.401***	-1.398***	-2.151***
	(0.061)	(0.215)	(0.215)	(0.425)
Adjusted R-squared		0.038	0.049	0.075
Pseudo R_squared	0.120			
Observations	8169	8169	8169	2324
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes

Table 2.6: Bid Premium, Large Loss, Synergies, and Post-merger Performance

In column 1, the dependent variable is *Bid Premium*, which is measured by subtracting (Final offer price /target stock price fthe weeks prior to the acquisition announcement date) from one. In column 2, I run a logit regression with the dependent variable being *Large Loss* dummy which is an indicator variable equal to one if the acquisition generated a dollar loss of over $500 million (in 2011 dollars), and zero otherwise. I run OLS regressions for other columns. In column 3, the dependent variable is PCAR[-2:2], five-day cumulative abnormal stock returns around the announcement date cumulative abnormal return for a value-weighted portfolio of the acquirer and the target. In column 4, the dependent variable is DROA 3 years, which is the difference between two digits SIC industry-adjusted 3 years post-merger ROA and pre-merger ROA for the combined firm. In column 5, the dependent variable is Buy and Hold Abnormal Return three years (BHAR 3 Years) after the deal has finished. Portfolio weights are calculated using the book values of the acquirer and the target at the beginning of the fiscal year preceding the deal announcement. Acquirer, deal, and target characteristics are the same as in Table 4. Standard errors are clustered at the acquirer level and adjusted for heteroscedasticity (White, 1980). The coefficients of the constant, year, and industry fixed effects are omitted for brevity. Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

	Bid Premium	Large Loss	PCAR[-2:2] (%)	DROA 3 years (%)	BHAR 3 Years (%)
	(1)	(2)	(3)	(4)	(5)
Independent Chair	-0.070**	-0.694***	1.364***	1.545**	10.156*
	(0.028)	(0.153)	(0.511)	(0.627)	(5.537)
Acquirer Characteristics	Yes	Yes	Yes	Yes	Yes
Deal Characteristics	Yes	Yes	Yes	Yes	Yes
Target Characteristic	Yes	No	Yes	Yes	Yes
Adjusted R-squared	0.157		0.121	0.396	0.104
Psuedo R_squared		0.277			
Observations	1405	7963	1504	1391	1425
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes	Yes

Table 2.7: CEO Turnover Analysis

This table presents the estimation results of the Cox hazard model used to predict CEO turnover subsequent to first merger announcements. CEO turnover is measured within a five-year window from the date of the first merger announcement. Post Deal CAR 3-Year and Post Deal CAR 2-Year are the acquirer's cumulative abnormal return over a three-year (column 1) or two-year (column 2) window starting one month after the first merger announcement, respectively. Pre-Merger ROA is the three-year average return on assets prior to the merger announcement. High CEO Ownership is a dummy variable that equals one if the CEO's percentage ownership of firm's common stock is higher than the sample median and zero otherwise. Model coefficients (i.e., not hazard ratios) are reported. The coefficients of year dummies and industry dummies are omitted for brevity. Standard errors are clustered at the acquirer level and adjusted for heteroscedasticity (White, 1980). Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

Dep. var.=Prob(CEO Turnover)	(1)	(2)
Independent Chair	0.153	0.167*
	(0.095)	(0.094)
Post Deal CAR 3-Year	0.010	
	(0.032)	
Independent Chair * Post Deal CAR 3-Year	-0.176**	
	(0.080)	
Post Deal CAR 2-Year		0.029
		(0.044)
Independent Chair * Post Deal CAR 2-Year		-0.230**
		(0.116)
Ln(CEO Age)	3.972***	3.961***
	(0.317)	(0.316)
Ln(CEO Tenure)	0.065*	0.066*
	(0.037)	(0.037)
CEO Compensation	-0.025	-0.023
	(0.027)	(0.027)
High CEO Ownership	-0.219***	-0.216***
	(0.075)	(0.075)
Pre-Deal ROA	-0.709	-0.709
	(0.482)	(0.481)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Observations	1650	1650
Prob > Chi Squared	0.000	0.000

Table 2.8: Interaction Analysis With CAR

This table presents the effect of independent leadership structure on acquirers M&A CAR[-2:2]. *High E-Index* is a dummy variable which equals one if *E-Index* is above the sample median of the variable and 0 otherwise. *High CEO Tenure* is a dummy variable which equals one if *CEO Tenure* is above the sample median of the variable and 0 otherwise. *High Social Ties* is a dummy variable which equals one if *Average Connection* variable is above the sample median of the variable and 0 otherwise. *CEO Holder67* is a dummy variable proxies for CEO overconfident (Campbell et al., 2011). All regressions include an intercept, industry fixed effects, year fixed effects. All regressions have acquirer and deal characteristic control variables. Standard errors are clustered at the acquirer level and adjusted for heteroscedasticity (White, 1980). The coefficients of the constant, year dummies, industry dummies, and other control variables are omitted for brevity. Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

Dependent Variable: CAR[-2:2] (%)	(1)	(2)	(3)	(4)
Independent Chair	0.976***	1.289***	1.372***	0.594
	(0.351)	(0.290)	(0.300)	(0.773)
High E-Index	-0.554***			
	(0.207)			
Independent Chair * High E-Index	1.439***			
	(0.431)			
High CEO Tenure		-0.174		
		(0.150)		
Independent Chair * High CEO Tenure		1.488***		
		(0.377)		
CEO Holder67			-0.372**	
			(0.167)	
Independent Chair * CEO Holder67			0.791**	
			(0.394)	
High Social Ties				-1.328***
				(0.485)
Independent Chair * High Social Ties				2.075**
				(1.026)
Acquirer Characteristics	Yes	Yes	Yes	Yes
Deal Characteristics	Yes	Yes	Yes	Yes
Target Characteristic	No	No	No	No
Adjusted R-squared	0.051	0.050	0.051	0.159
Observations	7962	8233	7960	1158
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes

Table 2.9: Acquirer CARs, Cash Deal

Column 1 presents Probit regression with the dependent variable as Cash Deal dummy, which takes a value of "1" for 100% cash-financed deals, and zero otherwise. In columns 2, the dependent variable is acquirer CAR [-2:2]. Standard errors are clustered at the acquirer level and adjusted for heteroscedasticity (White, 1980). The coefficients of the constant, year, industry dummies, and other control variables are omitted for brevity. Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

Dependent Variable	Cash Deal	CAR[-2:2]
	(1)	(2)
Independent Chair	0.033	1.827***
	(0.044)	(0.269)
Cash Deal		0.107
		(0.162)
Independent Chair * Cash Deal		0.152
		(0.365)
Acquirer Characteristics	Yes	Yes
Deal Characteristics	No	Yes
Target Characteristic	No	No
Adjusted R-squared		0.049
Pseudo R-squared	0.075	
Observations		8233
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Intercept	Yes	Yes

Table 3.1: Summary Statistics

This table reports summary statistics of variables. The number of independent executive directors divided by board size (IEB). Independent executive dummy (IED) equals one if a firm has at least one independent executive director and 0 otherwise. The main sample consists of firm-year observations from 1996 to 2018. The number of observations, mean, standard deviation, 25th percentile, median, and 75th percentile, are reported from left to right, in sequence for each variable. Detailed definitions of all variables are described in Appendix 1.A1.

	Observations	Mean	SD	25%	Median	75%
$Ncskew_{t+1}$	19468	0.130	0.966	-0.470	0.087	0.679
$Duvol_{t+1}$	19468	0.090	0.698	-0.380	0.075	0.548
$Crash_{t+1}$	19468	0.228	0.420	0.000	0.000	0.000
IEB_t	19468	0.143	0.142	0.000	0.111	0.222
IED_t	19468	0.654	0.476	0.000	1.000	1.000
$Ln(Board\ Size)_t$	19468	2.174	0.246	1.946	2.197	2.303
$Board\ Independent\ Ratio_t$	19468	0.719	0.161	0.625	0.750	0.857
$Busy\ Director\ Ratio_t$	19468	0.068	0.096	0.000	0.000	0.125
$High\ Ranked\ Director\ Ratio_t$	19455	0.108	0.135	0.000	0.077	0.182
$Dturn_t$	19468	0.003	0.086	-0.027	0.002	0.030
$Ncskew_t$	19468	0.140	0.935	-0.447	0.092	0.672
$Sigma_t$	19468	0.045	0.022	0.029	0.040	0.054
Ret_t	19468	-0.152	0.547	-0.417	-0.110	0.154
$Ln(Total\ Assets)_t$	19468	7.484	1.406	6.455	7.373	8.447
$Market\ to\ Book_t$	19468	3.134	2.857	1.556	2.370	3.739
ROA_t	19468	0.043	0.100	0.020	0.054	0.089
$Leverage_t$	19468	0.186	0.157	0.031	0.173	0.289
$Opaque_t$	19468	0.538	1.347	0.101	0.183	0.374
$Ln(CEO\ Age)_t$	19468	4.018	0.129	3.932	4.025	4.111
$Ln(CEO\ Tenure)_t$	19468	1.654	0.932	1.099	1.792	2.303
$CEO\ Payslice_t$	19412	0.380	0.123	0.307	0.383	0.453
$CEO\ Holder\_100_t$	19461	0.343	0.475	0.000	0.000	1.000
$CEO\ Option\ Incentive_t$	19439	0.174	0.167	0.048	0.126	0.254
$E\ Index_t$	17053	2.814	1.600	2.000	3.000	4.000
Institutional Ownership	19353	55.262	19.066	43.927	57.111	68.604
HHI_t	19468	0.138	0.129	0.052	0.086	0.182
$Ln(1+Number\ of\ Analysts)_t$	19208	2.245	0.691	1.792	2.303	2.773

Table 3.2: Independent Executive Directors and Stock Price Crash Risk.

This table reports the panel regression results of the impact of independent executive directors on future stock price crash risk. The sample covers firm-year observations from 1996 to 2018. The dependent variables are three measures of stock price crash risk: $Crash_{t+1}$, $Ncskew_{t+1}$, and $Duvol_{t+1}$. IEB: The number of independent executive directors divided by board size. IED: An indicator variable that equals one if a firm has at least one independent executive director and 0 otherwise. I use OLS regressions in columns (1), (2), (3), (4), and logit regressions in columns (5) and (6). The coefficients of the intercept, two-digits SIC industry fixed effects and year fixed effects are suppressed for brevity in the respective columns. All variables are defined in Appendix 1.A1. The p-value reported in parentheses are based on standard errors clustered by firm. ∗∗∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% level, respectively.

	$Ncskew_{t+1}$	$Ncskew_{t+1}$	$Duvol_{t+1}$	$Duvol_{t+1}$	$Crash_{t+1}$	$Crash_{t+1}$
	(1)	(2)	(3)	(4)	(5)	(6)
IEB_t	-0.170***		-0.104***		-0.340**	
	(0.003)		(0.009)		(0.035)	
IED_t		-0.045***		-0.023**		-0.096**
		(0.006)		(0.045)		(0.022)
$Ln(Board\ Size)_t$	-0.081**	-0.070**	-0.064***	-0.059**	-0.119	-0.096
	(0.019)	(0.042)	(0.008)	(0.015)	(0.223)	(0.331)
Board Independent $Ratio_t$	0.093*	0.071	0.077**	0.060	0.060	0.026
	(0.091)	(0.178)	(0.044)	(0.102)	(0.695)	(0.862)
$Dturn_t$	0.365***	0.364***	0.281***	0.280***	0.297	0.293
	(0.000)	(0.000)	(0.000)	(0.000)	(0.164)	(0.170)
$Ncskew_t$	-0.019**	-0.019**	-0.037***	-0.037***	0.081***	0.081***
	(0.045)	(0.044)	(0.000)	(0.000)	(0.000)	(0.000)
$Sigma_t$	2.890***	2.923***	3.101***	3.121***	0.095	0.159
	(0.000)	(0.000)	(0.000)	(0.000)	(0.934)	(0.889)
Ret_t	0.266***	0.266***	0.261***	0.261***	0.098**	0.097**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.011)	(0.012)
$Ln(Total\ Assets)_t$	0.013**	0.013**	0.010**	0.009**	-0.018	-0.018
	(0.046)	(0.047)	(0.037)	(0.040)	(0.335)	(0.334)
Market to $Book_t$	0.021***	0.021***	0.018***	0.018***	0.007	0.008

	(0.000)	(0.000)	(0.000)	(0.000)	(0.248)	(0.237)
ROA_t	0.576***	0.577***	0.526***	0.526***	0.492**	0.496**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.028)	(0.027)
$Leverage_t$	-0.028	-0.027	-0.029	-0.028	0.106	0.107
	(0.600)	(0.611)	(0.423)	(0.437)	(0.418)	(0.412)
$Opaque_t$	0.004	0.004	0.005	0.005	0.005	0.005
	(0.465)	(0.465)	(0.233)	(0.233)	(0.708)	(0.708)
$Ln(CEO\ Tenure)_t$	0.005	0.005	0.001	0.001	-0.031	-0.031
	(0.486)	(0.497)	(0.822)	(0.820)	(0.116)	(0.111)
Observations	19468	19468	19468	19468	19468	19468
Pseudo/Adj R-squared	0.043	0.076	0.076	0.029	0.029	0.043
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes	Yes	Yes

Table 3.3: Endogeneity-Propensity Score Matching

This table presents results using propensity score matching methodology for the full sample from 1996-2018. The dependent variable of the matching process is IED indicator variable. The independent variables are those used in Table 3.2. I use a one-to-one match and require caliper to be at least 0.003%. The coefficients of the intercept, two-digits SIC industry fixed effects and year fixed effects are suppressed for brevity in the respective columns. All variables are defined in Appendix 1.A1. The standard errors reported in parentheses are based on robust standard errors clustered at the firm level. ∗∗∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% level, respectively

Panel A: Balance tests of treated and control group

	Mean		t value
	Treated	Control	
$Ln(Boardsize)_t$	2.176	2.173	0.430
Board Independent $Ratio_t$	0.738	0.734	1.400
$Dturn_t$	0.003	0.001	1.050
$Ncskew_t$	0.142	0.120	1.020
$Sigma_t$	0.043	0.044	-1.170
Ret_t	-0.146	-0.145	-0.130
Ln(Total $Assets)_t$	7.477	7.493	-0.540
Market to $Book_t$	3.030	3.091	-1.010
ROA_t	0.044	0.042	0.920
$Leverage_t$	0.182	0.185	-1.110
$Opaque_t$	0.557	0.556	0.010
Ln(CEO $Tenure)_t$	1.645	1.624	1.020

Panel B: Regression results of the matched sample

	$Ncskew_{t+1}$	$Duvol_{t+1}$	$Crash_{t+1}$
	(1)	(2)	(3)
IED_t	-0.067**	-0.035*	-0.166**
	(0.010)	(0.061)	(0.011)
Ln(Board $Size)_t$	-0.081	-0.056	0.077
	(0.224)	(0.259)	(0.660)
Board Independent $Ratio_t$	0.169	0.112	0.288
	(0.131)	(0.166)	(0.348)
$Dturn_t$	0.357**	0.267**	0.578
	(0.010)	(0.012)	(0.149)
$Ncskew_t$	-0.015	-0.036***	0.090**
	(0.370)	(0.002)	(0.019)
$Sigma_t$	2.555***	3.220***	-1.284
	(0.004)	(0.000)	(0.554)
Ret_t	0.308***	0.291***	0.138*

	(0.000)	(0.000)	(0.058)
Ln(Total Assets)$_t$	0.009	0.008	-0.032
	(0.452)	(0.371)	(0.313)
Market to Book$_t$	0.016***	0.013***	-0.000
	(0.001)	(0.001)	(0.995)
ROA$_t$	0.639***	0.560***	1.090***
	(0.000)	(0.000)	(0.004)
Leverage$_t$	0.074	0.032	0.170
	(0.461)	(0.656)	(0.485)
Opaque$_t$	0.010	0.007	0.003
	(0.307)	(0.333)	(0.894)
Ln(CEO Tenure)$_t$	0.000	-0.004	-0.049
	(0.972)	(0.705)	(0.157)
Observations	0.045	0.074	0.038
Pseudo/Adj R-squared	6750	6750	6750
Industry Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
Intercept	Yes	Yes	Yes

Table 3.4: Endogeneity-Firm Fixed Effects.

This table reports the panel regression results of the impact of independent executive directors on future stock price crash risk with firm fixed effects. The sample covers firm-year observations from 1996 to 2018. The dependent variables are three measures of stock price crash risk: $Crash_{t+1}$, $Ncskew_{t+1}$, and $Duvol_{t+1}$. I use OLS regressions in columns (1), (2), (3), (4), and logit regressions in columns (5) and (6). The coefficients of the intercept, year fixed effects are suppressed for brevity in the respective columns. All variables are defined in Appendix 1.A1. The p-value reported in parentheses are based on standard errors clustered by firm.∗∗∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% level, respectively.

	$Ncskew_{t+1}$	$Ncskew_{t+1}$	$Duvol_{t+1}$	$Duvol_{t+1}$	$Crash_{t+1}$	$Crash_{t+1}$
	(1)	(2)	(3)	(4)	(5)	(6)
IEB_t	-0.224***		-0.151***		-0.444**	
	(0.002)		(0.005)		(0.030)	
IED_t		-0.058***		-0.031**		-0.147***
		(0.004)		(0.032)		(0.006)
Ln(Board Size)$_t$	-0.046	-0.030	-0.028	-0.019	-0.083	-0.043
	(0.455)	(0.625)	(0.529)	(0.663)	(0.599)	(0.787)
Board Independent Ratio$_t$	-0.023	-0.050	0.012	-0.012	-0.430*	-0.462**
	(0.792)	(0.553)	(0.851)	(0.843)	(0.061)	(0.039)
$Dturn_t$	0.443***	0.443***	0.310***	0.309***	0.680***	0.674***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.003)
$Ncskew_t$	-0.114***	-0.114***	-0.090***	-0.090***	-0.087***	-0.088***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Sigma_t$	0.291	0.296	1.747***	1.749***	-9.617***	-9.593***
	(0.631)	(0.624)	(0.000)	(0.000)	(0.000)	(0.000)
Ret_t	0.207***	0.206***	0.236***	0.236***	-0.024	-0.024
	(0.000)	(0.000)	(0.000)	(0.000)	(0.556)	(0.545)
Ln(Total Assets)$_t$	0.254***	0.252***	0.189***	0.188***	0.399***	0.395***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Market to Book$_t$	0.050***	0.050***	0.044***	0.044***	0.031***	0.031***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.003)

ROA_t	0.638***	0.643***	0.595***	0.598***	0.453	0.465
	(0.000)	(0.000)	(0.000)	(0.000)	(0.140)	(0.130)
$Leverage_t$	-0.266***	-0.262***	-0.227***	-0.224***	-0.292	-0.282
	(0.002)	(0.003)	(0.000)	(0.000)	(0.182)	(0.199)
$Opaque_t$	0.009	0.009	0.007*	0.007*	0.008	0.008
	(0.189)	(0.191)	(0.094)	(0.094)	(0.582)	(0.586)
$Ln(CEO\ Tenure)_t$	0.003	0.003	-0.001	-0.001	-0.013	-0.013
	(0.768)	(0.767)	(0.929)	(0.939)	(0.621)	(0.608)
Observations	0.070	0.070	0.111	0.110	0.023	0.023
Pseudo/Adj R-squared	19468	19468	19468	19468	17409	17409
Industry Fixed Effect	No	No	No	No	No	No
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes	Yes	Yes

Table 3.5: Difference in Difference, independent executive directors' Deceases

This table reports the difference-in-differences regression results of the impact of independent executive directors' deceases on future stock price crash risk. *Director Death* is an indicator variable that equals one if a firm experiences an unexpected death of an independent executive director and zero if a firm experiences the death of an independent *non-executive* director. *Post* is an indicator variable that equals one if firm-year t + 1 is after the director's death and zero otherwise. The sample covers firm-year observations with non-missing values for all variables from 1996 to 2018. The dependent variables are three measures of stock price crash risk: $Crash_{t+1}$, $Ncskew_{t+1}$, and $Duvol_{t+1}$. I use logit regressions in columns (5) and (6), and OLS regressions in columns (1), (2), (3), (4). The coefficients of the intercept, year dummies, and control variables are suppressed for brevity in the respective columns. All variables are defined in Appendix 1.A1. The p-value reported in parentheses are based on standard errors clustered at the firm level. ∗∗∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% level, respectively.

	$Ncskew_{t+1}$	$Duvol_{t+1}$	$Crash_{t+1}$
	(1)	(2)	(3)
Director Death	-0.784	-0.319	-0.253
	(0.168)	(0.416)	(0.000)
$Post_{t+1}$	-0.396	-0.234	-0.817
	(0.211)	(0.284)	(0.266)
$Director\ Death_j * Post_{t+1}$	1.561***	0.564*	0.672***
	(0.002)	(0.089)	(0.000)
Observations	0.116	0.169	0.249
Pseudo/Adj R-squared	328	328	328
Control Variables	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes
Intercept	Yes	Yes	Yes

Table 3.6: Difference in Difference, Distracted Independent Executive Directors

This table reports the difference-in-differences regression results of the impact of independent executive directors' deceases on future stock price crash risk. An independent executive director is called "distracted" if her primary employer's annual stock return is in the bottom quintile of the sample. A treatment firm is a firm that has at least one distracted independent executive director at year t and no distracted independent executive director at year t-1. A control firm is a firm that has no distracted independent executive director at year t and t-1. I then match each treatment firm with a control firm that is in the same year, same three-digit SIC industry, has total assets within 50% of the treatment firm, and has the closest risk (Sigma) in year t compared to the treatment firm. *After* is an indicator variable that equals one if it is year t and forward, and zero otherwise. I then construct my difference-in-differences sample as firm-year observations 3 years before and 3 years after the distracted year. The sample covers firm-year observations with non-missing values for all variables from 1996 to 2018. The dependent variables are three measures of stock price crash risk: $Crash_{t+1}$, $Ncskew_{t+1}$, and $Duvol_{t+1}$. I use logit regressions in columns (5) and (6), and OLS regressions in columns (1), (2), (3), (4). The coefficients of the intercept, year dummies, and control variables are suppressed for brevity in the respective columns. All variables are defined in Appendix 1.A1. The p-value reported in parentheses are based on standard errors clustered at the firm level. ∗∗∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% level, respectively

	$Ncskew_{t+1}$	$Duvol_{t+1}$	$Crash_{t+1}$
	(1)	(2)	(3)
$Treatment_j$	-0.100***	-0.052**	-0.520***
	(0.007)	(0.049)	(0.000)
$After_t$	0.007	0.008	-0.003
	(0.834)	(0.729)	(0.977)
$Treatment_j$ x $After_t$	0.134***	0.073**	0.699***
	(0.002)	(0.018)	(0.000)
Observations	0.104	0.150	0.047
Pseudo/Adj R-squared	7609	7609	7609
Control Variables	Yes	Yes	Yes
Firm Fixed Effect	Yes	Yes	Yes
Industry Fixed Effect	No	No	No
Year Fixed Effect	Yes	Yes	Yes
Intercept	Yes	Yes	Yes

Table 3.7: Differential impact of independent executive directors on Crash Risk: Sub-sample Analyses.
The dependent variables is $Ncskew_{t+1}$. I use the same other control variables as in table 3.2. In Panel A, B, and C, I divide the main sample into two sub-samples based on the medians of E Index, Institutional Ownership, and Ln(1+ Number of Analysts). Institutional Ownership is measured by the percentage of shares outstanding held by dedicated and quasi-index institutional investors at the end of the fiscal year (Bushee,1998; Chen et al. (2007). The High (Low) sub-samples include firm-year observations with above(below)-median corresponding variables. I use OLS regressions in columns (1)-(8) ,and logit regressions in columns (9), (10), (11), (and (12). The intercept, firm fixed effects, year fixed effects, and control variables are suppressed for brevity in the respective columns. All variables are defined in Appendix 1.A1. The z-values and t-values reported in parentheses are based on standard errors clustered by firm and year (Petersen, 2009). $***$, $**$, and $*$ denote statistical significance at the 1%, 5%, and 10% level, respectively.

	$Ncskew_{t+1}$			
	(1)	(2)	(3)	(4)
	High	Low	High	Low
Panel A. E Index: Managerial Entrenchment				
IEB	-0.384***	-0.084		
	(0.003)	(0.488)		
IED			-0.089***	0.002
			(0.005)	(0.951)
Other Controls	Yes	Yes	Yes	Yes
Observations	0.076	0.115	0.076	0.115
Pseudo/Adj R-squared	9729	7324	9729	7324
Panel B. Institutional Ownership				
IEB	-0.049	-0.301***		
	(0.701)	(0.003)		
IED			-0.026	-0.086***
			(0.407)	(0.004)
Other Controls	Yes	Yes	Yes	Yes
Observations	0.068	0.093	0.068	0.093
Pseudo/Adj R-squared	9677	9676	9677	9676

Panel C. Ln (1+ Number of Analysts)

IEB	-0.149	-0.255**		
	(0.145)	(0.027)		
IED			-0.013	-0.085***
			(0.645)	(0.007)
Other Controls	Yes	Yes	Yes	Yes
Observations	0.07	0.085	0.07	0.085
Pseudo/Adj R-squared	10103	9105	10103	9105

Table 3.7 Cont.: Differential impact of independent executive directors on Crash Risk: Sub-sample Analyses.
The dependent variables is $Duvol_{t+1}$. I use the same other control variables as in table 3.2. In Panel A, B, and C, I divide the main sample into two sub-samples based on the medians of E Index, Institutional Ownership, and Ln(1+ Number of Analysts). Institutional Ownership is measured by the percentage of shares outstanding held by dedicated and quasi-index institutional investors at the end of the fiscal year (Bushee,1998; Chen et al. (2007). The High (Low) sub-samples include firm-year observations with above(below)-median corresponding variables. I use OLS regressions in columns (1)-(8) ,and logit regressions in columns (9), (10), (11), (and (12). The intercept, firm fixed effects, year fixed effects, and control variables are suppressed for brevity in the respective columns. All variables are defined in Appendix 1.A1. The z-values and t-values reported in parentheses are based on standard errors clustered by firm and year (Petersen, 2009). ∗ ∗ ∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% level, respectively.

	$Duvol_{t+1}$			
	(5)	(6)	(7)	(8)
	High	Low	High	Low
Panel A. E Index: Managerial Entrenchment				
IEB	-0.250***	-0.075		
	(0.008)	(0.403)		
IED			-0.052**	0.001
			(0.021)	(0.981)
Other Controls	Yes	Yes	Yes	Yes
Observations	0.115	0.161	0.115	0.161
Pseudo/Adj R-squared	9729	7324	9729	7324
Panel B. Institutional Ownership				
IEB	-0.014	-0.207***		
	(0.875)	(0.006)		
IED			0.001	-0.054**
			(0.977)	(0.011)
Other Controls	Yes	Yes	Yes	Yes
Observations	0.104	0.138	0.104	0.138
Pseudo/Adj R-squared	9677	9676	9677	9676

Panel C. Ln (1+ Number of Analysts)

IEB	-0.097	-0.197**		
	(0.210)	(0.014)		
IED			-0.003	-0.050**
			(0.864)	(0.020)
Other Controls	Yes	Yes	Yes	Yes
Observations	0.107	0.132	0.107	0.132
Pseudo/Adj R-squared	10103	9105	10103	9105

Table 3.7 Cont.: Differential impact of independent executive directors on Crash Risk: Sub-sample Analyses.
The dependent variables is $Crash_{t+1}$. I use the same other control variables as in table 3.2. In Panel A, B, and C, I divide the main sample into two sub-samples based on the medians of E Index, Institutional Ownership, and Ln(1+ Number of Analysts). Institutional Ownership is measured by the percentage of shares outstanding held by dedicated and quasi-index institutional investors at the end of the fiscal year (Bushee,1998; Chen et al. (2007). The High (Low) sub-samples include firm-year observations with above(below)-median corresponding variables. I use OLS regressions in columns (1)-(8) ,and logit regressions in columns (9), (10), (11), (and (12). The intercept, firm fixed effects, year fixed effects, and control variables are suppressed for brevity in the respective columns. All variables are defined in Appendix 1.A1. The z-values and t-values reported in parentheses are based on standard errors clustered by firm and year (Petersen, 2009). ∗ ∗ ∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% level, respectively.

	$Crash_{t+1}$			
	(9)	(10)	(11)	(12)
	High	Low	High	Low
Panel A. E Index: Managerial Entrenchment				
IEB	-0.585*	-0.397		
	(0.075)	(0.282)		
IED			-0.177**	-0.114
			(0.024)	(0.258)
Other Controls	Yes	Yes	Yes	Yes
Observations	0.031	0.039	0.031	0.039
Pseudo/Adj R-squared	8264	5454	8264	5454
Panel B. Institutional Ownership				
IEB	0.107	-0.950***		
	(0.742)	(0.002)		
IED			-0.103	-0.208**
			(0.175)	(0.016)
Other Controls	Yes	Yes	Yes	Yes
Observations	0.029	0.027	0.03	0.027
Pseudo/Adj R-squared	8055	7284	8055	7284
Panel C. Ln (1+ Number of Analysts)				

IEB	-0.298	-0.441		
	(0.307)	(0.173)		
IED			-0.057	-0.208**
			(0.443)	(0.013)
Other Controls	Yes	Yes	Yes	Yes
Observations	0.026	0.036	0.026	0.07
Pseudo/Adj R-squared	8659	7323	8659	10103

Table 3.8: Other Board and Managerial Characteristics.

This table reports the panel regression results of the impact of independent executive directors on future stock price crash risk along with other board (High Ranked Director Ratio, Busy Director Ratio), managerial characteristics (CEO Age, CEO Tenure, CEO Option Incentive, CEO Overconfidence). The sample covers firm-year observations from 1996 to 2018. The dependent variables are three measures of stock price crash risk: $Crash_{t+1}$, $Ncskew_{t+1}$, and $Duvol_{t+1}$. I use OLS regressions in columns (1), (2), (3), (4), and logit regressions in columns (5) and (6). The coefficients of the intercept, firm fixed effects and year fixed effects are suppressed for brevity in the respective columns. All variables are defined in Appendix 1.A1. The p-value reported in parentheses are based on standard errors clustered by firm.∗ ∗ ∗, ∗∗, and ∗ denote statistical significance at the 1%, 5%, and 10% level, respectively.

	$Ncskew_{t+1}$	$Ncskew_{t+1}$	$Duvol_{t+1}$	$Duvol_{t+1}$	$Crash_{t+1}$	$Crash_{t+1}$
	(1)	(2)	(3)	(4)	(5)	(6)
IEB_t	-0.229***		-0.150***		-0.459**	
	(0.002)		(0.005)		(0.026)	
IED_t		-0.061***		-0.032**		-0.150***
		(0.003)		(0.030)		(0.005)
Ln(Board Size)$_t$	-0.159	-0.162	-0.074	-0.074	-0.072	-0.079
	(0.143)	(0.136)	(0.344)	(0.339)	(0.793)	(0.773)
Board Independent Ratio$_t$	0.223**	0.230**	0.229***	0.233***	0.057	0.063
	(0.016)	(0.013)	(0.000)	(0.000)	(0.810)	(0.790)
High Ranked Director Ratio$_t$	-0.032	-0.016	-0.015	-0.006	-0.064	-0.022
	(0.601)	(0.800)	(0.739)	(0.893)	(0.688)	(0.890)
Busy Director Ratio$_t$	-0.047	-0.075	-0.021	-0.045	-0.436*	-0.471**
	(0.588)	(0.375)	(0.734)	(0.464)	(0.058)	(0.036)
$Dturn_t$	0.444***	0.443***	0.309***	0.308***	0.683***	0.677***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.003)
$Ncskew_t$	-0.114***	-0.114***	-0.090***	-0.090***	-0.089***	-0.089***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$Sigma_t$	0.181	0.189	1.658***	1.661***	-9.562***	-9.535***
	(0.765)	(0.755)	(0.000)	(0.000)	(0.000)	(0.000)
Ret_t	0.205***	0.205***	0.235***	0.235***	-0.025	-0.026
	(0.000)	(0.000)	(0.000)	(0.000)	(0.536)	(0.525)
Ln(Total Assets)$_t$	0.231***	0.229***	0.168***	0.167***	0.387***	0.382***

	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Market to Book$_t$	0.044***	0.044***	0.039***	0.039***	0.025**	0.025**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.019)	(0.021)
ROA$_t$	0.580***	0.585***	0.550***	0.552***	0.386	0.398
	(0.000)	(0.000)	(0.000)	(0.000)	(0.209)	(0.195)
Leverage$_t$	-0.238***	-0.232***	-0.197***	-0.193***	-0.291	-0.280
	(0.007)	(0.008)	(0.002)	(0.003)	(0.188)	(0.207)
Opaque$_t$	0.008	0.008	0.007	0.007	0.008	0.007
	(0.208)	(0.211)	(0.104)	(0.105)	(0.622)	(0.627)
Ln(CEO Tenure)$_t$	-0.008	-0.008	-0.010	-0.009	-0.005	-0.005
	(0.544)	(0.552)	(0.292)	(0.299)	(0.880)	(0.875)
Ln(CEO Age)$_t$	-0.072	-0.074	-0.073	-0.073	-0.311	-0.312
	(0.483)	(0.473)	(0.302)	(0.296)	(0.217)	(0.215)
CEO Option Incentive$_t$	0.231***	0.234***	0.194***	0.195***	0.307	0.312*
	(0.002)	(0.002)	(0.000)	(0.000)	(0.103)	(0.097)
CEO Holder_100$_t$	0.061**	0.060**	0.056***	0.055***	0.022	0.019
	(0.019)	(0.020)	(0.002)	(0.002)	(0.749)	(0.777)
Observations	0.072	0.072	0.113	0.112	0.023	0.024
Pseudo/Adj R-squared	19419	19419	19419	19419	17356	17356
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes	Yes	Yes

Appendix 1.A1: Variable definitions

1. Adjusted Operating Cash Flow/Total Assets : (OANCF + Audit Fees)/AT. Source: Compustat, Audit Analytics
2. BHAR (%) Market-adjusted buy-and-hold abnormal returns for the combined firm three years after deal completion using CRSP value-weighted return as the market return. Source: CRSP
3. Bid Premium (Final offer price /target stock price fthe weeks prior to the acquisition announcement date) – 1. Source: SDC
4. Board Independence Ratio : Number of independent directors on the board divided by board size. Source: ISS
5. Board independence ratio: Number of independent outside directors/board size. Source: ISS
6. Board Independent Ratio The number of independent directors divided by board size. Source: ISS
7. Book leverage: [Short-term debt (DLC) + long-term debt (DLTT)] / book value of total assets (AT). Source: Compustat
8. Busy Director Ratio: The proportion of independent directors who hold three or more directorship at other public firms. Source: ISS
9. Capex/Total Sales: The firm's capital expenditures scaled by its total assets. Source: Compustat
10. CAR[-2, +2] (%) Five-day cumulative abnormal stock returns around the announcement date for the acquirer, where abnormal stock returns are calculated using the market model parameters estimated over the 200-trading-day period from event day -210 to event day -11. CRSP's value-weighted return is used as the market return. Source: CRSP
11. Cash deal (1/0) Indicator variable equal to one for 100% cash-financed deals, and zero otherwise. Source: SDC
12. CEO Age: Natural logarithm of # of CEO Age. Source: ExecuComp
13. CEO Compensation: bonus/tdc1. Source: ExecuComp
14. CEO Option Incentive: The incentive ratio for CEO option holdings, which is calculated as Onepct_Opt/(Onepct_Opt+Salary+Bonus). The variable Onepct_Opt is the dollar change in the value of CEO option holdings resulting from a 1% increase in the firm's stock price (Kim et al., 2011a). Source: Execucomp
15. CEO Payslice: The ratio of a CEO's annual compensation to the sum of the top five executives' annual compensation. Source: Execucomp
16. CEO tenure: Natural logarithm of a number of years served by a CEO in the current position. Source: ExecuComp
17. CEO_holder100: We construct CEO_holder100 as follow (Kim, Wang, and Zhang, 2016):

    The realizable value per option as the total realizable value of the exercisable options divided by the total number of exercisable options.

The average exercise price of the options by subtracting the realizable value per option from the stock price at the fiscal year-end.
The average percent moneyness of the options is calculated as the per-option realizable value divided by the estimated average exercise price.
CEO_holder100: takes the value of one beginning with the first time the CEO exhibits the below described "behavior" option-holding behavior and zero otherwise.
"Behavior": CEOs hold stock options at least twice during our sample period that are more than 100 percent in the money. (Kim, Wang, and Zhang, 2016). Source: Execucomp

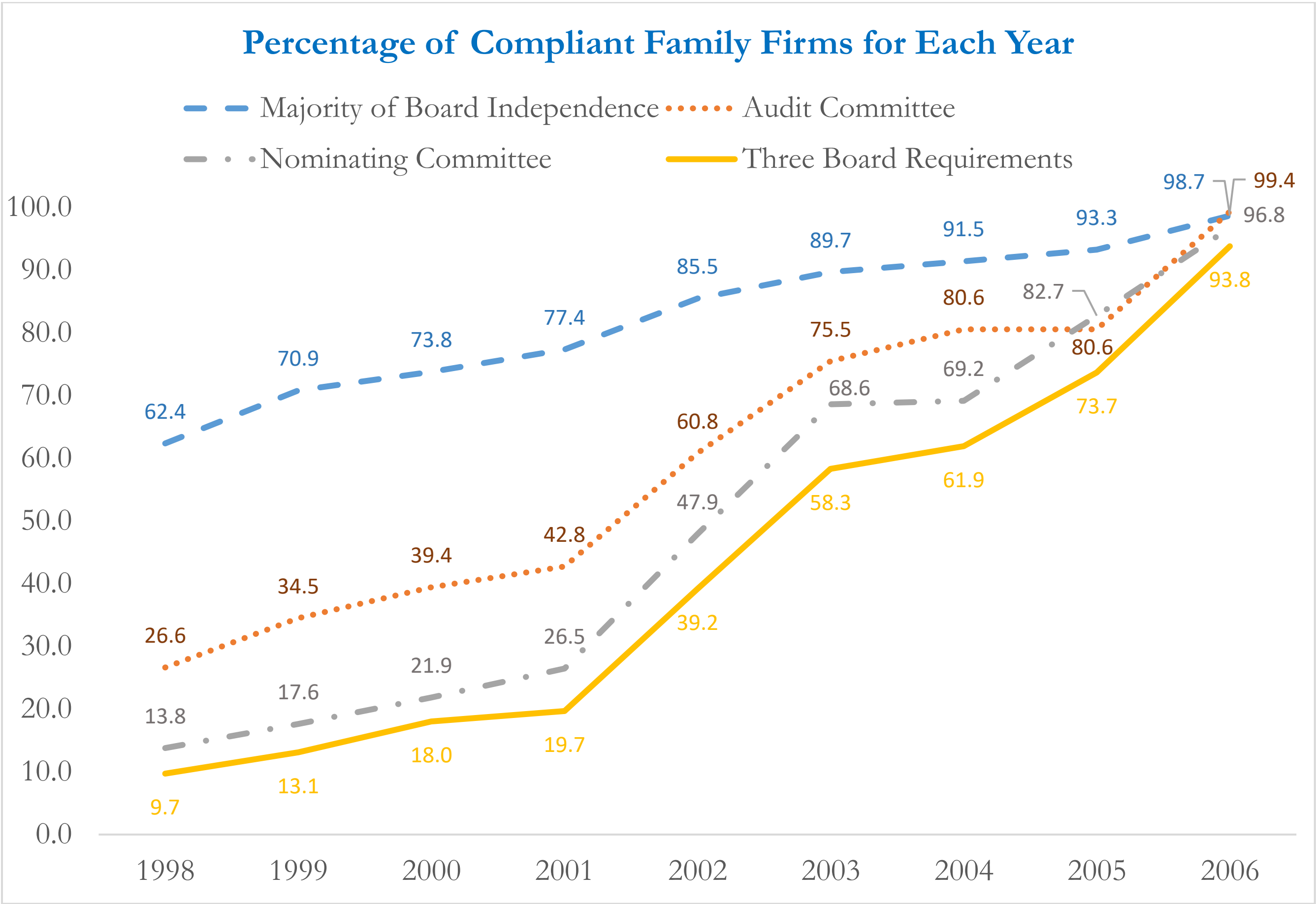
18. Competing offer(1/0): Indicator variable equal to one if a deal has competing bidders, and zero otherwise. Source: SDC
19. County Independent Chair Ratio The proportion of firms (excluding the sample firm in question) in the county of the sample firm's headquarters that have an independent chairperson and is computed yearly. Source: Compustat, ISS.
20. Coverage: ebitda/(xint + dvp). Source: Compustat
21. Crash: An indicator variable that equals one if a firm experiences one or more firm-specific weekly returns exceeding 3.20 standard deviations below the mean firm-specific weekly returns over the fiscal year and zero otherwise, with 3.20 chosen to generate frequencies of 0.1% in a normal distribution. Source: CRSP
22. Debt ratio: (dltt+dlc)/at. Source: Compustat
23. Descendant CEO: Descendant CEO equals one if the CEO is a founders' descendant and zero otherwise.
24. Diversification: Natural logarithm of number of business segments in Compustat. Source: COMPUSTAT
25. Diversifying M&A (1/0) Indicator variable equal to one if the acquirer and the target do not share the same two-digit SIC industry, and zero otherwise. Source: SDC
26. Dturn The difference between the average monthly share turnover over fiscal year T − 1 and the average monthly share turnover over fiscal year T, where monthly share turnover is calculated as the monthly trading volume divided by the total number of shares outstanding over the month. Source: CRSP
27. Duvol: The natural logarithm of the ratio of the standard deviation of firm-specific weekly returns for the "down-week" sample to the standard deviation of firm-specific weekly returns for the "up week" sample over the fiscal year. Source: CRSP
28. E Index: An entrenchment index composed of the six most important provisions in the G-index (Bebchuk et al., 2009). Source: ISS
29. Family Firm is 1 when one or more family members are officers and/or directors and/or own 5% or more of the firm's equity either individually or as a group and zero otherwise.
30. Firm age The number of years since a firm first appears in Compustat with a non-missing stock price. Source: CRSP

31. Firm size: Natural logarithm of sales. Source: Compustat
32. First type family: First type family equals one if the firm has a founder and his/her family members as officers, directors, and/or blockholders and zero otherwise.
33. Forced CEO Turnover. Source: Execucomp; Jenter and Kanaan (2015). Peters and Wagner (2014)
34. Founder CEO: Founder CEO equals one if the CEO is the founder of the firm and zero otherwise.
35. Free cash flow: [Operating income before depreciation (OIBDP) – interest expenses (XINT) – income taxes (TXT) – capital expenditures (CAPX)] / book value of total assets (AT). Source: Compustat
36. Friendly offer (1/0): Indicator variable equal to one for friendly takeovers, and zero otherwise. Source: SDC
37. HHI: Herfindahl-Hirschman Index (HHI). Source: Compustat
38. High ranked director ratio: The proportion of directors who are independent, as classified by the Institutional Shareholder Services, and for whom this directorship is at least 10% larger than their smallest directorship. (Masulis and Mobbs, 2014; Sila, Gonzalez, Hagendorff, 2017). Source: ISS
39. Hired CEO: Hired CEO equals one when the CEO is a nonfamily member in a family firm and zero otherwise.
40. IEB:The number of independent executive directors divided by board size. Source: ISS, Boardex, Execucomp
41. IED: An indicator variable that equals one if a firm has at least one independent executive director and 0 otherwise. Source: ISS, Boardex, Execucomp
42. Independent Chair A dummy variable which is equal to 1 if a firm has an independent Chair, and 0 otherwise. Source: ISS, Boardex, Proxies.
43. Large Loss (1/0) Indicator variable equal to one if the acquisition generated a dollar loss of over $500 million (in 2011 dollars), and zero otherwise. Dollar loss is calculated by subtracting the market value of the acquirer's publicly traded equity at the close of event day +1 from the market value at the close of event day -2. Source: CRSP
44. Leverage: The ratio of long-term debt to total assets measured at the end of the fiscal year. Source: Compustat
45. Ln(1+ Number of Analysts): The natural logarithm of one plus the number of following analysts who issue earnings forecasts during the fiscal year. Source: IBE
46. Ln(Board size) : Ln(Number of directors on the board). Source: ISS
47. Ln(Board size): Natural logarithm of Board Size which is the number of directors on board. Source: ISS
48. Ln(Firm Age): Natural logarithm of number of years since founding year.
49. Ln(Sales): Ln(Sales). Source: Compustat
50. Lone founder firm: Lone founder firm equals one if an individual is one of the company's founders with no other family members involved and zero otherwise.

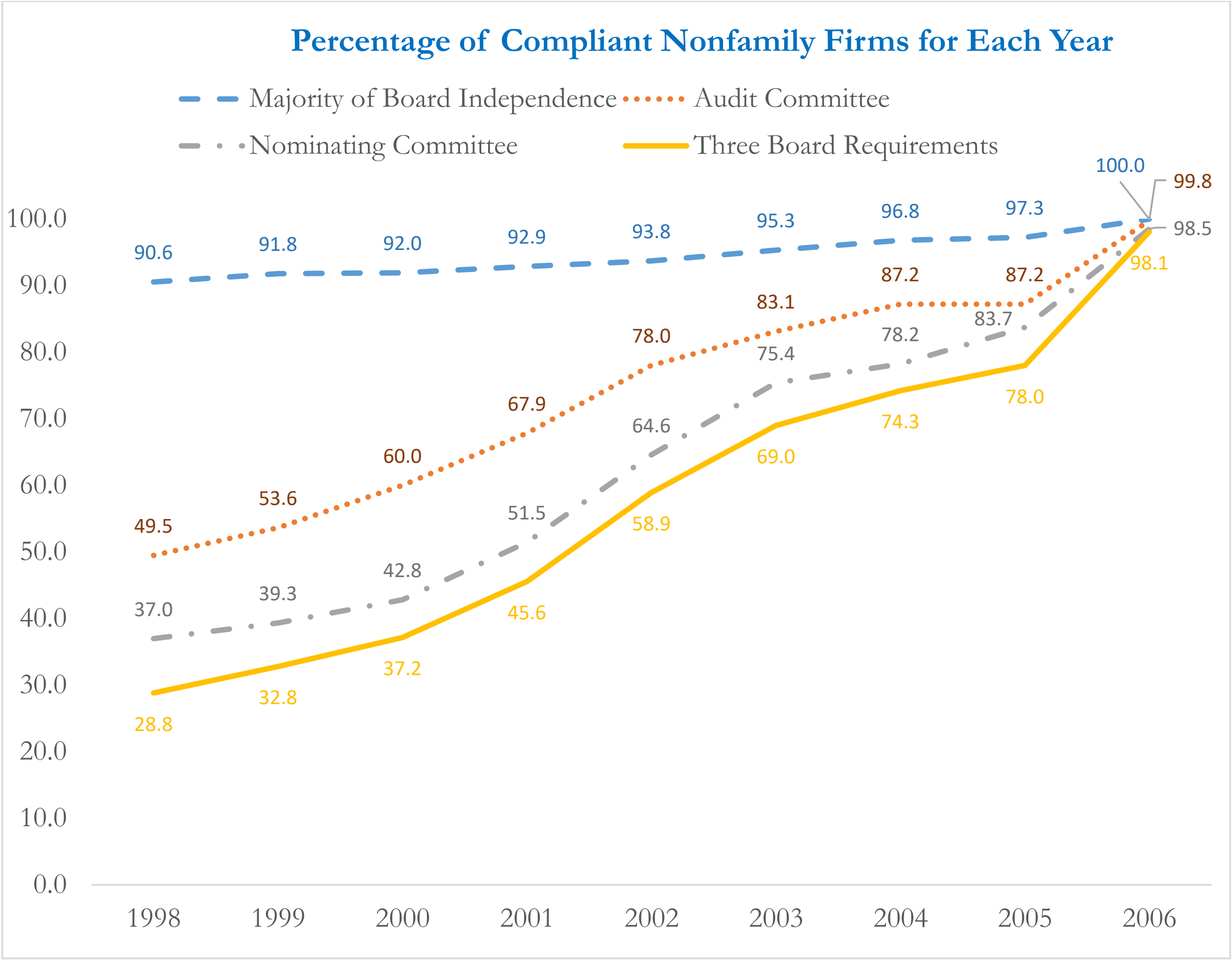
51. MTB:The ratio of the market value of equity to the book value of equity measured at the end of the fiscal year. Source: Compustat
52. Ncskew: The negative coefficient of skewness of firm-specific weekly returns over the fiscal year (Chen et al., 2001). Source: CRSP
53. NonCompliant firms are firms that do not satisfy any one of the three requirements, the majority of board independent, fully independent audit and nominating committee, in any year from 1998 to 2001. Compliant firms are firms that satisfy all three requirements in all years from 1998-2001.
54. Opaque: The prior 3 years' moving sum of the absolute value of discretionary accruals, where discretionary accruals are estimated from the modified Jones's (1991) model (Dechow et al., 1995). Source: Compustat
55. PCAR [-2, +2] (%) Five-day cumulative abnormal stock returns around the announcement date for a value-weighted portfolio of the acquirer and the target, where abnormal stock returns are calculated using the market model parameters estimated over the 200-trading-day period from event day -210 to event day -11. CRSP's value-weighted return is used as the market return. Portfolio weights are based on the market capitalizations of the acquirer and the target two months prior to the acquisition announcement date. Source: CRSP
56. Prior-year excess return One-year buy-and-hold abnormal return prior to the deal announcement year with CRSP value-weighted return as the market index. Source: CRSP
57. Private (1/0):Indicator variable equal to one if the target status is private, and zero otherwise. Source: SDC
58. Public (1/0) Indicator variable equal to one if the target status is public, and zero otherwise. Source: SDC
59. R&D/Total Assets: R&D expenses divided by total assets. Source: Compustat
60. Relative deal size: Deal value divided by acquirer market value of equity. Source: SDC
61. Return: The mean of firm-specific weekly returns over the fiscal year, times 100 (Kim et al., 2011a). Source: CRSP
62. ROA 3 Years Difference between the two digits SIC industry-adjusted 3-year post-merger ROA and pre-merger ROA for the combined firm. Portfolio weights are calculated using the book values of the acquirer and the target at the beginning of the fiscal year preceding the deal announcement. Source: Compustat
63. ROA: OIBDP[t]/ Total Assets [t]
64. ROA: Operating income before depreciation (OIBDP) divided by Total Assets (AT) of the previous year. Source: Compustat
65. ROA: The ratio of net income divided by total assets. Source: Compustat
66. Sales growth: [Sales in the current year / sales in the last year] – 1. Source: Compustat
67. Second type family: Second type family equals one if the firm has no founder and has only family members as officers, directors, and/or blockholders and zero otherwise.

68. SG&A/Sales: Ratio of SG&A expenses to annual sales. Source: Compustat
69. Sigma The standard deviation of firm-specific weekly returns over the fiscal year (Kim et al., 2011a). Source: CRSP
70. Size: The natural logarithm of total assets. Source: Compustat
71. SOX: SOX is equal 1 if the observation occurs in 2002 or later and equals zero otherwise.
72. Stock deal (1/0) Indicator variable equal to one for deals at least partially stock-financed, and zero otherwise. Source: SDC
73. Subsidiary (1/0): Indicator variable equal to one if the target status is subsidiary, and zero otherwise. Source: SDC
74. Tender offer (1/0): Indicator variable equal to one if tender offers are received, and zero otherwise. Source: SDC
75. Tobin's Q: [Book value of total assets (AT) – book value of common equity (CEQ) + Common shares outstanding (CSHO) * stock price (PRCC_F)] / book value of total assets (AT). Source: Compustat
76. Tobin's Q: [Book value of total assets (AT) – book value of common equity (CEQ) + Common shares outstanding (CSHO) * stock price (PRCC_F)] / book value of total assets (AT). Source: Compustat
77. Transparency: The natural logarithm of a number of analysts following a firm three quarters before each firm's fiscal year-end. Source: Institutional Brokers' Estimate System (I/B/E/S).

Appendix 1.A2a: Percentage of Compliant Family Firms for Each Year



Appendix 1.A2b: Percentage of Compliant Nonfamily Firms for Each Year



Appendix 1.A2c: Numbers of Firms for Each Year

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006
Number of Noncompliant Family Firms	288	325	341	355	264	170	147	90	19
Number of Compliant Family Firms	31	49	75	87	170	238	239	252	289
Number of Noncompliant Nonfamily Firms	279	287	289	276	217	160	129	104	9
Number of Compliant Nonfamily Firms	113	140	171	231	311	356	372	369	464
Percent of Family Firms (%)	44.9	46.7	47.5	46.6	45.1	44.2	43.5	42.0	39.4

Appendix 1.A3: Delisted/Private

		Tobin's Q	ROA	Board Independence Ratio	Ln(Board Size)	Ln(Firm Age)	Firm Size	R&D Intensity
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
There are 33 firms went private or delisted after the advent of SOX. Within 33 firms, there is one compliant family firm, 18 noncompliant family firms, and 14 noncompliant nonfamily firms. In rows 1, 2, and 3 of this Panel, I report univariate statistics of variables of delisted/privatization in the post-SOX period. In rows 4, 5, and 6, I report univariate statistics of non-delisted/non-privatization firms in the post-SOX period.								
Noncompliant Family (Delisted/Private)	(1)	2.121	0.154	0.622	2.151	3.713	7.459	0.023
Noncompliant Nonfamily (Delisted/Private)	(2)	1.698	0.117	0.678	2.072	3.539	7.034	0.034
	(3)=(2)-(1)	-0.423*	-0.036*	0.057**	-0.079	-0.174	-0.425	0.010
Noncompliant Family (Non-Delisted/Private)	(4)	1.969	0.157	0.660	2.180	3.636	7.531	0.032
Noncompliant Nonfamily (Non-Delisted/Private)	(5)	1.851	0.156	0.767	2.201	3.875	7.784	0.030
	(6)=(5)-(4)	-0.118***	-0.002	0.107***	0.021***	0.239***	0.253***	-0.002*
	(7)=(4)-(1)	-0.152	0.004	0.038**	0.029	-0.077	0.072	0.008
	(8)=(5)-(2)	0.153	0.038**	0.089***	0.129***	0.336***	0.750***	-0.004

Appendix 1.A3: Delisted/Private (continue)

		Ln(1+ number of patents)	Ln(1+ number of citations)	Number of patents/R&D expenses	Number of citations/R&D expenses	Total Risk	Market Risk	Leverage	Credit Rating
		(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
There are 33 firms went private or delisted after the advent of SOX. Within 33 firms, there is one compliant family firm, 18 noncompliant family firms, and 14 noncompliant nonfamily firms. In rows 1,2, and 3 of this Panel, I report univariate statistics of variables of delisted/privatization in the post-SOX period. In rows 4, 5, and 6, I report univariate statistics of non-delisted/non-privatization firms in the post-SOX period.									
Noncompliant Family (Delisted/Private)	(1)	2.654	4.561	0.163	1.693	0.139	1.299	0.193	11.4
Noncompliant Nonfamily (Delisted/Private)	(2)	2.255	4.229	0.592	6.917	0.153	1.186	0.224	10.929
	(3)=(2)-(1)	-0.399	-0.332	0.429**	5.224**	0.014	-0.113	0.031	-0.471
Noncompliant Family (Non-Delisted/Private)	(4)	2.622	3.602	0.282	1.84	0.124	1.21	0.178	13.278
Noncompliant Nonfamily (Non-Delisted/Private)	(5)	2.791	3.669	0.329	1.967	0.117	1.162	0.22	13.62
	(6)=(5)-(4)	0.170***	0.067	0.047***	0.126	-0.008***	-0.048**	0.041***	0.342***
	(7)=(4)-(1)	-0.032	-0.959*	0.119	0.147	-0.014**	-0.09	-0.014	1.878***
	(8)=(5)-(2)	0.536	-0.561	-0.263**	-4.950***	-0.036***	-0.025	-0.004	2.691***

Appendix 1.A4: Firms Being Acquired

		Tobin's Q	ROA	Board Independence Ratio	Ln(Board Size)	Ln(Firm Age)	Firm Size	R&D Intensity
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
There are 79 firms being acquired after the advent of SOX. Within 79 firms, 26 noncompliant family firm, 0 compliant family firms, 47 noncompliant nonfamily firms, and 6 compliant nonfamily firms. M&A data is from SDC platinum. In rows 1,2, and 3 of this Panel, I report univariate statistics of variables in the post-SOX period. In rows 4, 5, and 6, I report univariate statistics of non-acquired firms in the post-SOX.								
Noncompliant Family (Acquired)	(1)	1.838	0.137	0.651	2.146	3.413	7.019	0.056
Noncompliant Nonfamily (Acquired)	(2)	1.976	0.134	0.758	2.133	3.768	7.137	0.043
	(3)=(2)-(1)	0.138	-0.003	0.106***	-0.013	0.355*	0.118	-0.013
Noncompliant Family (Non-Acquired)	(4)	1.974	0.157	0.659	2.180	3.640	7.534	0.031
Noncompliant Nonfamily (Non-Acquired)	(5)	1.847	0.155	0.766	2.201	3.872	7.784	0.029
	(6)=(5)-(4)	-0.127***	-0.002	0.107***	0.021***	0.232***	0.250***	-0.002
	(7)=(4)-(1)	0.136	0.020	0.008	0.033	0.227*	0.515*	-0.025**
	(8)=(5)-(2)	-0.129	0.021	0.009	0.068**	0.105	0.647***	-0.013**

Appendix 1.A4: Firms Being Acquired (continue)

		Ln(1+ number of patents)	Ln(1+ number of citations)	Number of patents/R&D expenses	Number of citations/R&D expenses	Total Risk	Market Risk	Leverage	Credit Rating
		(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
There are 79 firms being acquired after the advent of SOX. Within 79 firms, 26 noncompliant family firm, 0 compliant family firms, 47 noncompliant nonfamily firms, and 6 compliant nonfamily firms. M&A data is from SDC platinum. In rows 1, 2, and 3 of this Panel, I report univariate statistics of variables in the post-SOX period. In rows 4, 5, and 6, I report univariate statistics of non-acquired firms in the post-SOX.									
Noncompliant Family (Acquired)	(1)	1.473	1.861	0.149	0.235	0.132	1.134	0.171	12.300
Noncompliant Nonfamily (Acquired)	(2)	2.325	3.459	0.247	1.786	0.124	1.051	0.211	12.304
	(3)=(2)-(1)	0.852*	1.598**	0.097	1.551	-0.008	-0.082	0.040	0.004
Noncompliant Family (Non-Acquired)	(4)	2.633	3.634	0.280	1.849	0.125	1.213	0.179	13.229
Noncompliant Nonfamily (Non-Acquired)	(5)	2.794	3.676	0.332	2.007	0.117	1.163	0.220	13.598
	(6)=(5)-(4)	0.161***	0.042	0.052***	0.158	-0.008***	-0.049**	0.041***	0.369***
	(7)=(4)-(1)	1.160**	1.773**	0.131	1.615	-0.007	0.079	0.008	0.929
	(8)=(5)-(2)	0.468	0.217	0.085	0.221	-0.007	0.112	0.009	1.294**

Appendix 1.A5: Degree of Noncompliance

Panel A: Fama-French 12 industry, family firm, and degree of noncompliance

This Table presents the degree of noncompliance, by FF12 industry, and by firm type. Degree of Noncompliance is a number of unsatisfied board requirements in the year of 2001. The Degree of Noncompliance ranges from 0 to 3. In this Panel, I include only firms that have degree of noncompliance being greater than 0. The significance levels at 1%, 5%, and 10% are denoted by ***, **. and *, respectively.

	Mean of the degree of noncompliance	Mean of the degree of noncompliance	Difference
Industry	Family	Nonfamily	
	(1)	(2)	(3)=(1)-(2)
Consumer Nondurables -- Food, Tobacco, Textiles, Apparel, Leather, Toys	1.824	1.650	0.174
Consumer Durables -- Cars, TV's, Furniture, Household Appliances	1.857	1.429	0.429*
Manufacturing -- Machinery, Trucks, Planes, Off Furn, Paper, Com Printing	1.755	1.343	0.411***
Oil, Gas, and Coal Extraction and Products	2.100	1.579	0.521
Chemicals and Allied Products	1.667	1.409	0.258
Business Equipment -- Computers, Software, and Electronic Equipment	1.583	1.456	0.127
Telephone and Television Transmission	2.357	2.000	0.357
Wholesale, Retail, and Some Services (Laundries, Repair Shops)	1.981	1.705	0.277*
Healthcare, Medical Equipment, and Drugs	1.771	1.440	0.331
Other -- Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entertainment	1.766	1.774	-0.008

Panel B: Degree of Noncompliant in Multivariate Settings.

Degree of Noncompliance is a number of unsatisfied board requirements in the year of 2001. The Degree of Noncompliance ranges from 0 to 3. I include same control variables as in Table 4. Appendix 1.A1 contains all other variable definitions. Standard errors are clustered at the firm and year level (Petersen, 2009) and adjusted for heteroscedasticity (White, 1980). The significance levels at 1%, 5%, and 10% are denoted by ***, **. and *, respectively.

	Ln(1+ Degree of	Tobin's Q	ROA

Noncompliance)
2001

Family Firm	**0.159*** **		
	(0.037)		
SOX		-0.161*	0.014***
		(0.083)	(0.005)
Degree of Noncompliance		0.068	0.007
		(0.086)	(0.007)
Family Firm * SOX		-0.080	0.008
		(0.115)	(0.008)
Family Firm * Degree of Noncompliance		0.103	0.016
		(0.134)	(0.010)
SOX * Degree of Noncompliance		0.063	0.004
		(0.073)	(0.005)
Family Firm * SOX * Degree of Noncompliance		**-0.248** **	**-0.021*** **
		(0.122)	**(0.008)**
Ln(Board Size)	-0.064	-0.184	-0.027***
	(0.078)	(0.120)	(0.009)
E-Index	-0.032**	-0.066***	-0.002
	(0.015)	(0.022)	(0.002)
Dual Class	0.177***	-0.262***	-0.020***
	(0.045)	(0.085)	(0.007)
R&D/Total Assets	-0.976**	6.001***	-0.262***
	(0.446)	(0.965)	(0.071)
Capex/Total Sales	0.096	0.304	0.068*
	(0.217)	(0.256)	(0.037)

Ln(Sales)	-0.012	0.141***	0.017***
	(0.015)	(0.031)	(0.002)
Ln(Firm Age)	-0.026	-0.063	-0.004
	(0.024)	(0.041)	(0.003)
Diversification	0.002	-0.222***	-0.018***
	(0.028)	(0.044)	(0.003)
Leverage	-0.102	-1.507***	-0.094***
	(0.116)	(0.290)	(0.020)
CEO Compensation	-0.093	0.382***	0.013**
	(0.059)	(0.086)	(0.006)
Ln(CEO Tenure)	0.015	0.075***	0.008***
	(0.019)	(0.024)	(0.002)
Ln(CEO Age)	0.136	-0.507***	-0.029*
	(0.129)	(0.181)	(0.015)
Firm Market Risk	0.031	-0.118**	-0.035***
	(0.032)	(0.050)	(0.004)
Intercept	Yes	Yes	Yes
Fixed Effect	Industry	Industry and Year	Industry and Year
Adjusted R-squared	0.095	0.287	0.226
Observations	876	10181	10181

Appendix 2.A1: Correlation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
CAR[-2:2] (1)	1.00												
PCAR[-2:2] (2)	0.84^{a}	1.00											
ΔROA 3 Years (3)	0.00	-0.00	1.00										
BHAR 3 Years (4)	-0.03	-0.02	0.23^{a}	1.00									
Bid Premium (5)	0.02	0.07^{b}	-0.01	0.01	1.00								
Large Loss (6)	-0.36^{a}	-0.34^{a}	-0.07^{a}	-0.07^{b}	0.01	1.00							
Ln(Board Size) (7)	-0.00	-0.09^{a}	0.07^{b}	-0.00	-0.05^{c}	0.14^{a}	1.00						
Board Independence Ratio (8)	0.06^{b}	0.06^{b}	0.05^{b}	-0.02	-0.01	0.01	0.10^{a}	1.00					
ROA (9)	0.02	0.02	-0.49^{a}	0.01	0.08^{a}	0.14^{a}	-0.22^{a}	-0.10^{a}	1.00				
Prior-year Excess Return (10)	-0.10^{a}	-0.13^{a}	0.04	-0.12^{a}	0.02	0.10^{a}	-0.05^{c}	-0.01	0.02	1.00			
Firm Size (11)	0.02	-0.08^{a}	-0.02	-0.02	0.03	0.34^{a}	0.37^{a}	0.20^{a}	0.14^{a}	-0.01	1.00		
Firm Age (12)	0.04	-0.00	0.09^{a}	-0.01	0.02	0.08^{a}	0.34^{a}	0.22^{a}	-0.08^{a}	-0.11^{a}	0.40^{a}	1.00	
Book Leverage (13)	0.03	0.09^{a}	0.08^{a}	-0.01	-0.05^{c}	-0.05^{c}	-0.07^{b}	0.07^{b}	0.05^{c}	0.01	0.10^{a}	-0.02	1.00

^{c} $p < 0.10$, ^{b} $p < 0.05$, ^{a} $p < 0.01$

Appendix 2.A2: CAR 3 days

This table presents the results of OLS regressions in which the dependent variable is CAR [-1:1] for acquirers. Standard errors are clustered at the acquirer level and adjusted for heteroscedasticity (White, 1980). The coefficients of the constant, year, and industry dummies are omitted for brevity. Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

Dependent Variable: CAR[-1:1] (%)	(1)	(2)	(3)
Independent Chair	1.453***	1.460***	1.124**
	(0.183)	(0.181)	(0.468)
Acquirer Characteristics	Yes	Yes	Yes
Deal Characteristics	No	Yes	Yes
Target Characteristics	No	No	Yes
Adjusted R-squared	0.031	0.046	0.142
Observations	8233	8233	1504
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Intercept	Yes	Yes	Yes

Appendix 2.A3: Two-way clustering

This table presents the results of OLS regressions in which the dependent variable is CAR [-2:2] for acquirers. Standard errors are clustered at the acquirer level and year level (Petersen, 2009). The coefficients of the constant, year, and industry dummies are omitted for brevity. Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

Dependent Variable: CAR[-2:2] (%)	(1)	(2)	(3)
Independent Chair	1.886***	1.895***	1.609***
	(0.287)	(0.288)	(0.582)
Acquirer Characteristics	Yes	Yes	Yes
Deal Characteristics	No	Yes	Yes
Target Characteristics	No	No	Yes
Adjusted R-squared	0.038	0.049	0.132
Observations	8233	8233	1504
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Intercept	Yes	Yes	Yes

Appendix 2.A4: Propensity Score Matching.

This Appendix presents results using PSM methodology. I estimate a probit regression where the dependent variable is the independent chairperson dummy, and independent variables are the acquirer characteristics. After obtaining the estimated propensity score of a particular acquirer with an independent chairperson (treated group), I use the nearest neighbor matching approach (1:1) and pair each acquirer with a nonindependent chairperson (control group) with each acquirer in the treatment group (Independent Chair). ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

Panel A: Comparison of Variables from Treated and Control Groups

Covariates	Mean Value (Treated)	Mean Value (Control)	t value (Treated – Control)
Ln(Board Size)	2.22	2.24	-1.86
Board Independence Ratio	0.79	0.78	1.52
ROA	0.14	0.15	-0.49
Prior Year Excess Return	0.06	0.06	0.17
Ln(Sale)	7.62	7.65	-0.59
Ln(Firm Age)	2.89	2.94	-1.39
Book Leverage Ratio	0.18	0.19	-1.26
Free Cash Flow	0.05	0.05	-0.55
CEO Compensation	0.69	0.69	0.55
Relative Deal Size	0.16	0.19	-2.69
Stock Deal	0.22	0.24	-1.16
Diversifying M&A	0.39	0.40	-0.6
Tender Offer	0.04	0.04	-0.39
Friendly Offer	0.99	0.99	0.34
Target's a Public firm	0.23	0.25	-1.01

Panel B: Average Treatment Effect: CAR[-2:2] for Treated versus Control

Sample	Treated	Control	t value (Treated - Control)
Unmatched	1.71	-0.04	9.50
ATT	1.71	-0.08	6.18

Appendix 2.A5: Multivariate Analysis with Independent Chairperson, Lead Director, Affiliated Chairperson, and CEO Chairperson.

This table presents the results of OLS regressions in which the dependent variable is CAR [-2:2] for acquirers. Standard errors are clustered at the acquirer level and adjusted for heteroscedasticity (White, 1980). The coefficients of the constant, year, and industry dummies are omitted for brevity. Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

Dependent Variable: CAR[-2:2]	(1)	(2)
Independent Chair	1.823***	1.755***
	(0.217)	(0.301)
Lead Director	-0.227	
	(0.183)	
Affiliated Chair		-0.566
		(0.350)
CEO/Chair		-0.121
		(0.243)
Acquirer Characteristics	Yes	Yes
Deal Characteristics	Yes	Yes
Target Characteristic	No	No
F test		
Independent Chair – Affiliated Chair =0		2.321***
Independent Chair – CEO/Chair=0		1.876***
Adjusted R-squared	0.049	0.049
Observations	8233	8233
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Intercept	Yes	Yes

Appendix 2.A6: Other sample exclusion criteria.

This table presents the results of OLS regressions in which the dependent variable is CAR [-2:2] for acquirers. Standard errors are clustered at the acquirer level and adjusted for heteroscedasticity (White, 1980). The coefficients of the constant, year, and industry dummies are omitted for brevity. Standard errors are in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively. Variable definitions are provided in Appendix 1.A1.

CAR[-2:2]	(1)	(2)	(3)	(4)	(5)	(6)
Independent Chair	1.778***	1.802***	1.871***	1.809***	1.831***	1.873***
	(0.201)	(0.201)	(0.203)	(0.199)	(0.199)	(0.200)
Acquirer Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Deal Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Target Characteristics	No	No	No	No	No	No
Adjusted R-squared	0.046	0.046	0.047	0.046	0.047	0.048
Observations	8941	8894	8617	9706	9652	9342
Deal Value ($ million)	No restriction	>=1	>=5	No restriction	>=1	>=5
Deal Status	Completed	Completed	Completed	All	All	All
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	Yes	Yes	Yes	Yes	Yes	Yes

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