

Social Networks, Risk Taking, and Firm Value: Evidence from Corporate Control Activities

Yen-Teik Lee *

Singapore Management University

This draft: November 2012

First draft: May 2012

Abstract

This paper investigates the impact of social ties between the Chief Executive Officer (CEO) and board members on corporate risk-taking in mergers and acquisitions (M&As) and on shareholder value. Using a measure of CEO-director connections in a large sample of U.S. firms from 2000 to 2010, we document that boardroom connections lower firm acquisitiveness. If connected CEOs undertake M&As, they are less likely to choose focus acquisitions, and more likely to pay in stock. CEO-board connections do not enhance firm value in M&As. Higher levels of boardroom connection are associated with lower announcement returns and lower subsequent return on assets. Our results are robust to alternative explanations and various robustness checks.

Keywords: Social networks; mergers and acquisitions; corporate risk-taking; CEO; board of directors

JEL classification codes: G3; G30

We thank Jeremy Goh, Roger Loh, Mitch Warachka, Hong Dong, Narasimham Jegadeesh, and seminar participants at FMA Doctoral Student Consortium 2012, and SMU-SKBI Brown Bag for their helpful comments and discussions. All errors are ours.

* Department of Finance, Lee Kong Chian School of Business, Singapore Management University, Singapore 178899.
E-mail: yt.lee.2006@smu.edu.sg.

1. Introduction

The value of a firm is the present value of its future cash flows, which result from investment projects. In an ideal world, corporate managers should take the risk of investing in new and profitable projects that increase shareholder value. However, a number of factors might prevent corporations from taking the right level of risk and undertaking optimal investment decisions. Myers and Majluf (1984) for example show that agency problems might create a situation when net present value (NPV)-positive projects are not pursued, leading to a general underinvestment that is not optimal for shareholder value. Shareholders should thus be concerned with providing managers with the right incentives to make value-enhancing investments. If NPV-positive investments increase the risk that the Chief Executive Officer (CEO) will be fired, or the firm will be taken over, the CEO might refrain from investing out of a concern for his career (Coles et al. 2006, Low 2009). In contrast, governance literature is more concerned with the possibility that managers who over-invest in their pet-projects destroy firm value (Shleifer and Vishny 1997).

In this paper, we investigate the impact of boardroom connection on mergers and acquisitions and on firm value in a large panel of U.S. firms from 2000 to 2010. Informal social links between top executives and directors are a prevalent feature in many countries (Useem 1984). In many cases, top executives enjoy an elite education, share membership in prestigious social and professional associations, and sit on the boards of large firms. This phenomenon leads Mills (1956, p. 294) to observe that the corporate elite “often seem to know one another, seem quite naturally to work together, and share many organizations in common.” We define boardroom connections by measuring the proportion of independent directors connected to the CEO through current employment, prior employment, education, and social activities (Cohen, Frazzini, and Malloy 2008, Fracassi and Tate 2012).

Little research exists, however, on whether and how informal and social relationships between a CEO and directors impact corporate investment decision and firm value. When a CEO and a number of directors belong to the same social networks, their connections might facilitate the exchange of information, empower the advisory role of boards of directors, and create mutual faith between the CEO and directors, leading to an optimal level of risk-taking that enhances firm value. A close boardroom relationship between a CEO and directors might incite the CEO not to take

risk, to take a lower than optimal level of risk, or the wrong type of risk. The overall impact of social ties between CEOs and directors thus remains an open empirical question.

We focus on mergers and acquisitions (M&As) as our key proxy for CEO risk-taking for several reasons. First, major M&As are often initiated by the CEO, and approved by the board. Boardroom ties are therefore relevant in this context. Second, M&As are major observable corporate investment decisions that change firm risk (Acharya et. al. 2011). Diversifying acquisitions, for example, broaden the revenue base across business segments in different industries whose cash flows are less correlated to each other, and therefore lower the firm's idiosyncratic risk (Comment and Jarrell 1995). Diversifying acquisitions also represent managerial desire to lower corporate risks (Amihud and Lev 1981). On the contrary, focus acquisitions may strengthen a firm's strategic position within the industry the firm resides in, and therefore prevent the firm from becoming a takeover target (Gordon et al 2010). Third, M&As carry considerable uncertainty both for the firm and the top managers. Bad acquisition decisions might cost a CEO his job (Lehn and Zhao 2006). Similarly, firms that make bad acquisitions might later become targets (Mitchell and Lehn 1990). Thus, through these decisions, we can better understand corporate risk-taking and its impact on shareholder value. Fourth, M&A characteristics are observable. We can thus study the impact of social ties between CEOs and directors on various M&A dimensions, such as the payment method, and the nature of the M&A operation (focus vs. diversifying). As managerial risk-taking can be unobservable, we also complement our study by relying on alternative proxies for risk-taking, such as stock return volatility and idiosyncratic risk.

We find, first, that firms with connected boards are less likely to pursue mergers and acquisitions. Second, if they undertake M&As, they are less likely to choose focus acquisitions, and more likely to pay in stock. Third, social ties in the boardroom do not enhance firm value in the M&A context. A higher level of boardroom connection is associated with a lower level of short-term stock performance and a lower subsequent return on assets (ROA). Connected CEOs are less likely to undertake value-creating acquisitions. Our results are robust to alternative specifications of the empirical model and alternative proxies for risk-taking. Overall, our results seem to support the "quiet life" hypothesis by Bertrand and Mullinathan (2003) and Aggarwal and Samwick (2006). Insulated from board monitoring, socially connected CEOs appear to prefer not to take risk, or to take a low level of risk at the expense of shareholder value. When the CEOs acquire, the acquisitions seem defensive in nature, plausibly to fend off possible takeover.

Our paper contributes to the literature along several lines. First, it studies the impact of social network on corporate risk-taking and shows that boardroom connections significantly impact corporate major investment decisions and firm value. To the best of our knowledge, this paper is among the first in finance to study this question.

Second, evidence from this study might have implications for the ongoing debate on the independence and the effectiveness of boards of directors from both the research and regulatory points of view. Prior research and regulations focus on visible board and governance features and on disclosure rules and do not take into account sociological factors such as top executives' social ties, which are, as this paper shows, less observable yet non-negligible determinants of board effectiveness.

Third, results from this paper contribute to our understanding of corporate and managerial risk-taking, which is crucial in the value creation for shareholders. In relation to the current financial crisis, much has been discussed about the impact of managerial incentives to take an excessive level of risk. We show that, on the contrary, social connections in the boards of directors cause the CEOs to shirk the risk, reducing firm value. We thus join recent finance literature (Barber et al. 1995, Larcker et al. 2005, Hallock 1997, Barber and Palmer 2001, Cohen et al. 2008, Hochberg et al. 2007, 2010, Barnea and Guedj 2007, Schmidt 2008, Kuhnen 2009, and Nguyen 2012) that provides evidence on the impact of social ties and points toward the broader prevalence of the influence of social linkages across numerous finance issues.

The paper is organized as follows. Section 2 discusses extant literature on social networks and corporate risk-taking. Section 3 presents our data. Section 4 reports our empirical results on the relationship between board connectedness and risk-taking. Section 5 shows alternative explanations and robustness checks. Section 6 concludes.

2. Literature review

One of the most important corporate decisions is the investment decision. As value enhancing projects are risky, investment decisions involve risk-taking. In principle, the managers must undertake the risky investments that increase firm value. Many factors impact the corporate risk-taking in investment decisions, leading potentially to a sub-optimal level of risk-taking or an excessive level of risk-taking.

Because the choice of projects alters the firm's risk profile (Amihud and Lev 1981), self-interest and risk-averse managers might thus want to lower firm risks and under-invest or invest in less risky projects. Higher firm risks might also put managerial firm-specific human capital (Smith and Stulz 1985) and their perquisite consumptions (Williams 1987) at stake. Consistent with this view, Bertrand and Mullainathan (2003) find that managers might prefer a quiet life instead of empire building. A well-designed executive compensation package might offer a solution to deal with this underinvestment problem (Coles et al. 2006, Low 2009, Armstrong and Vashishtha 2012, among others). On the other hand, corporate governance literature shows that poor governance might lead to overinvestment and/or inefficient investments in acquisition activities (Shleifer and Vishny 1997, Harford et al. 2008, Masulis et al. 2009, Billet et al. 2011). A recent and growing strand of literature provides evidence that personal characteristics of managers impact corporate investment policies. The personal characteristics that have been studied include CEO age (Bertrand and Schoar 2003, Serfling, 2012); gender (Faccio et al. 2012); overconfidence (Malmendier et al. 2011); political affiliations (Hutton et al. 2011); religions (Hilary and Hui 2009); and marriage (Roussanov and Savor 2012).

Little research exists, however, on the impact of social networks in the boardroom on corporate major decisions. Fracassi and Tate (2012) find that boardroom ties are associated with lower firm value and higher propensity to engage in value-destroying acquisitions. Nguyen (2012) finds that CEOs connected to directors are less likely to be fired for poor performance and more likely to find an employment after being ousted. Using boardroom ties as a proxy for the board's advisory role, Schmidt (2008) finds that board connectedness is positively related to M&A announcement returns for firms with high advisory needs. Cai and Selivir (2012) find that M&A transactions in which boards of the acquirer and the target are connected are associated with positive merger outcomes. In contrast, Ishii and Xuan (2010) find a negative relation between acquirer-target social ties and merger returns.

Our study relies both on a large body of sociological literature on the social networks of top executives (see, for example, Useem 1984, Milgram 1967, Wasserman and Faust 1997, Watts 1999, and Pfeffer and Salancik 2003), and on a growing body of literature that provides empirical evidence on the impact of social networks in management, finance, and economics. Barber et al. (1995) provide evidence that acquisitions in the U.S. during the 1960s were partly influenced by the position of a firm's managers and directors in the social network of the business elite. Simon and

Warner (1992) argue that “old boy” networks reduce employers’ uncertainty about worker productivity. Workers hired through such networks earn higher initial salaries and stay on the job longer than do comparable workers hired from outside the network. Kramarz and Thesmar (2012) find that a board dominated by members of a network in France tends to favor the recruitment of new directors from the same network. Hallock (1997), Larcker et al. (2005), and Barnea and Guedj (2007) report evidence that connections between directors and top executives are related to executive compensation. Cohen et al. (2008) find that portfolio managers overweigh firms they are connected to through their networks of shared education. Hochberg et al. (2007, 2010) show that venture capital’s social networks influence investment performance. Kuhnen (2009) reports that ties between fund directors and advisory firms cause preferential hiring, but do not significantly impact fund investors’ welfare. Schmidt (2008) finds that social ties between the CEO and boards impact bidder announcement returns in mergers and acquisitions.

3. Data and methodology

3.1. Data

Our sample includes S&P1500 firms covered by BoardEx between 2000 and 2010¹. We collect the data in this study from several sources. Stock prices and returns are from CRSP, and accounting data are from Compustat Annual. The two datasets are merged using CRSP-Compustat link file provided by CRSP.

We obtain biographical information of senior company officers and directors from BoardEx database of Management Diagnostics Limited. The BoardEx database contains the current and past roles of board members and senior executives at both active and inactive firms (including the start and end dates of those roles), all undergraduate and graduate degrees attained (including the year in which those degrees were awarded and the awarding institution), and social activities (including memberships in clubs, as well as positions held at various foundations, charitable groups, and endowment funds). To verify the identity of the CEO, we match CEO names in BoardEx with

¹ BoardEx data cover SEC mandated and non-mandated information, such as education and non-for-profit activities. The disclosure quality is consistent on S&P 1500 firms. Coverage before 2000 is limited. Similar to prior literature (Engelberg et al. 2012, Do et al. 2012, Fracassi and Tate 2012), we thus choose the sample from 2000 onwards.

those in ExecuComp using the Levenshtein algorithm (after the initial match at firm-level).² We manually check these matches.

BoardEx covers both active and inactive firms. The database has the International Security Identification Number (ISIN), ticker symbol, and the company name as identifiers. However, the ISIN and ticker symbol may be missing for inactive firms. In these cases, we match the most recent company name provided by BoardEx with the most recent company name in CRSP using Levenshtein algorithm. Again, we manually verify each match to ensure the quality of the matching procedure. The final sample has 3,049 unique CEOs, from 1,822 unique firms.

We identify connections between the CEO and a director through current employment, prior employment, education, and social activities. Current employment connection exists when both the director and CEO currently serve in at least one common firm outside of the firm in question. Typically, such connections are common directorships in an outside firm. Prior employment connection exists when both the director and CEO served in at least one common company in the past (excluding prior roles in the company in question). Education connection exists when the director and CEO attended the same university program within a year. We classify university programs into one of the six types: (1) Undergraduate, (2) Masters, (3) MBA, (4) Ph.D., (5) Law, and (6) Other, as is similar to the classifications in Cohen et al. (2008), Engelberg et al. (2012), and Do et al. (2012a, 2012b). Finally, social activity connection exists when the director and CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012).³ A board member can be connected to the CEO through current employment, prior employment, education, and/or social activity. Our main measure of boardroom connection at firm level is the fraction of directors connected to the CEO measured one year before the fiscal year in consideration (variable *Connectedness (%)* in tables).

BoardEx data come from different sources, including discretionary disclosure, press releases, and company websites. The quality of non-mandated information on education and non-for-profit activities thus might vary. To alleviate this issue, we restrict our analysis to prominent companies in the S&P1500, whose quantity and quality of available director information is likely to be more comparable. Our estimation technique uses within-firm variations to identify the effect of

² Levenshtein algorithm computes the least number of operations necessary to modify one string to another string. For example, two perfectly matched strings will require zero steps to modify one string to the other.

³ Active role requires that the role description to be more than just “members” of organizations, except clubs. Frequent examples of active roles are “Trustee,” “President,” “Advisor,” and “Board Member.” As BoardEx does not report starting/ending dates for the majority of social activities, we do not require positions to occur at the same time.

boardroom ties on firm acquisitiveness, and controls for time fixed effects, allowing us to remove potential time-varying firm heterogeneity.

The distribution of BoardEx missing data might still be non-random; data might more likely be missing, for example, for smaller firms and for older directors with longer tenure on their boards, as a result of a lack of data on directors with no higher education (Fracassi and Tate 2012). To address this issue, we control for firm size, director age, and director tenure in our regressions. Another potential issue is the difference in disclosure quality across directors within the same board. Such differences are limited because BoardEx uses the same search procedure for each individual. Furthermore, firms in practice impose the same disclosure practice of director information; for example, director education or other activities information is either disclosed for all directors or none. Eventually, any missing ties between CEO and board should attenuate our estimated differences between the treated and the control sample, which also includes directors with missing information. Indeed, we find that our key estimates are larger when we restrict our sample to firms that are part of S&P500.

Our M&A sample is extracted from the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions database between 2000 and 2010. We include all completed M&As for U.S. targets and acquirers with an explicit change of control. The acquirer must purchase 50% or more of the target's shares in the transaction and own less than 50% of the target prior to the transaction. Following Netter, Stegemoller, and Wintoki (2011), our sample selection is based on the following steps:

Step 1: All acquisitions from 01/01/2000 to 12/31/2010.

Step 2: Disclosed Mergers and Acquisitions (Deal Type: 1).

Step 3: Deal Status is "Completed."

Step 4: Percentage of Shares Acquired in Transaction: 50 to HI.

Step 5: Percentage of Shares Held by Acquirer Six Months Prior to Announcement: 0 to 49.

We further require that the deal value disclosed is at least \$1 million, or more than 1% of the acquirer's market capitalization on the 41th trading day prior to announcement date (Masulis et al 2007, Schmidt 2008). Our final sample includes 2,897 M&As. Our sample differs from Fracassi and Tate (2012) in size and control. We include acquisitions involving private, subsidiary, and public

targets with transactions of at least \$1 million, or more than 1% of the acquirer's market capitalization, while Fracassi and Tate (2012) include only M&As involving public targets of at least \$10 million⁴. The inclusion of both private and subsidiary targets offers a more complete picture of firm acquisitiveness and M&A strategy because three times more acquisitions involve private and subsidiary targets than involve public target alone, and about 96% of these acquisitions involve transactions of more than \$10 million. We include completed change-in-control M&As, while Fracassi and Tate's (2012) sample may include acquisitions that do not change corporate control.

3.2. BoardEx panel data

Table 1 shows summary statistics of S&P1500 firm-year panel data from BoardEx. The panel data contains 13,560 observations. Our data are broadly similar to Fracassi and Tate (2012). Panel A provides summary statistics of CEO-Board connectedness. On average, 19.2% of independent directors and 18.6% of all directors are connected to the CEO⁵. The most common type of connection is through past employment (11.8% of directors), while the least is education (0.4%).

[Insert Table 1 about Here]

Panel B of Table 1 presents CEO characteristics. Average CEO age and tenure are 55.6 and 5.2 years, respectively. The mean fraction of CEO pay over the top 5 executives is 37.6%, a level consistent with Bebchuk et al. (2011). When comparing summary statistics for subsamples of firms with above and below the sample median of boardroom connectedness, we find that firms with more-connected boards have older and longer-serving CEOs who also capture a higher fraction of the pay of the top five executives in the firm.

Panels C and D of Table 1 report board and firm characteristics. Average director age and tenure are 59.9 and 8.6 years, respectively. The average number of directors on a board is 9.7, of which 75% are statutorily independent. Notably, more-connected boards are larger and more independent, but include older directors having shorter tenure. More-connected firms are larger. They have lower cash flow, and Tobin's Q, but higher book leverage. More-connected firms tend to

⁴ Our sample size for acquisitions involving public targets for the same sample period is comparable to that of Fracassi and Tate (2012).

⁵ 63.1% of firms in our sample have at least one director connected to the CEO through one of the four types of connections.

reside in more competitive industries. Our statistics are fairly similar to those of Fracassi and Tate (2012).

Panel E of Table 1 presents the pairwise correlations of our main measure of social ties between CEOs and independent directors, *Connectedness (%)*, measured one year before a fiscal year in consideration, and its four constituents (past employment, current employment, education, and social activity). All the pairwise correlations are positive and significant, except education-current employment and education-past employment. The positive correlation between education and social activity suggests, for example, that a director and a CEO who attended the same university program are also more likely to be on the board of trustees for the same endowment fund in the future.

To illustrate the variations in board connectedness, consider ExxonMobil's board of directors. In 2001, CEO Lee Raymond has social ties with 90% of the statutorily independent directors - 70% through past employment ties, 10% through common outside directorships, and 50% through social activities. In comparison, the average proportion of socially connected independent directors among ExxonMobil's peers is only 26%. Therefore, there is substantial cross-sectional variation. There is also variation across time in ExxonMobil's board. In 2002, for example, Doctor Henry McKinnell who is connected to Mr. Raymond joins the board, thus increasing the proportion of independent directors connected to the CEO.

3.3. Sample of mergers and acquisitions

Table 2 reports descriptive statistics of our M&A sample. Similar to Netter et al. (2011), Panel A shows a gradual increase in M&A activities from 2000 to 2007, followed by a decline during the financial crisis of 2008 and 2009. Similar to Schmidt (2008) and Netter et al. (2011), we find that public targets (25.3%) are less common than private and subsidiary targets, diversifying acquisitions (39.4%) are less common than focus acquisitions, and all-cash payments (40.5%) are more common than stock payment.

[Insert Table 2 about Here]

Panel B of Table 2 reports deal characteristics. The mean and the median value of transactions are \$923 million and \$150 million, respectively. The large difference between the mean and median is driven by a number of very large acquirers and deals. The mean and the median of relative deal value are 14.8% and 5.6%, respectively, comparable to figures from Masulis et al. (2007)

and Harford et al. (2012). More-connected boards tend to undertake larger deals, both in terms of transaction value and relative deal value; to pay acquisitions with all stock; and to acquire public targets.

Panel C of Table 2 describes acquiring firms' boardroom connectedness. It shows that 18.9% of independent directors and 18.3% of directors are socially connected to the CEO⁶. Our measures of acquiring firms' boardroom connectedness are broadly similar to the overall sample.

Panels D, E, and F report CEO, board, and firm characteristics of the sample of acquiring firms. Acquiring CEOs with a higher level of boardroom connectedness tend to be older, longer serving, and better paid relative to the other top 5 executives within the firm.

4. Empirical results

In this section, we first study the impact of boardroom connection on corporate propensity to acquire. We then examine its impact on the propensity to pursue focus acquisitions, the choice of method of payment, the acquirer's announcement return and the change in operating performance, and the propensity to engage in value-creating M&As. Finally, we discuss the robustness of these results. As CEO preferences influence corporate behavior (Weisbach 1995, Chevalier and Ellison 1999, Bertrand and Schoar 2003, Aggarwal and Samwick 2003, Malmendier and Tate 2005, etc.), we require in all empirical tests that the CEO in year t is the same as the CEO in year $t-1$.⁷ Our findings are virtually unaffected if we relax this condition.

4.1. Boardroom connections and the likelihood of mergers and acquisitions

We identify the effect of social ties on firm acquisitiveness by using a logit regression that accounts for both cross-sectional and within-firm variation. However, the effect of boardroom connection on firm acquisitiveness may be challenging to interpret because of endogeneity concern. For example, CEOs may appoint independent directors with pre-existing relationships prior to an acquisition to facilitate deal approval or to gather information about a prospective target. To address this concern, we use a second estimation procedure, a first-difference panel regression with an instrumental variable to identify within-firm variations of boardroom ties on firm acquisitiveness.

⁶ 64.6% of the acquirers have a board with at least one director connected to the CEO.

⁷ Consequently, the total number of observations drops from 13,560 to 10,433, M&A deals from 2,897 to 2,339.

We employ the death of connected independent directors (*Deceased Connected Independent Director*) as the instrument to account for the endogeneity of boardroom connectedness in our baseline regressions (Fracassi and Tate 2012). The instrument, *Deceased Connected Independent Director*, counts the number of independent directors with ties to the CEO who have died within one year up to the current fiscal year. Our estimates depend on within-firm changes in boardroom connectedness around the deaths of independent director as identification. Specifically, the identification comes from differences in firm acquisitiveness of the step functions defined by the instrument. In the first stage, we regress the first-difference of *Connectedness (%)* on the first-difference of the instrument and of our prior set of control variables. In the second stage, we regress the first-difference of the binary indicator of merger activity during the fiscal year on the first-difference of controls and of *Connectedness (%)* predicted by the first stage regression. The first-difference panel regression with instrumental variable approach eliminates both time-invariant firm effect on firm acquisitiveness and addresses the endogeneity of boardroom connection.

To study whether boardroom connection impacts the propensity to acquire, we first rely on a binomial logit model. Our main dependent variable is an indicator for whether a firm completes at least one M&A deal in excess of \$1 million or 1% of its market capitalization during a fiscal year. Our main independent variable is *Connectedness (%)*, measured as the percentage of independent directors connected to the CEO over the total number of independent directors one year before a fiscal year in consideration. As a robustness check, we also use *Connectedness (%)*, but measure two year before a fiscal year. We obtain sensible similar result, as presented in Table 8. Table 3 reports the regression results.

[Insert Table 3 about Here]

In column (1), we regress the dependent variable on our main proxy for boardroom connection (*Connectedness (%)*) and on various determinants of M&A activities such as firm characteristics, board characteristics, and CEO characteristics. We find a negative coefficient of 0.314, significant at the 5% level, on *Connectedness (%)*. The standard errors are robust to heteroskedasticity and unspecified within-firm correlation. CEOs closely connected to board members appear less likely to undertake mergers and acquisitions. The coefficient on firm size is positive and significant at the 1% level, indicating that larger firms are more likely to acquire other firms. The coefficient on Tobin's Q is negative and significant, suggesting that acquisitions may be substitutes for profitable investment opportunities. Coefficient on cash flow is significantly positive,

while coefficient on leverage is significantly negative. Firms with lower financial constraints are thus more likely to acquire. The impact of firm characteristics on firm acquisitiveness is consistent with findings in prior literature (Malmendier and Tate 2005, and Fracassi and Tate 2012).

Our finding of a negative effect of boardroom connection on the propensity to undertake mergers and acquisitions appears to contradict Fracassi and Tate's (2012) finding. Potential explanations are manifold. First, as mentioned in the previous section, our mergers and acquisitions sample is different. We include all targets (public, private, and subsidiary). We note that three times more acquisitions involve private and subsidiary targets than involve public target alone, and about 96% of these acquisitions involve transactions of more than \$10 million. Fracassi and Tate (2012) use M&A as a proxy for board monitoring intensity, and include only public targets. Restricting our M&A sample to public targets, we find a positive and significant estimate, as in Table VI of Fracassi and Tate (2012).

Column (2) includes year fixed effects to address the possibility of within-year merger clustering. The effect of boardroom connectedness on firm acquisitiveness remains significantly negative. Column (3) adds industry fixed effects to address the possibility of within-industry merger clustering (Andrade et al. 2001). Our estimate of the impact of CEO-board connection is not impacted. The effects of industry controls appear to be largely orthogonal to the effect of boardroom ties.

Column (4) includes the interaction term *Connectedness (%)* \times *Merger Wave*, whose coefficient is significantly positive. This suggests that boardroom connectedness induces more acquisitions when the firm's industry experiences a merger wave, plausibly to grow bigger so to preempt being taken over (Gorton, Kahl, and Rosen 2009).

As mentioned earlier in this subsection, the CEO-board connections might be endogenous to firm acquisitiveness. We thus address both firm heterogeneity and possible endogeneity between boardroom ties and firm acquisitiveness using first-difference panel regression using the death of connected independent director as the instrumental variable. Two-stage first-difference panel data allow us to identify the effect of boardroom ties on firm acquisitiveness using a subset of within-firm changes in boardroom connection caused by deaths of connected independent directors. Column (5) reports the first-stage estimation. As expected, the death instrument has a strong negative impact on boardroom connectedness. A Wald statistic rejects at 1% the null hypothesis that the instrument has no effect on the endogenous variable. Column (6) reports the second-stage

estimation. Similar to previous estimations, the effect of boardroom connectedness on firm acquisitiveness is negative, but marginally significant.

In sum, results from Table 3 show that social ties between the CEO and board members significantly diminish the propensity of firms to undertake merger and acquisition activity. Connected CEOs are less likely to undertake empire-building mergers and acquisitions. However, boardroom connectedness heightens firm acquisitiveness during merger wave, suggesting that CEOs are more likely to conduct defensive acquisitions with friends on board to fend off prospective acquirers when the perceived threat of being taken over is high. Overall, risk-shirking incentives seem to dominate risk-taking incentives in the presence of CEO-director connections. The higher propensity to acquire during merger wave may result from weaker board monitoring. This evidence appears to support the “quiet life” hypothesis of Bertrand and Mullainathan (2003). Boardroom connections might reduce the efficiency of board monitoring (Hermalin and Weisbach 1998), make the CEO feel safe in the job (Hwang and Kim 2009; Nguyen 2012), and insulate him from pressure to take the right type of risk to enhance firm value in the long term.

4.2. Boardroom connections and focus mergers and acquisitions

Agency theory argues that managers might make decisions that increase their own utility and deviate from the shareholders’ interest (Jensen and Meckling 1976). A CEO may derive utility from diversifying acquisition because of the better prestige and career prospect associated with a more diversified firm (Jensen 1986, Stulz 1990). Managers, as Amihud and Lev (1981) show, have the incentive to diversify their firm to lower their employment risks. On the contrary, a CEO might want to undertake specific investments to further entrench himself, making him indispensable, allowing him to extract rents, and reducing the probability of dismissal (Shleifer and Vishny 1989).

Boards of directors are supposed to provide a CEO with the right incentive to pursue shareholder-value enhancing deals in mergers and acquisitions. However, the ultimate impact of CEO-board ties on the propensity of CEOs to undertake focus or diversifying acquisitions is unclear. If boardroom connection enhances the board’s advisory role (Adams and Ferreira 2007), the propensity to engage in value-creating focus acquisitions should be higher. If boardroom connection weakens the board’s monitoring role (Hermalin and Weisbach 1998), managerial self-interest will dominate the choice. Managers will conduct either diversifying acquisitions to lower

employment risk (Amihud and Lev 1981) or enhance their career prospects (Jensen 1986, Stulz 1990), or focus acquisitions to make themselves more indispensable (Shleifer and Vishny 1989).

We explore this question in this sub-section by using a logit regression and first-difference panel regression with the death of connected independent director as the instrumental variable. The dependent variable is an indicator for whether a firm in BoardEx dataset completes at least one focus merger or acquisition during the fiscal year. Similar to prior literature, we define focus M&As as the ones that involve a target in industries with the same two-digit SIC code to the acquirer. Table 4 shows the regression results.

[Insert Table 4 about here]

Column (1) shows that the coefficient on *Connectedness (%)* is negative, and statistically significant. Boardroom ties are associated with lower propensity to conduct focus acquisitions, consistent with agency theory.

The previous section suggests that board connectedness is associated with defensive acquisitions when the perceived threat of being taken over is high. To fend off possible takeover within the industry as argued in Gorton, Kahl, and Rosen (2009), a firm has to grow larger within its industry. Therefore, the relationship between boardroom connectedness and the propensity to conduct focus acquisitions should be positive during times of heightened vulnerability to takeover. Column (2) tests this conjecture by including the interaction term *Connectedness (%) × Merger Wave*. Indeed, we find that connected firms are more likely to pursue same-industry acquisitions during a merger wave, supporting Gorton, Kahl, and Rosen's (2009) "eat or be eaten" hypothesis.

Next, we address both firm heterogeneity and possible endogeneity between boardroom connectedness and the propensity to conduct focus acquisitions using first-difference panel regression with instrumental variable. Column (3) reports the second-stage estimation. Similar to previous estimations, the effect of boardroom connectedness on firm propensity to conduct focus acquisition is negative.

4.3. Boardroom connections and the choice of payment methods in mergers and acquisitions

In this sub-section, we study the impact of boardroom connections on the choice of payment methods in M&As. From the agency theory perspective, the propensity to conduct stock-financed acquisitions, broadly seen as value-destroying for the acquiring firms, should be higher with a lower level of board monitoring. From a risk-taking perspective, risk-averse CEOs are likely to choose stock-financed acquisitions because of the uncertainty over the post-acquisition changes in firm value. Hansen's (1987) model predicts that, under asymmetric information, the acquirer chooses to use stock when the information asymmetry between the acquirer and target is high, as stock financing forces the target to share post-acquisition revaluation effects. Empirical evidence from Martin (1996) and Faccio and Masulis (2005) confirm this risk-sharing hypothesis. Thus, the choice of payment reveals an acquiring firm's aversion to the uncertainty over merger outcome. Both agency and risk-taking perspectives predict a positive association between boardroom ties and the propensity to finance with stocks.

We investigate if boardroom connections impact the choice of financing of M&A deals with stock (Martin 1996, Faccio and Masulis 2005). We estimate a double-sided Tobit (censored at 0 and 1) to explain the percentage of equity financing of each deal. We include the Inverse Mills Ratio to control for possible sample selection. Table 5 reports regression results.

[Insert Table 5 about here]

Column (1) shows that the marginal effect of the *Connectedness (%)* is positive and significant at 5%. Firms with lower cash flows are more likely to pay stocks. This result confirms Jung, Kim, and Stulz (1996) and Martin (1996). Firms with larger board and lower percentage of independent directors, and longer CEO tenure tend to pay acquisitions with more stocks, suggesting the positive association between poor corporate governance and the propensity to conduct stock-financed acquisitions.

We examine the effect of industry dynamics on the relationship between boardroom ties and the propensity to pay with stocks. Column (2) examines the interaction term *Connectedness (%)* \times *Merger Wave*, the coefficient is positive and significant. Boardroom connectedness thus increases the propensity to pay with stocks during industry-specific merger wave. Uncertainty rises with industry-specific merger wave, and CEOs have vested interest to keep their firm independent to preserve

their private benefits of controls. Therefore, the positive effect of boardroom connectedness on the propensity to pay with stocks during merger wave is expected. Column (3) includes the interaction term $Connectedness (\%) \times HHI$ (Herfindahl Index, measured as the sum of the squares of market share of each firm in the same three-digit SIC), the coefficient is significantly negative. Boardroom connectedness is thus associated with a greater propensity to pay with stocks for firms residing in competitive industries, whose outlook is more uncertain. Finally, column (4) includes the interaction term $Connectedness (\%) \times Focus$. We obtain a positive and significant coefficient. This is consistent with the positive effect of boardroom connectedness on the propensity to conduct focus acquisitions to achieve larger scale within an industry during merger wave to preempt the possibility of being taken over.

In summary, results from Table 5 provide evidence that the more socially connected a CEO and his board of directors are, the more likely the firm will finance mergers and acquisitions with stocks. This tendency seems to concentrate among acquirers in an industry undergoing a merger wave, and in competitive industries, whose future outlook is more uncertain on the basis of product market competition. Furthermore, boardroom connectedness increases the propensity to pay focus acquisitions with stocks, supporting the positive effect boardroom connectedness has on the propensity to conduct defensive acquisitions during times of heightened vulnerability.

In sum, results from Table 5 show that CEO-board connections appear to induce CEOs to finance acquisitions by stocks. This evidence supports our findings in Table 3 and Table 4 and is consistent with the quiet life hypothesis put forward by Bertrand and Mullinathan (2003) and Aggarwal and Samwick (2006). However, this sub-section cannot tell us whether this risk “shirking” is good or bad for firm value. We will answer this question in the following sub-section.

4.4. Acquirer’s cumulative abnormal returns and change in operating performance

We have so far shown that social ties between CEOs and directors reduce managerial risk-taking. However, if conservative risk-taking is value-enhancing, this behavior is not necessarily bad for shareholder value. This sub-section will investigate the wealth impact of boardroom connections.

We first examine stock price reactions to the announcement of M&As. We follow Brown and Warner’s (1985) standard event study methodology to calculate cumulative abnormal returns (CAR) in the 2-day window surrounding the announcement (day 0). Using CRSP value-weighted

returns as the market return, we estimate the market model parameters over 200 trading days, ending two months before the M&A announcement day, and compare CAR among sub-samples of firms. Results are reported in Panel A of Table 6.

[Insert Table 6 about here]

Markets generally react positively and significantly to M&A announcements. The average (median) CAR is 0.26% (0.16%), significant at the 5% level. This result is consistent with Masulis et al. (2007). Markets react positively and significantly to the announcement of focus deals, with an average (median) CAR of 0.35% (0.21%), significant at the 5% level. Focus deals seem to be value creating for shareholders. In contrast, no significant stock price reaction to the announcement of diversification deals occurs.

We use the median of boardroom connection to divide our sample into sub-samples of more- or less-connected boards. For the sub-sample of acquiring firms with more-connected boards, the CARs are insignificant (the mean and median CARs are -0.02% and -0.12%, respectively, both insignificant). By contrast, for less-connected boards, the mean and median CARs are 0.55% and 0.40%, respectively, both are significant at 1%. More interestingly, the differences in mean and median of the CARs between these two sub-samples are significant at the 5% and 1% levels, respectively. M&As by less-connected boards seem to create significantly more value to shareholders. We find similar results with subsamples of focus and diversifying acquisitions. The difference between CARs of these two groups of firms is significant. Focus acquisitions by less-connected boards significantly create more shareholder value than do focus deals by more-connected boards.

Evidence from Panel A of Table 6 shows that M&A deals and focus acquisition deals by connected boards do not create value for shareholders, while deals by less-connected boards do. Moreover, the difference in value creation in M&As between more- and less-connected firms is statistically significant.

Results from Panel A of Table 6 remain however univariate. We next develop our analysis of the impact of boardroom connection on stock price performance and operating performance in a multivariate framework. Panel B of Table 6 reports results of OLS regression of the acquirer's CAR and change in operating performance (ROA) around M&A announcement on our measure of social ties, *Connectedness (%)*, and control variables. We control for acquirer and deal characteristics known

in the literature to affect acquirer returns (see, for example, Masulis et al. 2007, Cai and Selivir 2012, Harford et al. 2012). Acquirer's characteristics include market capitalization, Tobin's Q, leverage (book value of debts over market value of total assets), and cash flow (scaled by lagged total assets). Deal characteristics include relative deal size (transaction value over acquirer's market capitalization), indicator for public target, indicator for all stock payment, stock run-up (buy-and-hold abnormal return during the period [-210,-11]), indicator variables for tender offer, cross-border, competed (more than one bidder), merger of equals, high tech combinations (Loughran and Ritter 2004), serial acquirer (more than three acquisitions during the sample period), and indicator for governance (taking value of 1 if Entrenchment Index (Bebchuk et al. 2009) is greater than the median).

Columns (1) to (3) report the results with CARs from windows of 3 days, 5 days, and 7 days around the M&A announcement, respectively, as dependent variables. We find consistently negative and significant coefficients of similar magnitude on *Connectedness (%)*. This indicates that firms with more-connected boards are associated with lower announcement returns. For column (1) for example, the coefficient on *Connectedness (%)* is -0.024, significant at the 1% level. The interaction term (*Connectedness (%)* x *Focus*) is positive and significant. Therefore, firms with strong boardroom connectedness are perceived to destroy value in M&As, but the effect is mitigated in focus acquisitions. For acquirers engaging in focus deals, one standard deviation increase in *Connectedness (%)* increases 3-day cumulative abnormal returns by about 1%. Consistent with extant literature, in columns (1) to (3), we find that the market reacts positively to M&A announcements by bidders that are smaller, with lower Tobin's Q, with lower stock price run-up, and with deals combining two high-tech companies (Masulis, Wang, and Xie 2007, and Moeller, Schlingemann, and Stulz 2004).

In column (4) of Panel B, we investigate the impact of boardroom connections on firm operating performance, i.e., on the change in returns on assets (ROA) from Year - 1 to Year + 1. Similar to the results with CARs, the estimate coefficient on *Connectedness (%)* is -0.031, significant at the 5% level. This result indicates that a higher level of board connectedness is associated with a lower ROA in the year following the M&A deal.

In summary, Table 6 provides evidence that CEO-board social ties do not enhance firm value in M&A context. A higher level of boardroom connection is associated with a lower level of short-term stock performance and a lower subsequent ROA.

4.5. Decisions to conduct value-creating (destroying) acquisitions

In this section, we examine whether a high level of CEO-director connection predicts better acquisition decisions ex-ante. We divide our acquisition sample into two groups of value-creating and destroying acquisitions based on the 5-day cumulative abnormal returns around the M&A announcement.

We estimate a multinomial logit model with the dependent variable being an indicator variable that equals 1 if a firm announces an change-in-control acquisition causing negative announcement return ($D_Acq=1$, *Value-Destroying*), which is subsequently completed, and 2 if the firm makes an acquisition that results in positive announcement return ($D_Acq=2$, *Value-Creating*). We use non-acquirers as the benchmark group, and set the dependent variable to 0 ($D_Acq=0$). For acquirers with multiple acquisitions in a fiscal year, we use the deal-value-weighted average returns to identify the indicator variable. In another unreported model, we use median cumulative abnormal return as the cutoff point, separating good from bad acquisitions. The results are virtually unchanged. Table 7 presents our findings.

[Insert Table 7 about here]

In model (1), the dependent variable for column (1) is $D_Acq=1$, which represents value-destroying (negative announcement return) acquisition decisions. The coefficient on *Connectedness (%)* is negative, but insignificant. The dependent variable for column (2) is $D_Acq=2$, representing value-creating acquisition decisions. The coefficient on *Connectedness (%)* is negative and significant. Higher boardroom connectedness is associated with lower propensity to engage in value-creating acquisitions, lending support to the notion that acquisitions made by firms with strong boardroom connectedness are defensive in nature. Model (2) includes the interaction term *Connectedness (%)* \times *Merger Wave*. Column (3) shows that higher boardroom connectedness is associated with higher propensity to engage in value-destroying acquisitions in the presence of merger wave.

Overall, the evidence supports the hypothesis that boardroom connectedness is associated with managers' tendency to engage in defensive acquisitions to avoid being taken over, and hence to protect their private benefits of control.

5. Alternative explanations and robustness tests

5.1. Alternative explanations

In this section, we examine possible channels that may influence our results, specifically board financial expertise, corporate governance, and CEO characteristics. Panel A of Table 8 reports the results.

Board financial expertise

Güner et al. (2008) document that financial expertise within the boardroom is associated with worse acquisitions, while Minton et al. (2010) find that having financial expertise on the board of financial institutions is associated with more risk-taking. To test the possibility that financial expertise may drive our results, we construct two measures of financial expertise: financial experience and financial education. *Financial experience (%)* is the fraction of directors with past or current experience as a CFO, treasurer, accountant, or vice president for finance. *Financial education (%)* is the fraction of directors with an MBA, CPA, CFA, or a degree in economics, management, accounting, or business. Column (1) shows that the impact of financial experience is positively related to firm acquisitiveness, but insignificant. Column (2) shows that financial education is positively but and significantly related to firm acquisitiveness. Our coefficient of interest on *Connectedness (%)* remains significantly negative and significant in the presence of board with financial expertise.

[Insert Table 8 about here]

Corporate governance

Mitchell and Lehn (1990) find that markets for corporate control discourage empire building because firms making bad acquisitions are more likely to be acquired later. However, Masulis et al. (2007) argue that antitakeover provisions protect managers from disciplinary market actions, and encourage managerial empire building. We test the effect of anti-takeover provisions on firm acquisitiveness. Column (3) controls for managerial entrenchment constructed by Bebchuk et al.

2009. The effect of managerial entrenchment is positive and significant. The negative effect of CEO-board ties on M&A activities nevertheless remains significant.

Amihud and Lev (1981) find that the presence of blockholders mitigates risk-reducing investments, for example, diversifying acquisitions. Anderson and Reeb (2003) document that block positions held by founder families are associated with higher operating risk. Faccio et al. (2011) show that diversified large shareholders wield positive impact on corporate risk taking. Column (4) controls for institutional shareholdings (defined as the fraction of shares owned by institutional investors as disclosed in 13F filings). The effect of institutional shareholdings is positive and significant. To the extent that institutional investors are large and diversified, this finding is consistent with Faccio et al. (2011). Our main coefficient of interest is not affected.

CEO characteristics

Managerial shareholdings may influence CEO risk-taking behavior. May (1995) finds that firms with higher managerial equity ownership tend to pursue diversifying acquisitions. In contrast, Denis et al. (1997) find that firms with higher managerial equity ownership have less diversification, suggesting that higher equity ownership may offset the private benefits managers derive from diversifying. Column (5) controls for CEO shareholdings. The negative effect of CEO-board ties is virtually unchanged. CEO shareholding has no effect on a firm's propensity to acquire.

Powerful CEOs may push their agenda through, with or without friends in the boardroom. One proxy for CEO power is CEO pay slice, which is the fraction of CEO pay over the top 5 executives (Bebchuk et al. 2011). CEO pay slice, as Bebchuk et al. (2011) argue, is a good proxy for agency costs. Column (6) controls for CEO pay slice. The impact of CEO pay slice on firm acquisitiveness is significantly positive. The negative effect of social ties remains robust.

CEOs may have different risk preferences, which affect corporate investment policies (Malmendier and Tate 2008, Malmendier et al. 2011, Cain and McKeon 2012). For example, Cain and McKeon (2012) find that the propensity of CEOs with pilot licenses to acquire may relate to a sensation-seeking personality trait. Following their study, we use Federal Aviation Administration data to identify a subset of CEOs with small aircraft pilot licenses. Column (7) includes a dummy for CEOs with flying licenses. Our coefficient on *Connectedness (%)* remains negative and significant.

5.2. Robustness tests

We examine the sensitivity of our results to alternative outcomes, measures of boardroom connectedness, and alternative samples. Panel B of Table 8 reports the results.

Alternative outcome variables

First, we deal with the possible concern that small acquisitions may not require the direct involvement of the board or the CEO, which is an assumption we make to infer the effect of CEO-board ties. To address this concern, we redefine the takeover indicator variable to represent larger deals, from \$1 million (or 1% of acquirer's market capitalization) to \$5 million, and to \$10million, respectively. Column (1) of Panel B redefines the indicator variable for M&A as acquisitions with deal values of at least \$5 million (see, for example, Morck et al. 1990 and Malmendier and Tate 2005). The negative impact of CEO-board ties remains robust, and the estimate is very similar. Column (2) redefines the indicator variable to represent deal values of at least \$10 million (Fracassi and Tate 2012). Our coefficient of interest remains negative and significant. Our results are therefore not sensitive to the size of M&As.

Alternative measures of boardroom connectedness

We test three alternative measures of boardroom connectedness, namely the fraction of independent directors connected to the CEO through current employment, the fraction of directors connected to the CEO through social activities, and the fraction of all directors connected to the CEO through the current employment, prior employment, education, and/or social activity in columns (3) to (5). In all cases, our coefficients of interest remain unaffected.

Alternative samples

Finally, we examine two alternative samples. We address the possibility that firms outside of S&P500, specifically S&P MidCap 400 and S&P SmallCap 600, may introduce biases due to the differential coverage of directors in the most prominent firms. In column (6), we restrict our analysis to the subsample of S&P500 firms. The coefficient on *Connectedness (%)* remains significantly negative, and the magnitude of the coefficient increases. Lastly, we test our baseline Logit regression with *Connectedness (%)* two fiscal years before (requiring the same CEO two fiscal years before). The use of a two-year lagged variable alleviates the possibility of CEOs appointing their friends to the board prior to an acquisition. Column (7) uses a two-year lagged measure of boardroom connectedness, *Connectedness (%)_{t-2}*, on a sample that is restricted to firms with the same CEO two

fiscal years before. Compared to column (2) of Table 3, the magnitude of the estimate is more negative and remains significant.

Overall, the results obtained from using alternative samples and proxies of boardroom connectedness do not change the results we obtain from previous sections. CEOs with friends in the boardroom appear to prefer a quiet life.

5.3 Alternative Proxies for Managerial Risk-Taking

CEOs may derive utility from lower idiosyncratic risk they face, given their large and undiversified positions in the firms they manage (Jin 2002). Furthermore, Amihud and Lev (1981) find that manager has incentive to diversify to lower employment risks. In this sub-section, we test the impact of CEO-board ties on unobservable managerial actions to reduce risks. We rely on realized stock return volatility and idiosyncratic volatility during the fiscal year as alternative proxies for managerial risk-taking.

We use three estimation strategies: firm fixed and random effects panel regression, and first-difference panel regression with instrumental variable. The dependent variable is the proxy for managerial risk-taking. All the independent variables are measured at the start of a fiscal year. Panel C of Table 8 reports the regression results.

Historical stock return volatility

Column (1) shows the results for fixed effects panel regression. The annualized stock return volatility is lower with higher boardroom connectedness. Factors that heighten stock return volatility are higher Tobin's Q and higher leverage, while factors that lower stock return volatility are higher market capitalization, and higher cash flow, consistent with Low (2009). Column (2) repeats the analysis with random effects panel regression, the result remains robust. Finally, as CEOs may strategically appoint their friends on board in response to firm uncertainty, the direction of causality is hard to establish. Column (3) addresses endogeneity concern with first-difference panel regression using the death of connected independent directors as the instrumental variable used in Table 3 column (5) and (6). Similar to column (1) to (2), boardroom connectedness lowers stock return volatility.

Idiosyncratic volatility

We turn to idiosyncratic volatility (the root mean square error from the Fama-French three factor market model estimated using a firm's daily stock return over the fiscal year, multiplied by the square root of the number of trading days) to examine the effect of boardroom connectedness on firm-specific risks⁸. Column (4) shows the results for fixed effects panel regression. Idiosyncratic volatility is lower with higher boardroom connectedness. Column (5) to (6) show the same conclusion with alternative estimation procedures.

Overall, the results using the two alternative proxies of corporate risk-taking support the main hypothesis that CEOs with friends in the boardroom prefers a quiet life.

6. Conclusions

Informal social links between top executives and directors are a prevalent feature in many countries. In many cases, top executives enjoy an elite education, share membership in prestigious social and professional associations, and sit on the boards of large firms. This paper attempts to investigate the impact of informal social networks in the boardroom on corporate risk-taking in corporate control activities in a large sample of U.S. firms from 2000 to 2010.

We document that firms with connected boards are less likely to pursue mergers and acquisitions. Firms with close CEO-board connections are less likely to choose focus acquisitions and more likely to undertake mergers with stock payment. Social ties in the boardroom do not enhance firm value in M&A context. A higher level of boardroom connection is associated with a lower level of short-term stock performance and a lower subsequent ROA. Our results are robust to different specifications of the empirical model, and to alternative explanations and proxies for risk-taking.

⁸ Idiosyncratic risk is the risk that is unique to a specific firm. Following Fu (2009), we measure the idiosyncratic risk of an individual stock in the following steps. First, for each fiscal year, we regress daily excess returns of individual stocks on the daily Fama-French three factors: (i) the excess return on a broad market portfolio ($R_m - r_t$), (ii) the difference between the return on a portfolio of small stocks and the return on a portfolio of large stocks (*SMB*, small minus big), and (iii) the difference between the return on a portfolio of high book-to-market stocks and the return on a portfolio of low book-to-market stocks (*HML*, high minus low):

$$R_{i\tau} - r_{i\tau} = \alpha_{it} + b_{it}(R_{m\tau} - r_{i\tau}) + s_{it}SMB_{\tau} + h_{it}HML_{\tau} + \varepsilon_{i\tau}$$

τ is the subscript for the day and t is the subscript for the fiscal year, $\tau \in t$, and b_t , s_t , and h_t are factor sensitivities or loadings. Daily stock returns are obtained from the CRSP. We download the daily factor data from Kenneth R. French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html). Then, we perform a time-series regression for each stock in each fiscal year. Idiosyncratic volatility of a stock is the root-mean-square-error from the market model. We then annualize idiosyncratic volatility by multiplying it by the square root of the number of trading days in that fiscal year.

Overall, our paper highlights the impact of social networks in the boardroom on CEO and firm behavior in major corporate decisions. Evidence from our paper indicates that social ties between a CEO and directors are associated with a lower level of corporate risk-taking in M&A activities that undermine firm value. Our results seem to support the “quiet life” hypothesis by Bertrand and Mullinathan (2003) and Aggarwal and Samwick (2006). Insulated from board monitoring, socially connected CEOs appear to prefer not to take risk, or to take a low level of risk to active empire-building at the expense of shareholder value.

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Appendix A: Variable Definitions and Constructions

Variable Name	Variable Definitions and Constructions	Source
CEO-Board Connections		
Connectedness (%)	The fraction of independent directors connected to the CEO. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)), and social activities (directors and the CEO share <i>active</i> membership in at least one non-profit organization (Fracassi and Tate 2012))	BoardEx
Connectedness - Overall (%)	The fraction of <i>all</i> directors connected to the CEO. CEO-director social ties are defined as above	BoardEx
Connectedness - Education (%)	The fraction of independent directors connected to the CEO through education: the director and CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)	BoardEx
Connectedness - Current Employment (%)	The fraction of independent directors connected to the CEO through current employment: both the director and CEO now serve in at least one common outside of the company in question	BoardEx
Connectedness - Past Employment (%)	The fraction of independent directors connected to the CEO through past employment: the director and CEO both served in at least one common outside company (prior roles in the company in question are excluded)	BoardEx
Connectedness - Social Activities (%)	The fraction of independent directors connected to the CEO through social activities: the director and CEO share active membership in at least one non-profit organization	BoardEx
Financial Experience (%)	The fraction of <i>all</i> directors with past or current experience as a CFO, Treasurer, Accountant, or Vice President for Finance	BoardEx
Financial Education (%)	The fraction of <i>all</i> directors with an MBA, CPA, CFA, or a degree in economics, management, accounting, or business	BoardEx
Firm Characteristics		
Market Value of Equity	Market value of total equity (CSHO*PRCC_F)	CRSP
Assets	Total assets (AT) at (t-1)	Compustat
Q	Total assets - total shareholder's equity + market value of total equity (CSHO*PRCC_F), scaled by total assets at (t)	Compustat
Leverage	Book value of debts (DLC + DLTT) over book value of total assets (DLC + DLTT + CEQ) at (t)	Compustat
Cash flow	Income before extraordinary items (t) + Depreciation (t) , scaled by total assets (t-1)	Compustat
Industry Herfindahl Index	The Herfindahl index for each industry is defined as the sum of squared market shares, where market share is based on firm market capitalization, and industry classification is based on three-digit SIC	Compustat
Idiosyncratic Volatility	The root mean square error from the Fama-French three factor market model estimated using a firm's daily stock return over the fiscal year, multiplied by the square root of the number of trading days	CRSP, Fama French Factors
ROA	Income before extraordinary items (t), scaled by total assets (t-1)	Compustat Segments
Institutional Shareholding	The percentage of shares owned by institutional investors	Thomson Reuters Institutional Holdings (13F)

CEO Characteristics		
CEO Age (Yrs)	CEO's age (in years)	ExecuComp
CEO Tenure (Yrs)	The time (in years) the CEO has been with his firm	ExecuComp
CEO Shareholding (%)	SHROWN_EXCL_OPTS + OPT_EXER_NUM, scaled by the firm's outstanding shares	ExecuComp
CEO Pay over Top 5 Executives (%)	The fraction of CEO's aggregate compensation (TDC1) over those of the top-five executive team in the firm, as defined by Bebchuk, Cremers, and Peyer (2011)	ExecuComp
CEO Flying License	Dummy variable: 1 if the CEO has small aircraft pilot license, 0 otherwise (Cain McKeon 2012)	Federal Aviation Admin
Board Characteristics		
Board Size	Board size	BoardEx
Independent Dir. (%)	Percentage of independent directors in the firm	BoardEx
Max Board Tenure (Yrs)	The maximum tenure of board of directors in the firm	BoardEx
Max Board Age (Yrs)	The maximum age of board of directors in the firm	BoardEx
Mean Board Tenure (Yrs)	The average tenure of board of directors in the firm	BoardEx
Mean Board Age (Yrs)	The average age of board of directors in the firm	BoardEx
M&A Deal Characteristics		
Acquirer's Marketcap	Log of acquirer's market value of equity at 41th trading days prior to M&A announcement	CRSP
Acquirer's Tobin's Q	Acquirer's Q (as defined above)	Compustat
Acquirer's Leverage	Acquirer's leverage (as defined above)	Compustat
Acquirer's Cash Flow	Acquirer's cash flow (as defined above)	Compustat
Transactions Value	Deal value (from SDC)	SDC
Relative Deal Size	Deal value (from SDC) over bidder market value of equity at the 41th trading day prior to announcement date	SDC
Public Target	Dummy variable: 1 if the target is a public firm, 0 otherwise	SDC
Private Target	Dummy variable: 1 if the target is a private firm, 0 otherwise	SDC
Subsidiary Target	Dummy variable: 1 if the target is a subsidiary, 0 otherwise	SDC
All Stock Deal	Dummy variable: 1 if the M&A is purely stock-financed deals, 0 otherwise	SDC
All Cash Deal	Dummy variable: 1 if the M&A is purely cash-financed deals, 0 otherwise	SDC
Focus M&A	Dummy variable: 1 if bidder and target shares the same SIC2, 0 otherwise	SDC
Stock Run-Up	Acquirer's buy-and-hold abnormal return (BHAR) during the period [-210,-11], and the market index is the CRSP value-weighted return	CRSP
Tender Offer	Dummy variable: 1 if the M&A involves tender offer, 0 otherwise	SDC
Cross Border	Dummy variable: 1 if the M&A involves cross border transaction, 0 otherwise	
Competed	Dummy variable: 1 if number of bidders is greater than 1	SDC
Merger of Equals	Dummy variable: 1 if the M&A is a merger of equals, 0 otherwise	SDC
High Tech	Dummy variable: 1 if acquirer and target are both from high tech industries as defined by Loughran and Ritter (2004), 0 otherwise	SDC
Serial	Dummy variable: 1 if the acquirer makes at least 3 acquisitions during the sample period	SDC
Governance	Dummy variable: 1 if acquiring firm's Entrenchment index (as defined by Bebchuk, Cohen, and Ferrell 2009) is greater or equal to 3	Risk Metrics/ IRRC

Appendix B: BoardEx Database

BoardEx database is provided by Management Diagnostics Ltd., a private research company that focuses on collecting and distributing social network information on corporate officers of the U.S. and European public and private companies. For U.S. companies, BoardEx collects biographical information on senior executives and directors from the public sources, such as SEC filings (8K filings, proxy statements, annual reports), company press releases, corporate website, U.S. stock exchanges, and press sources (for example, *Wall Street Journal* and the *Financial Times*). BoardEx started collecting data on U.S. companies in 2003, beginning with firms with the largest market capitalization. BoardEx extends the historical profile of each director and executive back to 2000. The coverage of U.S. firms increases further in 2005, with details of these new firms traced back to 2003. These profiles cover the individual awards, work experience, education, social activities (for example, university endowment fund, charities, or club memberships). Any BoardEx-covered director or executive has full historical profile, except for those who left the firm before 2000 and didn't reenter. To verify the completeness of the CEO identification on our data, we merge our BoardEx sample with the CEO data from ExecComp for firm-years shared by both datasets.

Table 1: Descriptive Statistics of Firms and Boardroom Connections

This table reports summary statistics of CEO-board connection and CEO, firm, and board characteristics. Panel A reports boardroom connections between a CEO and directors, derived from BoardEx. *Connectedness (%)* and *Connectedness – Overall (%)* are the fraction of independent directors and the fraction of all directors connected to the CEO, respectively. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)), and social activities (directors and the CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012)). A board is more (less) connected if *Connectedness (%)* is above (below) the median of the sample's connectedness. Panel B shows the CEO characteristics, including CEO age (in years), CEO tenure (in years), and CEO pay over top 5 executives (in percentage). Panel C reports board characteristics, including board size, fraction of independent directors (in percentage), maximum director tenure (in years), maximum director age (in years), average director tenure (in years), and average director age (in years). Panel D reports firm characteristics, including market value of equity, cash flow (scaled by lagged total assets), Tobin's Q, leverage (book value of debts over book value of total assets), and Industry HHI (measured as the sum of the squares of market share of each firm in the same three-digit SIC). Panel E reports the correlation matrix between *Connectedness (%)* and its components (fraction of independent directors connected to the CEO through current employment, prior employment, education, and education).

Variables	Full Sample			More-Connected Board			Less-Connected Board			Diff.	p-value
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD		
Panel A: CEO-Board Connection											
Connectedness (%)	0.192	0.111	0.250	0.362	0.286	0.242	0.007	0.000	0.025	0.355	0.000
Connectedness - Overall (%)	0.186	0.111	0.222	0.329	0.273	0.218	0.032	0.000	0.071	0.297	0.000
Connectedness - Current Employment (%)	0.061	0.000	0.165	0.110	0.000	0.215	0.007	0.000	0.036	0.103	0.000
Connectedness - Past Employment (%)	0.118	0.000	0.193	0.208	0.125	0.227	0.020	0.000	0.060	0.188	0.000
Connectedness - Education (%)	0.004	0.000	0.022	0.007	0.000	0.029	0.001	0.000	0.009	0.006	0.000
Connectedness - Other Activities (%)	0.075	0.000	0.124	0.133	0.111	0.146	0.012	0.000	0.038	0.121	0.000
Panel B: CEO Characteristics											
CEO Age (Years)	55.555	56.000	7.211	56.251	56.000	7.006	54.808	55.000	7.351	1.443	0.000
CEO Tenure (Years)	5.235	3.500	5.890	5.513	3.800	5.910	4.935	3.000	5.853	0.578	0.000
CEO Pay over Top 5 Executives (%)	0.376	0.378	0.125	0.383	0.385	0.122	0.368	0.369	0.129	0.015	0.005

Variables	Full Sample			More-Connected Board			Less-Connected Board			Diff.	p-value
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD		
Panel C: Board Characteristics											
Board Size	9.661	9.000	2.668	10.192	10.000	2.802	9.087	9.000	2.385	1.105	0.000
Independent Directors (%)	0.750	0.778	0.145	0.765	0.800	0.132	0.733	0.750	0.156	0.032	0.000
Mean Board Age (Years)	59.906	60.077	3.964	60.096	60.250	3.817	59.701	59.857	4.106	0.395	0.000
Max Board Age (Years)	71.491	71.000	5.706	71.465	71.000	5.510	71.519	71.000	5.910	-0.054	0.585
Mean Board Tenure (Years)	8.635	8.076	4.028	8.288	7.813	3.962	9.008	8.340	4.064	-0.720	0.000
Max Board Tenure (Years)	19.825	17.950	10.941	18.834	17.000	11.102	20.892	18.900	10.664	-2.058	0.000
Panel D: Firm Characteristics											
Market Value of Equity	8,710	1,921	26,335	11,028	2,450	30,498	6,197	1,463	20,632	4,832	0.000
Cash flow	0.093	0.091	0.131	0.087	0.083	0.138	0.099	0.100	0.123	-0.012	0.000
Q	1.867	1.456	1.310	1.766	1.383	1.209	1.978	1.554	1.404	-0.212	0.000
Leverage	0.346	0.338	0.861	0.391	0.385	0.296	0.297	0.290	1.202	0.094	0.000
Industry HHI	0.200	0.139	0.185	0.189	0.127	0.181	0.212	0.152	0.188	-0.023	0.000

Panel E: Correlation Matrix	Connectedness (%)	Connectedness - Current Emp. (%)	Connectedness - Past Emp. (%)	Connectedness - Education (%)	Connectedness - Other Activities (%)
Connectedness (%)	1				
Connectedness - Current Emp. (%)	0.683 (0.000)	1			
Connectedness - Past Emp. (%)	0.842 (0.000)	0.689 (0.000)	1		
Connectedness - Education (%)	0.102 (0.000)	0.012 (0.152)	0.006 (0.483)	1	
Connectedness - Other Activities (%)	0.559 (0.000)	0.126 (0.000)	0.147 (0.000)	0.070 (0.000)	1

Table 2: Descriptive Statistics of Mergers and Acquisitions

This table reports summary statistics of our sample of mergers and acquisitions from the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions database between 2000 and 2010. The sample consists of 2,897 completed U.S. merger and acquisitions with an explicit change of control when the acquirer owns less than 50% of the target prior to the transaction and purchases 50% or more of the target's shares in the transaction. The value of each deal must be at least \$1 million, or more than 1% of acquirer's market capitalization on the 41th trading day prior to the announcement date. Panel A presents the distribution of M&A announcements in our sample. Panel B shows deal characteristics, covering transactions value (in \$ million), relative deal size (transactions value, scaled by acquirer's market capitalization), payment method (all stock deal and all cash deal), public target, and focus deals (acquirer and target have the same two-digit SIC code). Panel C reports the CEO-directors connectedness (%) of acquiring firms, derived from BoardEx. *Connectedness (%)* is the fraction of independent directors connected to the CEO. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)), and social activities (directors and the CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012)). A board is more (less) connected if *Connectedness (%)* is above (below) the median of the sample's connectedness. Panel D shows acquiring CEO characteristics, including CEO age (in years), CEO tenure (in years), and CEO pay over top 5 executives (in percentage). Panel E reports acquiring board characteristics, including board size, the fraction of independent directors (in percentage), average director age (in years), maximum director age (in years), average board tenure (in years), and maximum board tenure (in years). Panel F reports acquiring firm characteristics, including market value of equity (in \$ millions), cash flow (scaled by lagged total assets), leverage (book value of debts over book value of total assets), Tobin's Q, and Industry HHI (measured as the sum of the squares of market share of each firm in the same three-digit SIC).

Panel A: Sample distribution by announcement year

Year	M&A	Target Types			Payment Method			Two-digit SIC		Connectedness (%)	
		Public	Private	Subsi.	All Share	Mixed	All Cash	Focus	Diversify	More	Less
2000	190	79	61	50	55	93	42	116	74	100	90
2001	238	87	75	76	54	126	58	150	88	130	108
2002	239	54	92	93	25	131	83	137	102	115	124
2003	264	49	111	104	21	140	103	168	96	143	121
2004	292	66	125	101	21	151	120	188	104	152	140
2005	309	75	138	96	15	163	131	189	120	178	131
2006	331	86	134	111	20	168	143	191	140	164	167
2007	337	86	157	94	8	174	155	203	134	175	162
2008	241	52	114	75	12	116	113	154	87	103	138
2009	174	38	74	62	6	82	86	109	65	87	87
2010	282	60	125	97	10	132	140	150	132	132	150
Total	2,897	732	1,206	959	247	1,476	1,174	1,755	1,142	1,479	1,418

Variables	Full Sample			More-Connected Board			Less-Connected Board			Diff.	p-value
	Mean	Median	SD	Mean	Median	SD	Mean	Median	Std. Dev.		
Panel B: Deal Characteristics											
Transactions Value	923	150	3,858	1,220	189	4,752	613	114	2,584	607	0.000
Relative Deal Size	0.148	0.056	0.286	0.156	0.056	0.311	0.140	0.057	0.259	0.016	0.152
All Stock Deal	0.085	0.000	0.279	0.108	0.000	0.310	0.062	0.000	0.241	0.046	0.000
All Cash Deal	0.405	0.000	0.491	0.384	0.000	0.487	0.427	0.000	0.495	-0.043	0.018
Public Target	0.253	0.000	0.435	0.296	0.000	0.457	0.207	0.000	0.406	0.089	0.000
Private Target	0.416	0.000	0.493	0.369	0.000	0.483	0.465	0.000	0.499	-0.096	0.000
Focus	0.606	1.000	0.489	0.602	1.000	0.490	0.609	1.000	0.488	-0.007	0.705
Panel C: CEO-Board Connection											
Connectedness (%)	0.189	0.125	0.232	0.342	0.286	0.227	0.029	0.000	0.079	0.313	0.000
Connectedness (%) - Overall	0.183	0.125	0.203	0.309	0.273	0.199	0.051	0.000	0.093	0.258	0.000
Connectedness - Current Employment (%)	0.046	0.000	0.129	0.066	0.000	0.154	0.023	0.000	0.089	0.043	0.000
Connectedness - Past Employment (%)	0.116	0.000	0.173	0.164	0.111	0.191	0.062	0.000	0.130	0.102	0.000
Connectedness - Education (%)	0.004	0.000	0.024	0.006	0.000	0.029	0.002	0.000	0.016	0.004	0.004
Connectedness - Other Activities (%)	0.067	0.000	0.107	0.091	0.000	0.117	0.039	0.000	0.086	0.052	0.000
Panel D: CEO Characteristics											
CEO Age (Years)	54.445	54.000	7.196	55.184	55.000	7.003	53.673	53.000	7.315	1.511	0.000
CEO Tenure (Years)	4.863	3.400	5.009	5.343	3.800	5.196	4.362	2.800	4.756	0.981	0.000
CEO Pay over Top 5 Executives (%)	0.386	0.383	0.131	0.396	0.392	0.127	0.375	0.372	0.135	0.021	0.000
Panel E: Board Characteristics											
Board Size	9.668	9.000	3.058	10.247	9.000	3.445	9.061	9.000	2.452	1.186	0.000
Independent Directors (%)	0.736	0.769	0.148	0.745	0.778	0.138	0.727	0.750	0.157	0.018	0.001
Mean Board Age (Years)	59.149	59.400	4.199	59.466	59.667	4.084	58.818	59.154	4.292	0.648	0.000
Max Board Age (Years)	70.964	70.000	6.070	71.081	70.000	5.809	70.842	70.000	6.332	0.239	0.311
Mean Board Tenure (Years)	7.997	7.544	3.835	7.833	7.491	3.953	8.169	7.642	3.702	-0.336	0.024
Max Board Tenure (Years)	18.032	16.200	10.414	17.129	15.900	10.757	18.977	16.800	9.959	-1.848	0.000
Panel F: Firm Characteristics											
Market Value of Equity	8,760	2,094	23,667	11,112	2,747	26,796	6,307	1,672	19,598	4,804	0.000
Cash flow	0.107	0.104	0.116	0.099	0.092	0.108	0.114	0.114	0.123	-0.015	0.002
Q	1.949	1.575	1.499	1.838	1.521	1.132	2.065	1.640	1.797	-0.227	0.000
Leverage	0.308	0.331	1.459	0.379	0.376	0.261	0.233	0.301	2.065	0.146	0.011
Industry HHI	0.167	0.110	0.166	0.162	0.098	0.174	0.172	0.125	0.157	-0.010	0.111

Table 3: Boardroom Connections and Likelihood of M&A

This table reports the relationship between boardroom connection and the likelihood of mergers and acquisitions. The dependent variable is an indicator for whether a firm in BoardEx dataset completes at least one merger or acquisition during the fiscal year. Column (1) reports the results for logit regression. Column (2) controls for year fixed effects. Column (3) controls for industry fixed effects. Column (4) includes the interaction term *Connectedness (%)* \times *Merger Wave*, measured as the number of acquisitions in the firm's industry. Column (5) shows the first-stage results for first-difference panel with instrumental variable. The instrument, *Deceased Connected Independent Director*, is the number of independent directors with ties to the CEO who have died within one a year, up to the current fiscal year. Column (6) reports the results for the second-stage regression. Our M&A sample is extracted from the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions database between 2000 and 2010, and includes completed U.S. merger and acquisitions with an explicit change of control when the acquirer owns less than 50% of the target prior to the transaction and purchases 50% or more of the target's shares in the transaction. The value of each deal must be at least \$1 million, or more than 1% of acquirer's market capitalization on the 41th trading day prior to the announcement date. *Connectedness (%)* is the fraction of independent directors connected to the CEO. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)), and social activities (directors and the CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012)). Industry classification is based on three-digit SIC codes. All explanatory variables are measured at the beginning of the fiscal year. Standard errors in the parentheses are adjusted for heteroskedasticity and clustered by firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Specification:	Dependent Variable: Indicator for Takeover					
	Logit				FD IV	
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Connectedness (%)	-0.314**	-0.384**	-0.372**	-0.563***		-1.488**
	(0.147)	(0.150)	(0.163)	(0.175)		(0.734)
Connectedness (%) \times Merger Wave				0.011**		
				(0.005)		
Log(Market Value of Equity)	0.131***	0.134***	0.139***	0.135***	0.0023	0.036**
	(0.027)	(0.028)	(0.031)	(0.028)	(0.0019)	(0.016)
Q	-0.149***	-0.158***	-0.181***	-0.156***	-0.0015	-0.017*
	(0.032)	(0.033)	(0.038)	(0.033)	(0.0010)	(0.010)
Leverage	-0.380***	-0.415***	-0.606***	-0.432***	0.0003	0.014***
	(0.127)	(0.140)	(0.161)	(0.144)	(0.0005)	(0.002)
Cash flow	0.328	0.395	0.708*	0.390	-0.0061	-0.013
	(0.381)	(0.400)	(0.426)	(0.399)	(0.0098)	(0.045)
Past Return	0.251***	0.219***	0.211***	0.216***	0.0018**	0.002
	(0.043)	(0.044)	(0.053)	(0.044)	(0.0009)	(0.010)
Merger Wave	0.010***	0.011***	0.003	0.009***	(0.0000)	0.006***
	(0.001)	(0.001)	(0.003)	(0.002)	(0.0001)	(0.001)
Board Size	-0.017	-0.023	-0.021	-0.026	-0.0043***	-0.007
	(0.017)	(0.017)	(0.018)	(0.017)	(0.0009)	(0.007)
Independent Directors (%)	-0.356	0.258	0.041	0.280	-0.0081	-0.071
	(0.240)	(0.289)	(0.298)	(0.290)	(0.0175)	(0.106)
Max Board Age (Years)	-0.005	-0.001	-0.007	-0.002	0.0006	0.006**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.0004)	(0.003)
Max Board Tenure (Years)	-0.011***	-0.011***	-0.009**	-0.011***	-0.0001	-0.002
	(0.004)	(0.004)	(0.004)	(0.004)	(0.0003)	(0.002)
CEO Age (Years)	-0.013**	-0.013**	-0.007	-0.013**	-0.0003	-0.001
	(0.006)	(0.006)	(0.006)	(0.006)	(0.0004)	(0.004)
CEO Tenure (Years)	0.002	0.003	-0.004	0.002	0.0005	0.002
	(0.006)	(0.006)	(0.006)	(0.006)	(0.0005)	(0.005)
Deceased Connected Independent Director					-0.0804***	
					0.0135	
Year Fixed Effects	No	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	No	No	Yes	No	No	No
Observations	8,860	8,860	8,452	8,860	7,581	7,581

Table 4: Boardroom Connections and Focus Mergers and Acquisitions

This table reports the relationship between boardroom connections and the likelihood of focus acquisitions that involve targets in industries with the same two-digit SIC code. The dependent variable is an indicator for whether a firm in BoardEx dataset completes at least one focus merger or acquisition during the fiscal year. Column (1) reports the results for logit regression. Column (2) includes interaction term *Connectedness (%) x Merger Wave*, which is the number of acquisitions in the firm's industry. Column (3) reports the second-stage results for the first-difference panel with instrumental variable. The instrument, *Deceased Connected Independent Director*, is the number of independent directors with ties to the CEO who have died within one a year, up to the current fiscal year. Our sample is extracted from the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions database between 2000 and 2010, and includes completed U.S. merger and acquisitions with an explicit change of control when the acquirer owns less than 50% of the target prior to the transaction and purchases 50% or more of the target's shares in the transaction. The value of each deal must be at least \$1 million, or more than 1% of acquirer's market capitalization on the 41th trading day prior to the announcement date. *Connectedness (%)* is the fraction of independent directors connected to the CEO. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)), and social activities (directors and the CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012)). Industry classification is based on three-digit SIC codes. All explanatory variables are measured at the beginning of the fiscal year. Standard errors denoted in the parentheses are adjusted for heteroskedasticity and clustered by firm. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Specification: Model:	Dependent Variable: Indicator for Focus Takeover		
	Logit		FD IV
	(1)	(2)	(3)
Connectedness (%)	-0.504** (0.198)	-0.742*** (0.242)	-1.343* (0.718)
Connectedness (%) x Merger Wave		0.011* (0.006)	
Log(Market Value of Equity)	0.115*** (0.038)	0.112*** (0.038)	0.002 (0.014)
Q	-0.168*** (0.043)	-0.167*** (0.043)	-0.009 (0.008)
Leverage	-0.914*** (0.217)	-0.924*** (0.218)	0.013*** (0.002)
Cash flow	0.205 (0.395)	0.198 (0.393)	-0.042 (0.043)
Past Return	0.170*** (0.056)	0.169*** (0.056)	0.013 (0.008)
Merger Wave	0.003 (0.003)	0.001 (0.004)	0.005*** (0.001)
Board Size	-0.031 (0.022)	-0.030 (0.022)	-0.000 (0.006)
Independent Directors (%)	-0.431 (0.341)	-0.412 (0.343)	-0.062 (0.085)
Max Board Age (Years)	-0.007 (0.008)	-0.007 (0.008)	0.002 (0.002)
Max Board Tenure (Years)	-0.011** (0.005)	-0.011** (0.005)	-0.003* (0.002)
CEO Age (Years)	-0.002 (0.007)	-0.002 (0.007)	-0.000 (0.004)
CEO Tenure (Years)	-0.005 (0.007)	-0.006 (0.007)	0.004 (0.004)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	No
Observations	8,002	8,002	7,581

Table 5: Boardroom Connections and the Choice of Payment Method in Mergers and Acquisitions

This table reports the relationship between boardroom connections and the percentage of stock payment, from a double-sided tobit regression (censored at 0 and 1). The dependent variable is the percentage of equity financing for each merger or acquisition. Column (1) reports the tobit results. Column (2) includes the interaction term *Connectedness (%) x Merger Wave*, measured as the number of acquisitions in the firm's industry. Column (3) includes the interaction term *Connectedness (%) x HHI*, measured as the sum of the squares of market share of each firm in the same industry. Column (4) includes the interaction term *Connectedness (%) x Focus* (involving targets in industries with the same two-digit SIC code). Our sample is extracted from the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions database between 2000 and 2010, and includes completed U.S. merger and acquisitions with an explicit change of control when the acquirer owns less than 50% of the target prior to the transaction and purchases 50% or more of the target's shares in the transaction. The value of each deal must be at least \$1 million, or more than 1% of acquirer's market capitalization on the 41th trading day prior to the announcement date. *Connectedness (%)* is the fraction of independent directors connected to the CEO. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)), and social activities (directors and the CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012)). To account for sample selection, we include Inverse Mills Ratio, estimated using probit model (2) in Table 3. Industry classification is based on three-digit SIC codes. All explanatory variables are measured at the beginning of the fiscal year. Standard errors denoted in the parentheses are adjusted for heteroskedasticity and clustered by firm. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Specification:	Dependent Variable: Percentage of Stock Payment			
Model:	(1)	(2)	(3)	(4)
Connectedness (%)	1.570** (0.684)	1.109 (0.719)	1.870*** (0.688)	0.707 (0.720)
Connectedness (%) x Merger Wave		0.011** (0.005)		
Connectedness (%) x HHI			-2.977*** (1.112)	
Connectedness (%) x Focus				1.137*** (0.390)
HHI			0.380 (0.369)	
Focus				-0.048 (0.117)
Log(Market Value of Equity)	-0.204 (0.191)	-0.150 (0.190)	-0.169 (0.190)	-0.190 (0.190)
Q	0.377 (0.310)	0.299 (0.307)	0.327 (0.307)	0.367 (0.309)
Leverage	0.871 (0.678)	0.654 (0.682)	0.713 (0.678)	0.831 (0.674)
Cash flow	-2.375** (0.965)	-2.113** (0.955)	-2.237** (0.959)	-2.324** (0.960)
Past Return	-0.335 (0.402)	-0.233 (0.399)	-0.269 (0.399)	-0.330 (0.402)
Merger Wave	-0.016 (0.020)	-0.013 (0.020)	-0.013 (0.020)	-0.015 (0.020)
Board Size	0.088** (0.037)	0.077** (0.037)	0.082** (0.036)	0.086** (0.036)
Independent Directors (%)	-0.915* (0.470)	-0.816* (0.469)	-0.851* (0.467)	-0.817* (0.463)

Specification: (Con't)	Dependent Variable: Percentage of Stock Payment			
Model:	(1)	(2)	(3)	(4)
Max Board Age (Years)	0.006 (0.008)	0.005 (0.008)	0.005 (0.008)	0.005 (0.008)
Max Board Tenure (Years)	0.013 (0.023)	0.007 (0.023)	0.010 (0.023)	0.013 (0.023)
CEO Age (Years)	0.016 (0.022)	0.012 (0.021)	0.014 (0.021)	0.017 (0.021)
CEO Tenure (Years)	0.017** (0.008)	0.017** (0.008)	0.018** (0.008)	0.017** (0.008)
Inverse Mills Ratio	-4.324 (3.731)	-3.295 (3.711)	-3.707 (3.707)	-4.188 (3.721)
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	1,908	1,908	1,908	1,908
Pseudo R ²	0.0928	0.0946	0.0954	0.0981

Table 6: Boardroom Connections and Firm Value and Performance following Mergers and Acquisitions

This table reports the impact of boardroom connection on firm value and performance following mergers and acquisitions. Our sample is extracted from the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions database between 2000 and 2010, and includes completed U.S. merger and acquisitions with an explicit change of control when the acquirer owns less than 50% of the target prior to the transaction and purchases 50% or more of the target's shares in the transaction. The value of each deal must be at least \$1 million, or more than 1% of acquirer's market capitalization on the 41th trading day prior to the announcement date. *Connectedness (%)* is the fraction of independent directors connected to the CEO. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)), and social activities (directors and the CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012)). A board is more (less) connected if *Connectedness (%)* is above (below) the median of the sample's connectedness. Focus M&A deals are the ones that involve targets in industries with the same two-digit SIC code. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A reports the acquirer's cumulative abnormal returns (CAR) in the (-2, +2) windows (5 days) around M&A announcement. Average abnormal returns are estimated based on the market model around the M&A announcement day (Day 0), using daily data over a 200-day (-240,-41) period. Panel B reports the results for OLS regression. Column (1) to (3) show the acquirer's CAR across different event windows. Column (4) reports the change in operating performance (ROA) around M&A announcement. Acquirer's characteristics include market capitalization, Tobin's Q, leverage (book value of debts over market value of total assets), and cash flow (scaled by lagged total assets). Deal characteristics include relative deal size (transaction value over acquirer's market capitalization), indicator for focus acquisition (acquirer and target have the same two-digit SIC code), public target, all stock payment, stock run-up (buy-and-hold abnormal return during the period [-210,-11]), indicator variables for tender offer, cross-border, competed (more than one bidder), merger of equals, high tech combinations (Loughran and Ritter 2004), serial acquirer (more than three acquisitions during the sample period), and indicator for governance (taking value of 1 if Entrenchment Index (Bebchuk et al. 2009) is greater than the median). To account for sample selection, we include Inverse Mills Ratio, estimated using probit model (2) in Table 3. All explanatory variables are measured at the beginning of the fiscal year. Standard errors in the parentheses are adjusted for heteroskedasticity and clustered by firm.

Panel A: Acquirer's Cumulative Abnormal Returns around M&A Announcements

Sample	Full		Focus		Diversify	
	Mean	Median	Mean	Median	Mean	Median
Full	0.0026 **	0.0016 **	0.0035 **	0.0021 **	0.0012	0.0008
N	2,897		1,755		1,142	
More Connected Board	-0.0002	-0.0012	0.0002	-0.0020	-0.0007	0.0000
N	1,479		891		588	
Less Connected Board	0.0055 ***	0.0040 ***	0.0069 ***	0.0054 ***	0.0032	0.0010 **
N	1,418		864		554	
Difference	-0.0056 **	-0.0051 ***	-0.0067 **	-0.0074 ***	-0.0039	-0.0009

Panel B: Acquirer's Cumulative Abnormal Returns and Change in Operating Performance

Dependent Variable:	CAR [-1,+1]	CAR [-2,+2]	CAR [-3,+3]	Δ ROA[-1,+1]
Model:	(1)	(2)	(3)	(4)
Connectedness (%)	-0.024*** (0.008)	-0.028*** (0.010)	-0.034*** (0.011)	-0.031** (0.016)
Connectedness (%) x Focus	0.033*** (0.012)	0.040*** (0.014)	0.048*** (0.016)	0.032 (0.022)
Focus	-0.003 (0.004)	-0.003 (0.004)	-0.004 (0.005)	0.001 (0.007)
Log(Market Value of Equity)	-0.002 (0.001)	-0.002** (0.001)	-0.003** (0.001)	0.004** (0.002)
Q	-0.004** (0.002)	-0.004* (0.002)	-0.004** (0.002)	0.003 (0.003)
Leverage	-0.000 (0.000)	0.000 (0.000)	0.001* (0.000)	-0.004*** (0.001)
Cash flow	0.005 (0.011)	0.009 (0.015)	-0.000 (0.027)	-0.596*** (0.075)
Relative Size	-0.001 (0.009)	-0.004 (0.010)	-0.001 (0.012)	-0.027** (0.014)
Public Target	-0.020*** (0.004)	-0.021*** (0.004)	-0.024*** (0.005)	-0.015* (0.009)
All Stock Deal	-0.017** (0.008)	-0.019** (0.008)	-0.021** (0.009)	-0.038* (0.020)
Stock Run-Up	-0.004 (0.005)	-0.012** (0.006)	-0.014** (0.007)	0.028*** (0.010)
Tender Offer	0.011 (0.008)	0.012 (0.007)	0.014* (0.008)	0.017 (0.014)
Cross Border	0.008 (0.005)	-0.017 (0.014)	-0.006 (0.010)	0.078* (0.041)
Competed	0.006 (0.009)	0.005 (0.010)	0.007 (0.011)	-0.012 (0.024)
Merger of Equals	-0.022 (0.021)	-0.013 (0.025)	-0.023 (0.036)	0.051* (0.028)
High Tech	-0.006* (0.004)	-0.006 (0.004)	-0.009* (0.005)	-0.013* (0.007)
Serial	-0.000 (0.004)	-0.004 (0.004)	-0.003 (0.005)	0.003 (0.005)
Governance	0.003 (0.003)	0.001 (0.003)	-0.001 (0.004)	-0.005 (0.005)
Inverse Mills Ratio	0.009 (0.008)	0.010 (0.009)	0.002 (0.010)	0.027** (0.013)
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	1,908	1,908	1,908	1,893
R ²	0.070	0.070	0.064	0.333

Table 7: Boardroom Connections and Decisions to Acquire

This table reports the results for the multinomial logit model. The dependent variable for column (1) equals one (two) if a firm takes at least one acquisition and the cumulative abnormal return (CAR) around the acquisition announcement is negative (positive), and equals zero if the firm is not an acquirer. Column (2) includes the interaction term of connectedness and merger wave, measured as the number of acquisitions in the firm's industry. CARs are computed using a five-day window, (-2,+2), where day zero is the event date. For firms with more than one acquisition in the same year, weighted average CAR is computed based on deal value. D_Acq=1 is for value destroying acquisitions, and D_Acq=2 is for value-creating acquisitions. Our sample is extracted from the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions database between 2000 and 2010, and includes completed U.S. merger and acquisitions with an explicit change of control when the acquirer owns less than 50% of the target prior to the transaction and purchases 50% or more of the target's shares in the transaction. The value of each deal must be at least \$1 million, or more than 1% of acquirer's market capitalization on the 41th trading day prior to the announcement date. *Connectedness (%)* is the fraction of independent directors connected to the CEO. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)), and social activities (directors and the CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012)). All explanatory variables are measured at the beginning of the fiscal year. Standard errors denoted in the parentheses are adjusted for heteroskedasticity and clustered by firm. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Model:	(1)		(2)	
Dependent Variable:	Value-Destroying	Value-Creating	Value-Destroying	Value-Creating
Connectedness (%)	-0.142 (0.180)	-0.620*** (0.195)	-0.468** (0.210)	-0.592*** (0.221)
Connectedness (%) x Merger Wave			0.016*** (0.006)	-0.001 (0.007)
Log(Market Value of Equity)	0.173*** (0.034)	0.098*** (0.036)	0.175*** (0.034)	0.098*** (0.036)
Q	-0.124*** (0.037)	-0.203*** (0.042)	-0.122*** (0.037)	-0.204*** (0.042)
Leverage	-0.429*** (0.139)	-0.401*** (0.138)	-0.444*** (0.142)	-0.416*** (0.141)
Cash flow	-0.020 (0.275)	0.991* (0.527)	-0.023 (0.274)	0.985* (0.527)
Past Return	0.217*** (0.050)	0.213*** (0.048)	0.212*** (0.050)	0.213*** (0.049)
Merger Wave	0.014*** (0.002)	0.007*** (0.002)	0.011*** (0.002)	0.007*** (0.002)
Board Size	0.012 (0.020)	-0.062*** (0.022)	0.008 (0.020)	-0.061*** (0.022)
Independent Directors (%)	0.184 (0.361)	0.354 (0.365)	0.223 (0.362)	0.355 (0.366)
Max Board Age (Years)	-0.008 (0.009)	0.004 (0.009)	-0.008 (0.009)	0.005 (0.009)
Max Board Tenure (Years)	-0.008* (0.005)	-0.013** (0.005)	-0.008* (0.005)	-0.013*** (0.005)
CEO Age (Years)	-0.017** (0.007)	-0.011 (0.008)	-0.016** (0.007)	-0.011 (0.008)
CEO Tenure (Years)	0.001 (0.007)	0.004 (0.007)	-0.000 (0.007)	0.004 (0.007)
Year Fixed Effects	Yes		Yes	
Observations	8,860		8,860	
Pseudo R ²	0.0341		0.0351	

Table 8: Robustness Tests**Panel A: Boardroom Connections and the Likelihood of Mergers and Acquisition**

This panel presents the determinants of an M&A using logit models. The dependent variable indicates whether there is at least one completed M&A during the fiscal year. Column (1) controls for *Financial Expertise (%)*, defined as the percentage of directors with past or current experience as a CFO, Treasurer, Accountant, or Vice President for Finance. Column (2) controls for *Financial Education (%)*, defined as the percentage of directors with an MBA, CPA, CFA, or a degree in economics, management, accounting, or business. Column (3) controls for managerial entrenchment, defined as firms with entrenchment index (Bebchuk et al 2004) greater than the median. Column (4) controls for institutional shareholdings. Column (5) controls for CEO shareholding. Column (6) controls for the fraction of CEO pay over the top 5 executives (Bebchuk et al 2011). Column (7) controls for the CEO with flying license (Cain Mckeen 2012). Our sample is extracted from the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions database between 2000 and 2010, and includes completed U.S. merger and acquisitions with an explicit change of control when the acquirer owns less than 50% of the target prior to the transaction and purchases 50% or more of the target's shares in the transaction. The value of each deal must be at least \$1 million, or more than 1% of acquirer's market capitalization on the 41th trading day prior to the announcement date. *Connectedness (%)* is the fraction of independent directors connected to the CEO. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)), and social activities (directors and the CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012)). All explanatory variables are measured at the beginning of the fiscal year. Standard errors denoted in the parentheses are adjusted for heteroskedasticity and clustered by firm. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

Model:	Dependent Variable: Indicator for Takeover						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Connectedness (%)	-0.372** (0.150)	-0.371** (0.150)	-0.415*** (0.151)	-0.392** (0.158)	-0.365** (0.151)	-0.376** (0.149)	-0.382** (0.150)
Financial Expertise (%)	0.302 (0.336)						
Financial Education (%)		0.423** (0.209)					
Entrenchment			0.190** (0.074)				
Institutional Holdings				0.121** (0.047)			
CEO shareholding					-0.434 (0.758)		
CEO Pay Slice						0.825*** (0.257)	
CEO Flying License							0.112 (0.171)

Model: (Con't)	Dependent Variable: Indicator for Takeover						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log(Market Value of Equity)	0.135*** (0.028)	0.133*** (0.028)	0.149*** (0.028)	0.116*** (0.031)	0.130*** (0.028)	0.132*** (0.028)	0.134*** (0.028)
Q	-0.157*** (0.033)	-0.158*** (0.033)	-0.155*** (0.033)	-0.140*** (0.037)	-0.160*** (0.033)	-0.151*** (0.033)	-0.158*** (0.033)
Leverage	-0.417*** (0.141)	-0.417*** (0.140)	-0.425*** (0.143)	-0.406*** (0.148)	-0.411*** (0.141)	-0.419*** (0.139)	-0.416*** (0.140)
Cash flow	0.403 (0.401)	0.386 (0.402)	0.371 (0.390)	0.783 (0.490)	0.526 (0.412)	0.335 (0.393)	0.400 (0.399)
Past Return	0.218*** (0.044)	0.221*** (0.045)	0.208*** (0.044)	0.219*** (0.050)	0.236*** (0.037)	0.213*** (0.044)	0.219*** (0.044)
Merger Wave	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.011*** (0.001)	0.011*** (0.001)
Board Size	-0.023 (0.017)	-0.023 (0.017)	-0.028 (0.017)	-0.007 (0.018)	-0.021 (0.017)	-0.019 (0.017)	-0.023 (0.017)
Independent Directors (%)	0.253 (0.289)	0.202 (0.291)	0.206 (0.289)	0.111 (0.318)	0.203 (0.294)	0.075 (0.293)	0.258 (0.289)
Max Board Age (Years)	-0.001 (0.007)	0.000 (0.007)	-0.001 (0.007)	-0.007 (0.008)	-0.001 (0.007)	-0.002 (0.007)	-0.001 (0.007)
Max Board Tenure (Years)	-0.010*** (0.004)	-0.010*** (0.004)	-0.011*** (0.004)	-0.010** (0.004)	-0.011*** (0.004)	-0.012*** (0.004)	-0.011*** (0.004)
CEO Age (Years)	-0.013** (0.006)	-0.012** (0.006)	-0.014** (0.006)	-0.012* (0.007)	-0.014** (0.006)	-0.014** (0.006)	-0.013** (0.006)
CEO Tenure (Years)	0.003 (0.006)	0.003 (0.006)	0.004 (0.006)	0.003 (0.007)	0.004 (0.006)	0.003 (0.006)	0.003 (0.006)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,860	8,860	8,860	7,430	8,514	8,807	8,860
Pseudo R ²	0.0349	0.0355	0.0359	0.0358	0.0346	0.0365	0.0349

Panel B: Alternative Measures of Boardroom Connection

This panel presents the logit regressions for alternative outcome variables, alternative measures of social connections, and subsample of S&P500 firms. The dependent variable for column (1) and (2) indicates whether there is at least one completed M&A whose value is greater than \$5 million and \$10million, respectively, during the fiscal year. Column (3) shows the results using the fraction of directors connected to the CEO through current employment. Column (4) presents the results using the fraction of directors connected to the CEO through social activities. Column (5) shows the results using the fraction of *all* directors connected to the CEO. Column (6) shows the results using the sample of S&P500 firms. Column (7) restricts the sample to firms with the same CEO two fiscal years before, and presents the results using *Connectedness (%)_{t-2}*. *Connectedness (%)* is the fraction of independent directors connected to the CEO. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008), and social activities (directors and the CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012). All explanatory variables are measured at the beginning of the fiscal year. Standard errors in the parentheses are adjusted for heteroskedasticity and clustered by firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Model:	Alternative Outcome		Alternative Measures of Connectedness			Alternative Sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	5mio	10mio	Current Employment	Social Activities	Connected Board	S&P500	T-2
Connectedness (%)	-0.376** (0.150)	-0.359** (0.151)	-0.614*** (0.223)				
Current Employment (%)				-0.821*** (0.280)			
Social Activity (%)					-0.437** (0.171)		
Connected Board (%)						-0.596** (0.248)	
Connectedness (%) _{t-2}							-0.440** (0.171)
Log(Market Value of Equity)	0.138*** (0.028)	0.151*** (0.028)	0.127*** (0.028)	0.138*** (0.028)	0.134*** (0.028)	0.085 (0.054)	0.134*** (0.032)
Q	-0.160*** (0.033)	-0.165*** (0.033)	-0.156*** (0.033)	-0.155*** (0.032)	-0.158*** (0.033)	-0.099** (0.050)	-0.215*** (0.047)
Leverage	-0.413*** (0.140)	-0.398*** (0.138)	-0.400*** (0.137)	-0.422*** (0.141)	-0.414*** (0.140)	-0.328* (0.182)	-0.291** (0.135)
Cash flow	0.464 (0.417)	0.469 (0.427)	0.398 (0.395)	0.409 (0.399)	0.408 (0.399)	-0.431 (0.587)	0.856* (0.485)
Past Return	0.221*** (0.044)	0.231*** (0.044)	0.220*** (0.044)	0.216*** (0.044)	0.219*** (0.044)	0.155* (0.080)	0.252*** (0.060)
Merger Wave	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)	0.010*** (0.001)	0.011*** (0.001)	0.013*** (0.002)	0.012*** (0.002)
Board Size	-0.023 (0.017)	-0.023 (0.017)	-0.026 (0.017)	-0.023 (0.017)	-0.022 (0.017)	-0.010 (0.026)	-0.023 (0.020)
Independent Directors (%)	0.275 (0.289)	0.257 (0.290)	0.208 (0.288)	0.305 (0.290)	0.209 (0.289)	0.760 (0.475)	0.389 (0.362)
Max Board Age (Years)	-0.001 (0.007)	-0.000 (0.007)	-0.001 (0.007)	-0.002 (0.007)	-0.001 (0.007)	0.016 (0.013)	-0.001 (0.008)
Max Board Tenure (Years)	-0.011*** (0.004)	-0.010** (0.004)	-0.010** (0.004)	-0.009** (0.004)	-0.011*** (0.004)	-0.014* (0.007)	-0.010** (0.005)
CEO Age (Years)	-0.014** (0.006)	-0.013** (0.006)	-0.014** (0.006)	-0.013** (0.006)	-0.013** (0.006)	-0.018** (0.009)	-0.013* (0.007)
CEO Tenure (Years)	0.003 (0.006)	0.003 (0.006)	0.002 (0.006)	0.003 (0.006)	0.003 (0.006)	0.017* (0.009)	0.003 (0.007)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,860	8,860	8,860	8,860	8,860	3,243	6,687
Pseudo R ²	0.0351	0.0355	0.0351	0.0353	0.0348	0.0375	0.0353

Panel C: Alternative Proxies for Risk Taking

This panel reports the firm panel regressions between 2000 and 2010. Realized volatility is the standard deviation of a firm's daily stock return over the fiscal year, multiplied by the square root of the number of trading days. Idiosyncratic volatility is the root mean square error from the Fama-French three factor market model estimated using a firm's daily stock return over the fiscal year, multiplied by the square root of the number of trading days. Column (1) and (4) present the results for fixed effects panel regression. Column (2) and (5) present the results for random effects panel regression. Column (3) and (6) present the second-stage results for a first-difference panel regression with an instrument variable. The instrument, *Deceased Connected Independent Director*, is the number of independent directors with ties to the CEO who have died within one year, up to the current fiscal year (See Table 3, column (6)). *Connectedness (%)* is the fraction of independent directors connected to the CEO. CEO-director social ties are measured by the percentage of directors connected to the CEO through current employment (directors and the CEO currently serve in at least one common outside firm), prior employment (director and the CEO had served in at least one common outside company, excluding the current one), education (directors and the CEO attended the same university program within a year (Cohen, Frazzini, and Malloy 2008)), and social activities (directors and the CEO share active membership in at least one non-profit organization (Fracassi and Tate 2012)). All explanatory variables are measured at the beginning of the fiscal year. Standard errors in the parentheses are adjusted for heteroskedasticity and clustered by firm. ***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Outcome:	Realized Volatility			Implied Volatility		
	(1)	(2)	(3)	(4)	(5)	(6)
Model:	FE	RE	FD IV	FE	RE	FD IV
Connectedness (%)	-0.095*** (0.028)	-0.080*** (0.014)	-0.520* (0.266)	-0.060*** (0.021)	-0.059*** (0.012)	-0.375* (0.204)
Log(Market Value of Equity)	-0.095*** (0.013)	-0.053*** (0.004)	-0.204*** (0.012)	-0.100*** (0.011)	-0.057*** (0.004)	-0.149*** (0.011)
Q	0.038*** (0.005)	0.024*** (0.004)	0.018*** (0.006)	0.031*** (0.004)	0.023*** (0.002)	0.016*** (0.005)
Leverage	0.006*** (0.002)	0.005** (0.002)	-0.001 (0.003)	0.004*** (0.001)	0.004* (0.002)	-0.001 (0.003)
Cash flow	-0.150*** (0.033)	-0.232*** (0.064)	-0.019 (0.028)	-0.114*** (0.023)	-0.179*** (0.048)	-0.008 (0.022)
Past Return	-0.010 (0.006)	-0.011** (0.006)	-0.006 (0.004)	-0.003 (0.004)	-0.008** (0.004)	-0.002 (0.003)
Merger Wave	-0.001*** (0.000)	-0.000** (0.000)	-0.003*** (0.000)	-0.001*** (0.000)	-0.000*** (0.000)	-0.002*** (0.000)
Board Size	0.002 (0.003)	-0.001 (0.002)	-0.003 (0.002)	0.001 (0.002)	0.000 (0.001)	-0.002 (0.002)
Independent Directors (%)	0.025 (0.029)	-0.042** (0.021)	-0.266*** (0.034)	-0.059** (0.024)	-0.100*** (0.017)	-0.236*** (0.031)
Max Board Age (Years)	-0.001 (0.001)	-0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.000)	-0.001 (0.001)
Max Board Tenure (Years)	0.001 (0.001)	-0.001*** (0.000)	-0.001* (0.001)	0.000 (0.001)	-0.001*** (0.000)	-0.001* (0.001)
CEO Age (Years)	-0.000 (0.001)	-0.001 (0.000)	-0.001 (0.001)	-0.000 (0.001)	-0.001* (0.000)	-0.001 (0.001)
CEO Tenure (Years)	0.001 (0.001)	0.001** (0.001)	-0.000 (0.002)	0.001 (0.001)	0.001* (0.000)	0.000 (0.001)
Observations	8,818	8,818	7,581	8,818	8,818	7,581
R ²	0.443	0.1634	0.254	0.4202	0.2261	0.199