THREE ESSAYS ON CORPORATE FINANCE

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Three Essays on Corporate Finance

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SUMMARY

This dissertation has three essays on corporate finance. The first essay 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.

The second essay examines the impact of Dodd-Frank Act on credit rating agencies. Previously, RFD prohibits U.S. listed firms from selective disclosure to investment professionals, but CRAs are exempted. The Act repeals the exemption granted to credit rating agencies (CRAs). As a result, CRAs are no longer conduits of selective disclosure, which may reduce the value of credit ratings to the stock analysts and the equity investors. We examine a sample of credit rating changes and their effect on equity investors and stock analysts. We find that Dodd-Frank Act weakens the informational effect of credit ratings changes as the Act rescinds the informational edge attributable to the exemption.

The third essay is co-authored with Gary Caton, Jeremy Goh, and Scott Linn. In this essay, we study the relation between company corporate governance and company valuation and operating performance around open market share

repurchase program announcements, using the Bebchuk, Cohen, and Ferrell (2009) entrenchment index as a measure of corporate governance strength. We find that announcement period stock returns, long-term post-announcement stock returns, and post-announcement adjusted operating performance are all significantly higher for firms with stronger relative to weaker governance. The results are robust to accounting for various controls. We conclude that the strength of the corporate governance system is an ex ante indicator of whether the managers announcing a share repurchase program do so to create value for shareholders.

CHAPTER ONE

Social Networks, Risk Taking, and Firm Value:

Evidence from Corporate Control Activities

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.

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 Betrand 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 (Betrand 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 2010[1]. 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

[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.

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 those in ExecuComp using the Levenstein 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

[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.

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 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

[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.

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 million[4]. 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 CEO[5]. The most common type of connection is

[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.

through past employment (11.8% of directors), while the least is education (0.4%).

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 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.

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 CEO [6]. 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, Betrand and Schoar 2003, Aggarwal and Samwick 2003, Malmendier and Tate 2005, etc.), we require in all empirical tests that the

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

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. 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

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

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.

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 (%) x 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.

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 (%) x 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.

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 (%) x 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 (%) x 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 (%) x 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 Betrand 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.

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.

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 (%) x 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.

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 risks[8]. 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.

[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 ($R_m - r_f$), (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):

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

τ is the subscript for the day and t is the subscript for the fiscal year, $\tau \in t$, and b_i , s_i , and h_i 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, 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. Conclusion

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.

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

Betrand 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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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				
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Diff.	p-value
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				
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Diff.	p-value
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				
	Mean	Median	SD	Mean	Median	SD	Mean	Median	Std. Dev.	Diff.	p-value
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 Characterisitics											
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 (%) x 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.

	Dependent Variable: Indicator for Takeover					
Specification:	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 (%) x 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.

	Dependent Variable: Indicator for Focus Takeover		
Specification:	Logit		FD IV
Model:	(1)	(2)	(3)
Connectedness (%)	-0.504**	-0.742***	-1.343*
	(0.198)	(0.242)	(0.718)
Connectedness (%) x Merger Wave		0.011*	
		(0.006)	
Log(Market Value of Equity)	0.115***	0.112***	0.002
	(0.038)	(0.038)	(0.014)
Q	-0.168***	-0.167***	-0.009
	(0.043)	(0.043)	(0.008)
Leverage	-0.914***	-0.924***	0.013***
	(0.217)	(0.218)	(0.002)
Cash flow	0.205	0.198	-0.042
	(0.395)	(0.393)	(0.043)
Past Return	0.170***	0.169***	0.013
	(0.056)	(0.056)	(0.008)
Merger Wave	0.003	0.001	0.005***
	(0.003)	(0.004)	(0.001)
Board Size	-0.031	-0.030	-0.000
	(0.022)	(0.022)	(0.006)
Independent Directors (%)	-0.431	-0.412	-0.062
	(0.341)	(0.343)	(0.085)
Max Board Age (Years)	-0.007	-0.007	0.002
	(0.008)	(0.008)	(0.002)
Max Board Tenure (Years)	-0.011**	-0.011**	-0.003*
	(0.005)	(0.005)	(0.002)
CEO Age (Years)	-0.002	-0.002	-0.000
	(0.007)	(0.007)	(0.004)
CEO Tenure (Years)	-0.005	-0.006	0.004
	(0.007)	(0.007)	(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**	1.109	1.870***	0.707
	(0.684)	(0.719)	(0.688)	(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	-0.150	-0.169	-0.190
	(0.191)	(0.190)	(0.190)	(0.190)
Q	0.377	0.299	0.327	0.367
	(0.310)	(0.307)	(0.307)	(0.309)
Leverage	0.871	0.654	0.713	0.831
	(0.678)	(0.682)	(0.678)	(0.674)
Cash flow	-2.375**	-2.113**	-2.237**	-2.324**
	(0.965)	(0.955)	(0.959)	(0.960)
Past Return	-0.335	-0.233	-0.269	-0.330
	(0.402)	(0.399)	(0.399)	(0.402)
Merger Wave	-0.016	-0.013	-0.013	-0.015
	(0.020)	(0.020)	(0.020)	(0.020)
Board Size	0.088**	0.077**	0.082**	0.086**
	(0.037)	(0.037)	(0.036)	(0.036)
Independent Directors (%)	-0.915*	-0.816*	-0.851*	-0.817*
	(0.470)	(0.469)	(0.467)	(0.463)

Specification: (Con't)	Dependent Variable: Percentage of Stock Payment			
Model:	(1)	(2)	(3)	(4)
Max Board Age (Years)	0.006	0.005	0.005	0.005
	(0.008)	(0.008)	(0.008)	(0.008)
Max Board Tenure (Years)	0.013	0.007	0.010	0.013
	(0.023)	(0.023)	(0.023)	(0.023)
CEO Age (Years)	0.016	0.012	0.014	0.017
	(0.022)	(0.021)	(0.021)	(0.021)
CEO Tenure (Years)	0.017**	0.017**	0.018**	0.017**
	(0.008)	(0.008)	(0.008)	(0.008)
Inverse Mills Ratio	-4.324	-3.295	-3.707	-4.188
	(3.731)	(3.711)	(3.707)	(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

	Full		**Focus**		**Diversify**	
Sample	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]	ΔROA[-1,+1]
Model:	(1)	(2)	(3)	(4)
Connectedness (%)	-0.024***	-0.028***	-0.034***	-0.031**
	(0.008)	(0.010)	(0.011)	(0.016)
Connectedness (%) x Focus	0.033***	0.040***	0.048***	0.032
	(0.012)	(0.014)	(0.016)	(0.022)
Focus	-0.003	-0.003	-0.004	0.001
	(0.004)	(0.004)	(0.005)	(0.007)
Log(Market Value of Equity)	-0.002	-0.002**	-0.003**	0.004**
	(0.001)	(0.001)	(0.001)	(0.002)
Q	-0.004**	-0.004*	-0.004**	0.003
	(0.002)	(0.002)	(0.002)	(0.003)
Leverage	-0.000	0.000	0.001*	-0.004***
	(0.000)	(0.000)	(0.000)	(0.001)
Cash flow	0.005	0.009	-0.000	-0.596***
	(0.011)	(0.015)	(0.027)	(0.075)
Relative Size	-0.001	-0.004	-0.001	-0.027**
	(0.009)	(0.010)	(0.012)	(0.014)
Public Target	-0.020***	-0.021***	-0.024***	-0.015*
	(0.004)	(0.004)	(0.005)	(0.009)
All Stock Deal	-0.017**	-0.019**	-0.021**	-0.038*
	(0.008)	(0.008)	(0.009)	(0.020)
Stock Run-Up	-0.004	-0.012**	-0.014**	0.028***
	(0.005)	(0.006)	(0.007)	(0.010)
Tender Offer	0.011	0.012	0.014*	0.017
	(0.008)	(0.007)	(0.008)	(0.014)
Cross Border	0.008	-0.017	-0.006	0.078*
	(0.005)	(0.014)	(0.010)	(0.041)
Competed	0.006	0.005	0.007	-0.012
	(0.009)	(0.010)	(0.011)	(0.024)
Merger of Equals	-0.022	-0.013	-0.023	0.051*
	(0.021)	(0.025)	(0.036)	(0.028)
High Tech	-0.006*	-0.006	-0.009*	-0.013*
	(0.004)	(0.004)	(0.005)	(0.007)
Serial	-0.000	-0.004	-0.003	0.003
	(0.004)	(0.004)	(0.005)	(0.005)
Governance	0.003	0.001	-0.001	-0.005
	(0.003)	(0.003)	(0.004)	(0.005)
Inverse Mills Ratio	0.009	0.010	0.002	0.027**
	(0.008)	(0.009)	(0.010)	(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	-0.620***	-0.468**	-0.592***
	(0.180)	(0.195)	(0.210)	(0.221)
Connectedness (%) x Merger Wave			0.016***	-0.001
			(0.006)	(0.007)
Log(Market Value of Equity)	0.173***	0.098***	0.175***	0.098***
	(0.034)	(0.036)	(0.034)	(0.036)
Q	-0.124***	-0.203***	-0.122***	-0.204***
	(0.037)	(0.042)	(0.037)	(0.042)
Leverage	-0.429***	-0.401***	-0.444***	-0.416***
	(0.139)	(0.138)	(0.142)	(0.141)
Cash flow	-0.020	0.991*	-0.023	0.985*
	(0.275)	(0.527)	(0.274)	(0.527)
Past Return	0.217***	0.213***	0.212***	0.213***
	(0.050)	(0.048)	(0.050)	(0.049)
Merger Wave	0.014***	0.007***	0.011***	0.007***
	(0.002)	(0.002)	(0.002)	(0.002)
Board Size	0.012	-0.062***	0.008	-0.061***
	(0.020)	(0.022)	(0.020)	(0.022)
Independent Directors (%)	0.184	0.354	0.223	0.355
	(0.361)	(0.365)	(0.362)	(0.366)
Max Board Age (Years)	-0.008	0.004	-0.008	0.005
	(0.009)	(0.009)	(0.009)	(0.009)
Max Board Tenure (Years)	-0.008*	-0.013**	-0.008*	-0.013***
	(0.005)	(0.005)	(0.005)	(0.005)
CEO Age (Years)	-0.017**	-0.011	-0.016**	-0.011
	(0.007)	(0.008)	(0.007)	(0.008)
CEO Tenure (Years)	0.001	0.004	-0.000	0.004
	(0.007)	(0.007)	(0.007)	(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 Mckeon 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.

	Dependent Variable: Indicator for Takeover						
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Connectedness (%)	-0.372**	-0.371**	-0.415***	-0.392**	-0.365**	-0.376**	-0.382**
	(0.150)	(0.150)	(0.151)	(0.158)	(0.151)	(0.149)	(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)

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

	Alternative Outcome		Alternative Measures of Connectedness			Alternative Sample	
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	5mio	10mio	Current Employment	Social Activities	Connected Board	S&P500	T-2
Connectedness (%)	-0.376**	-0.359**	-0.614***				
	(0.150)	(0.151)	(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***	0.151***	0.127***	0.138***	0.134***	0.085	0.134***
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.054)	(0.032)
Q	-0.160***	-0.165***	-0.156***	-0.155***	-0.158***	-0.099**	-0.215***
	(0.033)	(0.033)	(0.033)	(0.032)	(0.033)	(0.050)	(0.047)
Leverage	-0.413***	-0.398***	-0.400***	-0.422***	-0.414***	-0.328*	-0.291**
	(0.140)	(0.138)	(0.137)	(0.141)	(0.140)	(0.182)	(0.135)
Cash flow	0.464	0.469	0.398	0.409	0.408	-0.431	0.856*
	(0.417)	(0.427)	(0.395)	(0.399)	(0.399)	(0.587)	(0.485)
Past Return	0.221***	0.231***	0.220***	0.216***	0.219***	0.155*	0.252***
	(0.044)	(0.044)	(0.044)	(0.044)	(0.044)	(0.080)	(0.060)
Merger Wave	0.011***	0.011***	0.011***	0.010***	0.011***	0.013***	0.012***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Board Size	-0.023	-0.023	-0.026	-0.023	-0.022	-0.010	-0.023
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.026)	(0.020)
Independent Directors (%)	0.275	0.257	0.208	0.305	0.209	0.760	0.389
	(0.289)	(0.290)	(0.288)	(0.290)	(0.289)	(0.475)	(0.362)
Max Board Age (Years)	-0.001	-0.000	-0.001	-0.002	-0.001	0.016	-0.001
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.013)	(0.008)
Max Board Tenure (Years)	-0.011***	-0.010**	-0.010**	-0.009**	-0.011***	-0.014*	-0.010**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.005)
CEO Age (Years)	-0.014**	-0.013**	-0.014**	-0.013**	-0.013**	-0.018**	-0.013*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.009)	(0.007)
CEO Tenure (Years)	0.003	0.003	0.002	0.003	0.003	0.017*	0.003
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.009)	(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		
Model:	(1)	(2)	(3)	(4)	(5)	(6)
Specification:	FE	RE	FD IV	FE	RE	FD IV
Connectedness (%)	-0.095***	-0.080***	-0.520*	-0.060***	-0.059***	-0.375*
	(0.028)	(0.014)	(0.266)	(0.021)	(0.012)	(0.204)
Log(Market Value of Equity)	-0.095***	-0.053***	-0.204***	-0.100***	-0.057***	-0.149***
	(0.013)	(0.004)	(0.012)	(0.011)	(0.004)	(0.011)
Q	0.038***	0.024***	0.018***	0.031***	0.023***	0.016***
	(0.005)	(0.004)	(0.006)	(0.004)	(0.002)	(0.005)
Leverage	0.006***	0.005**	-0.001	0.004***	0.004*	-0.001
	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)	(0.003)
Cash flow	-0.150***	-0.232***	-0.019	-0.114***	-0.179***	-0.008
	(0.033)	(0.064)	(0.028)	(0.023)	(0.048)	(0.022)
Past Return	-0.010	-0.011**	-0.006	-0.003	-0.008**	-0.002
	(0.006)	(0.006)	(0.004)	(0.004)	(0.004)	(0.003)
Merger Wave	-0.001***	-0.000**	-0.003***	-0.001***	-0.000***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Board Size	0.002	-0.001	-0.003	0.001	0.000	-0.002
	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Independent Directors (%)	0.025	-0.042**	-0.266***	-0.059**	-0.100***	-0.236***
	(0.029)	(0.021)	(0.034)	(0.024)	(0.017)	(0.031)
Max Board Age (Years)	-0.001	-0.000	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
Max Board Tenure (Years)	0.001	-0.001***	-0.001*	0.000	-0.001***	-0.001*
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
CEO Age (Years)	-0.000	-0.001	-0.001	-0.000	-0.001*	-0.001
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
CEO Tenure (Years)	0.001	0.001**	-0.000	0.001	0.001*	0.000
	(0.001)	(0.001)	(0.002)	(0.001)	(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

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 *active* membership in at least one non-profit organization (Fracassi and Tate 2012))	BoardEx
Connectedness - Overall (%)	The fraction of *all* 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 *all* directors with past or current experience as a CFO, Treasurer, Accountant, or Vice President for Finance	BoardEx
Financial Education (%)	The fraction of *all* 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.

CHAPTER TWO

Who Knows What When? The Informational Effect of Dodd-Frank Act

Abstract

This paper examines the impact of Dodd-Frank Act on credit rating agencies. Previously, RFD prohibits U.S. listed firms from selective disclosure to investment professionals, but CRAs are exempted. The Act repeals the exemption granted to credit rating agencies (CRAs). As a result, CRAs are no longer conduits of selective disclosure, which may reduce the value of credit ratings to the stock analysts and the equity investors. We examine a sample of credit rating changes and their effect on equity investors and stock analysts. We find that Dodd-Frank Act weakens the informational effect of credit ratings changes as the Act rescinds the informational edge attributable to the exemption.

1. Introduction

'There are two superpowers in the world today. There's the United States and there's Moody's bond rating service. The US can destroy you by dropping bombs, and Moody's can destroy you by downgrading your bonds. And believe me, it's not clear sometimes who's more powerful." ~ Thomas Friedman

In a New York Times article ("Triple-A Failure", April 27, 2008), columnist Roger Lowenstein lays out how Thomas Friedman once opined that there were two superpowers in the world – the United States and Moody's bond rating service and that it was not clear which was more powerful. Statutory reference to credit ratings started since the Banking Act of 1936. In 1975, the SEC inadvertently gave credit ratings agencies enormous power as the commission introduced the designation of Nationally Recognized Statistical Rating Organizations (NRSROs) to prevent inferior entrants from into the rating industry. This designation erected significant barriers into the rating industry. The designation of Moody's, Standard and Poor's and Fitch as NRSROs made them the only source of ratings to determine the capital requirements for broker-dealers. [9] Since then, NRSROs and their ratings are extensively referenced in regulations including insurance holdings companies, pension funds, and money market mutual funds.

In 2000, the SEC further empowered the CRAs, mainly Moody's, Standard and Poor's and Fitch's, when it exempted them from the Regulation Fair Disclosure

[9] The fourth NRSRO, Dominion Bond Rating Services, was designated by the SEC in 2003. The number has increased to only 10 in 2010.

(RFD). Through this exemption, the CRAs have access to nonpublic information on the firms they rate. However, the CRAs have come under intense scrutiny for warning investors notoriously late of the declining credit quality associated with the bursting of the tech bubble of 2000 and for providing overly optimistic ratings for structured finance products that promulgated the subprime mortgage crisis (Benmelech and Dlugosz, 2010). The growing skepticism has culminated in tighter regulation of credit rating agencies under Dodd–Frank Wall Street Reform and Consumer Protection Act that was signed into law by President Barack Obama on July 21, 2010. The Act aims to improve rating agency incentives and performance.

Following the Act, the SEC amended Regulation Fair Disclosure (RFD)[10] to repeal the exemption of disclosures to credit rating agencies (CRAs) on October 4, 2010. RFD mandates all U.S. public companies to disclose material and private information simultaneously to the public to reduce selective disclosure of such information by companies to stock analysts and other investment professionals, and it covers persons such as securities analysts, institutional investors, market professionals, or others who are involved in investment decision making involving an issuer's securities. Exemption was nevertheless granted to rating agencies, which allowed them to have access into privileged information not available to other information intermediary or market players. Supporting this view, Jorion, Liu, and Shi (2005) show that ratings have a stronger effect on stock markets than before since the passing of RFD in 2000. While Dodd-Frank's repeal of the exemption aims to

[10] FD requires U.S. public companies to disclose material, nonpublic information simultaneously to the public, instead of to a select group. The purpose is to remove selective disclosure to the privileged few, and therefore create a level playing field for all market players. The SEC wanted to eliminate selective disclosure to equity analysts.

remove the privilege, CRAs, such as Fitch's has asserted "to the greatest extent possible, Fitch will work with the issuer community to put in place appropriate mechanisms so that Fitch can continue to receive confidential information as part of the rating process."

The Act also aims to reduce statutory reliance on credit ratings assigned by the Nationally Recognized Statistical Rating Organizations (NRSROs). Following the Act, the SEC adopts a new rule to remove credit ratings as eligibility criteria for firms seeking to raise capital through shelf registration on July 26, 2011.[11] The move is not the first because there are ongoing regulatory changes that aim to create a level playing field for non-NRSROs (See Wolfson and Crawford 2010 for the ongoing regulatory changes with the same purpose). In lowering statutory reliance on credit ratings, the Act aims to rein in CRA's power. Opp, Opp, and Harris (2012) show theoretically that statutory reliance on CRAs may cause the collapse of delegated information acquisitions as CRAs fully engage in rating inflation, and this scenario is more likely when costly-to-evaluate complex securities are involved. Their theoretical model predicts that a reduction in statutory reliance on CRAs is likely to improve CRAs' incentives to acquire information, and hence rating accuracy.

Dodd-Frank also rescinds Rule 436(g), which protects CRAs from expert liability as apply to auditors, securities analysts, and investment bankers. The aim is to hold CRAs accountable for their rating actions. CRAs have long been protected

[11] Companies that are "short-form eligible" are allowed to register securities "on the shelf". Specifically, these companies can register for future securities offerings and can do more than one offering in the future from a single registration without new SEC clearance. Previously, for a company to be "short-form eligible", the company's securities must be rated investment grade by at least one credit rating agency, which is nationally recognized statistical rating organization (NRSRO).

under the First Amendment from expert liability because of their assertion that credit ratings are just forward-looking opinions about credit risk. Finally, a series of measures are that subject CRAs to public and regulatory oversights are introduced. For example, CRAs are required to disclose publicly their rating methodology, and strengthen their corporate governance and board independence. Also, the SEC is given the authority to suspend or revoke a credit rating agency's National Recognized Statistical Rating Organization ("NRSRO") status.

Dodd-Frank Act not only posts significant challenge to the credit rating industry, including greater liability for rating errors, enhanced disclosure and reporting requirements, but also reduces the role of credit ratings agencies in financial regulations. This paper examines the relative change in information content of rating announcements around RFD and round Dodd-Frank Act when the repeal is effective by focusing on market reaction and analyst forecast revision around the credit rating actions. We find that while RFD strengthens the informativeness of rating changes, Dodd-Frank weakens it. The privileged access to nonpublic information during RFD gives CRAs competitive edge over other information intermediary and market players, and the edge is taken away with the repeal of the exemption.

One caveat for our study, common for others on law changes, is that the reported effects could be coincidental. After all, we have only the two effective dates for RFD and Dodd-Frank (when the exemption is repealed) as event dates. However, the repeal of the exemption granted to the CRAs serves as a good counterfactual for any informational effect we may find during RFD. Furthermore, evidence using market reactions, CRA market influence, analyst activity, and analyst forecast

revisions corroborate with each other in attributing the reported effects to RFD exemption, instead of to other possible confounding circumstances.

The contributions of this paper are twofold. First, this study examines the informational effects of Regulations Fair Disclosure and Dodd-Frank Act from the perspective of rating agencies. Both equity analysts and credit rating agencies are important information brokers. Law changes, however, alter the *relative* change in the information environment for both. Rating agencies, which were the main conduits of selective disclosure during Regulations Fair Disclosure, are denied privileged access to nonpublic material information from the issuers they rate under the Dodd-Frank Act (through SEC Amendment to RFD on October 4, 2010). This study, therefore, complements with the literature on Regulations Fair Disclosure. Second, our findings contribute to the literature on the information content of rating changes. We find that rating changes are disproportionately more influential during Regulations Fair Disclosure. The influence appears to wane after the repeal of CRA's exemption to RFD.

The remainder of the paper is organized as follows. Section 2 provides a brief review of the credit rating process. Section 3 discusses the extant literature on credit rating agencies. Section 4 describes data and provides descriptive statistics. Section 5 presents the empirical analyses. Finally, Section 6 concludes.

2. Credit Rating Process

The dominant U.S. bond rating agencies are Standard and Poors (S&P's), Moody's Investor Service, and Fitch Investors Service. However, since the passing of Credit Rating Agency Act whose objective is to increase competition within the credit rating industry, the number of Nationally Recognized Statistical Rating Organization (NRSRO) has increased. Currently, there are ten NRSROs. However, S&P's, Moody's, and Fitch's still dominate the industry.

Credit rating agencies rate various private and public securities, including corporate bonds, municipal bonds, commercial papers, and asset-backed securities. S&P's defines a credit rating as "*a current opinion of the general creditworthiness of an obligor, or the creditworthiness of an obligor with respect to a particular debt security or other financial obligation.*"[12] S&P's evaluates default risk over the life of an issuer or a debt issue considering all future events to the extent that they are known or predictable. To address the possibility that future performance may deviate from initial expectation, S&P's may place an issuer or an issuer on CreditWatch and rating outlook when circumstances that may result in a rating change emerge. The horizons for CreditWatch and rating outlook are usually 90 days and 2 years, respectively.

A credit rating can either be issuer- or issue-specific. "Issuer-specific credit rating focuses the obligator's overall capacity to meet its financial obligations, while issue-specific credit rating focuses on the creditworthiness of an obligor with respect to a specific financial obligation, a specific class of financial obligations, or a specific

[12] See Standard and Poor's (2005), page 8

financial program."[3] A bond issue may be rated differently from that of an issuer because of its relative priority.[13] Our paper focuses on issuer-level rating actions.

Credit Ratings can broadly be classified into "Investment Grade" and "Speculative Grade" Grade. "Investment Grade" is at and above BBB for S&P's. This distinction is particularly important because government agencies, including the SEC, federal, and state legislations, use it for rule making and for investment decision making, for example pension funds are mandated to hold only investment grade investments. The Dodd-Frank Act, nevertheless, deletes various statutory references to credit ratings and NRSROs, and orders federal agencies to substitute alternative benchmarks for creditworthiness for all references to credit ratings.

Most firms solicit CRAs for a rating before debt issuance. In response to the request, S&P's will assemble a team of experts led by a lead analyst to review information, qualitative and quantitative, relevant to the rating. Members of the team will then meet the firm's management to review confidential information pertinent to the rating, which may include operating plans, financial plans, and minutes of board meetings (Ederington, Yawitz, and Roberts, 1987). Once rating is assigned, the firms may appeal with new or more information. After that, S&P's will continue to monitor new financial and economic information and reassess a rating when necessary. An analyst may place the firm under CreditWatch, if the odds of a subsequent change in credit rating are reasonably high. The analyst will then review the rating, and possibly meet the management during the process. The rating committee will then evaluates the case as presented by the analyst, and decides whether to change the rating. The

[13] Issue-specific rating may reflect the creditworthiness of guarantors, insurers, or other forms of credit enhancement on the obligation, and takes into account statutory and regulatory preferences.

rating analysts also schedule annual review meetings with the management, independent of the issuance of new obligations. These meetings allow analysts to discuss about possible issues and receive information on changes in the issuer's plans, if any. Furthermore, firms also seek S&P's guidance on corporate actions that may affect credit opinion. For example, firms may solicit S&P's view on financing transactions, which include the issuance of hybrid preferred stocks, innovative financing methods, among others. Also, firms voluntarily disclose to the CRAs material, nonpublic information that has an impact on a credit rating, including upcoming merger and acquisition announcements, and significant changes in capital structure.

The rating revisions process provides CRAs with confidential information. The access to confidential information, which is no longer available to stock analysts, remains available to the credit analysts during RFD. Dodd-Frank Act through SEC amendment to RFD on October 4, 2010 (Exchange Act Release Note 63003) aims to block this channel of selective disclosure to CRAs.

3. Literature Review

The literature on whether credit ratings provide valuable information to the capital market on credit quality is vast. Early studies on default rates and rating transitions for corporate bonds show that CRAs offer accurate assessment on creditworthiness of firms (Altman and Kao 1992, Altman 1998, Nikell, Perraudin, and Varotto 2000). Bonds rated BBB and above (Investment grade) have almost zero

probability of defaulting in a year, while those CCC and below greater than 20%. Also, rating stability (the likelihood of retaining an initial rating) declines with the rating scale; highly-rated bonds tend to keep their initial rating. The odds of rating changes vary with industry and business cycle. The recent studies on rating transitions for corporate bonds are broadly consistent with the early results (Kraemer and Vazza 2010, Benmelech and Dlugosz 2010). The evidence nevertheless changes significantly for structured finance products. While Hu and Cantor (2003) find higher rating stability for structured finance products than corporate bond in the earlier years, Benmelech and Dlugosz (2010) find over one-third of downgrades involve AAA-rated structured finance products in the first three quarters of 2008. On average, these products were downgraded over 4 notches in 2007 and 2008.

Researchers have put forth various explanations for the dramatic decline. Among them are issuers' ability to shop for the best possible rating (Skreta and Veldkamp, 2009), the complexity of these products (Blinder, 2009), and the opaqueness of payoffs from the underlying securities (Hull, 2009). Numerous solutions to resolve inaccurate ratings are put forth, and they include the withdrawal of statutory reference to ratings (White, 2010), regulatory overhaul of the rating industry (Pagano and Volpin, 2010; Papaikonomous, 2010; Sy, 2009), and changing the compensation scheme for CRAs and financial institutions (Listokin and Taibleson, 2010).

Many critics cast doubt on the importance of credit ratings accusing them to be a follower, rather than a leader, of investor opinion. Boot, Milbourne and Schmeits (2006) argue that there seems to be a lack of consensus as to whether ratings play an

important economic role and whether rating changes are informative at their core. They argue that the value of credit ratings may instead come from (a) monitoring role of the CRAs of an implicit contract between CRA and the issuer, and (b) regulatory constraints in the investing decisions by fiduciary investors. As a result, credit ratings create a focal point to coordinate the actions of both bond issuers and bond investors. Supporting this view, studies on rating announcements generally find market to move in anticipation of negative rating announcements. Dichev and Piotroski (2001) find negative abnormal stock returns before downgrades, while Nordon and Weber (2004) and Hull, Predescu, and White (2004) find the same evidence in the credit default swap market. The evidence of anticipation raises the issue of whether CRAs reflect changes in credit quality in a timely manner, and whether their ratings opinions simply follow public information. Nevertheless, CRAs defend that such delay occurs by design, and that rating accuracy is not a function of time horizon. The point of contention comes from through-the-cycle versus point-in-time assessment. While a through-the-cycle outlook offers a long-term assessment of credit quality (whose premise is that credit quality is largely stable throughout the course of a business cycle), a point-in-time assessment provides an accurate view of credit quality at a specific point in time. Therefore, a rating is only changed when the issuer's credit quality is permanently altered. Consistent with this view, S&P's states that "credit ratings are meant to be forward-looking, and their time horizon extends as far as is analytically foreseeable… ratings should never be a mere snapshot of the present situation".[14]

[14] See Standard and Poor's (2005), page 33

Transient rating inaccuracies may surface by design, but conflicts of interest and competition among CRAs may play a role. Theoretically, Bolton, Freixas, and Shapiro (2012) show that ratings inflation may occur from conflict of interest as the CRAs trade off between higher current profit and expected future profits (reputational concern). Similarly, Opp, Opp, and Harris (2012) predict that the more securities a CRA rates, the higher future rents it can rent and the better the CRA is committed to provide informative ratings. Supporting this conjecture, Becker and Milbourn (2011) show a decline in rating quality of corporate bonds for both Moody's and S&P's as their rival, Fitch grows through acquisitions. Specifically, ratings become 'friendlier', and correlate less with bond yields and default prediction as competition increases.

Given that rating inaccuracy may exist - either by design or conflict of interest - do credit ratings still convey incremental information to the capital market? The empirical evidence of the effect of credit ratings on capital markets is wide-ranging, and it ranges from bonds (Katz, 1974; Weinstein, 1977; Ederington, Yawitz, and Roberts, 1987), stocks (Pinches and Singleton, 1978; Holthausen and Leftwich, 1986; Dichev and Piotroski, 2001; Jorion et al., 2005; Jorion and Zhang, 2007), credit default swap (Hull, Predescu, and White, 2004), commercial paper (Crabbe and Post, 1994) to stock analysts (Ederington and Goh, 1998). Most studies show that downgrades convey new information, but not upgrades. Ederington and Goh (1998) postulate that CRAs' reputations hinge on their ability to uncover downside risks, therefore CRAs spend more time and resources to identify developments that the market may not have fully anticipated. Furthermore, firms tend to publicly release positive news sooner than they would negative (Hong, Lim, and Stein, 2002). As a

result, the good news may be widely disseminated before positive rating announcements, dampening the subsequent price reaction to the positive rating announcements.

The information content behind these market reactions is difficult to establish because rating changes often coincide with other developments at the firm or industry level. To address this empirical challenge, Kliger and Sarig (2000) exploit Moody's rating refinement in 1982, which prefixes broad rating category (e.g. A) with modifiers (e.g. A1, A2, and A3), as a natural experiment to identify the causal effect of rating announcements. The refinement causes bond, stock, and option revalue, supporting ratings' revelation of incremental information to the capital markets.

Another empirical challenge is to distinguish whether the market reactions are due to revelation of new information on a firm's creditworthiness or ability to access capital. Tang (2009) finds that Moody's refinement lowers information asymmetry firms enough to influence financing and investing policy. Firms with better-than-expected fine rating experience a decline in their bond yields, which then leads the firms to increase their leverage, capital expenditures, and asset growth in the four quarters after the refinement. Similarly, Sufi (2009) finds evidence that ratings for bank loans reduce information asymmetry, and that newly rated firms have more uninformed borrowers and use more debt.

4. Data and Methodology

We use four databases: data on all corporate bond rating actions from S&P's rating Xpress data services, earnings forecasts from Institutional Brokers' Estimate System (IBES), daily stock price data from the Center for Research in Security Prices (CRSP), and firm fundamental data from Compustat.

4.1 S&P's Ratings Actions

To assess the impact of RFD and Dodd-Frank (SEC Amendment to repeal of CRA's RFD exemption) on the information content of credit ratings, we examine the stock market reaction and analyst forecast revision to rating changes around their implementation. To do so, we split the sample equally into four 24-month periods: pre-RFD from October 23, 1998 to October 22, 2000 and post-RFD from October 23, 2000 to October 22, 2002, while pre-repeal from October 4, 2008 to October 3, 2010 and post-repeal from October 4, 2010 to October 3, 2012. The choice of two years around the policy implementation is consistent with Jorion et al (2005), Gintschel and Markov (2004), among others. The results are qualitatively similar if we split the sample into pre-RFD, during RFD, and after the Repeal of RFD.

S&P's rating Xpress data services cover a complete history of S&P's credit rating actions, including issuer's long-term credit ratings, credit watches, and credit outlooks. Issuers are put on CreditWatch when "*an event or deviation from an expected trend has occurred or is expected, and additional information is necessary to take a rating action … such rating reviews normally completed within 90 day …*

Outlooks have a longer time frame than CreditWatch listings—typically, two years—and incorporate trends or risks with less certain implications for credit quality" [15]. CreditWatch is designated "positive" (possible upgrade), "negative" (possible downgrade), or "Developing" (used for those unusual situations in which future events are so unclear that both upgrade and downgrade are possible). Similarly, outlook is designated "positive" (possible upgrade), "negative" (possible downgrade), or "Stable" (credit rating is not likely to change).

Each observation in the S&P's database corresponds to a rating action. Our sample spans from January 1, 1990 to June 31, 2012. We restrict the sample to U.S. public issuers, and require the issuer to have data on Center for Research in Security Prices (CRSP) stock return files, the Institutional Brokers Estimation System (IBES) earnings forecast files and Compustat fundamental files. Finally, we assign a numerical value to each rating as follows on notch basis: AAA=1, AA+=2, AA=3, AA-=4, A+=5, A=6, A-=7, BBB+=8, BBB=9, BBB-=10, BB+=11, BB=12, BB-=13, B+=14, B=15, B-=16, CCC+=17, CCC=18, CCC-=19, CC=20, C=21, and D=22.

Panel A in Table 1 shows the distribution of number, size of bond rating changes, and contamination rate. The sample consists of 461 (225) and 478 (424) downgrades (upgrades) around RFD and around Dodd-Frank, respectively.[16] The low ratio of number of upgrades to downgrades is consistent with previous studies. [17] The pattern manifests either deterioration of credit quality over the sample period, or the

[15] See Standard and Poor's (2005), page 14-15
[16] The full sample from January 1, 1990 to June 30, 2012 consists of 1,542 downgrades and 1,455 upgrades.
[17] This result is common on other studies on credit ratings agencies (See Jorion et al, 2006, Holthausen and Leftwich, 1986).

tightening of credit standards (Blume, Lim and Mackinlay 1998). The size of rating change is the change in cardinal value of an issuer's credit rating. The average change seems to be stable across time for both downgrade and upgrade. This lowers the concern that the degree of rating change may explain the differential stock price and analyst revision across RFD and Dodd-Frank. Also, the fractions of contaminated samples, those with earnings announcement one-day around rating changes, look stable across RFD and Dodd-Frank. The contamination rate for downgrade (upgrade) around RFD and Dodd-Frank are 9.54% (8.44%) and 9.83% (5.19%), respectively.

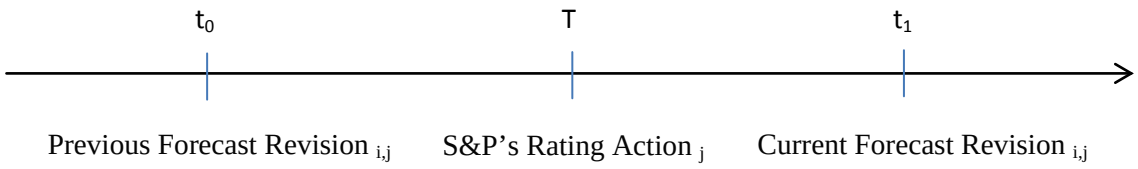
Panel B describes the three categories of rating change: "within investment", "within speculative", and "across". A rating change is "within investment" and "within speculative" when the rating change is within investment (BBB- or higher) and speculative grade (below BBB-), respectively. "Across" identifies rating changes that are revised from investment to speculative grade, or vice versa. The three categories of rating changes distribute evenly pre- and post- RFD and Dodd-Frank.

4.2 Individual Analyst Forecast Revision

The stock recommendations sample is from Thomson Financial's Institutional Brokers

Estimate (I/B/E/S) U.S. Detail File. A rating is assumed to be outstanding according to the definition in Ljungqvist, Malloy, and Marston (2009). Specifically, a rating is outstanding if it has been confirmed by the analyst (in the I/B/E/S review date field) in the last twelve months and has not been stopped by the broker (in the I/B/E/S

Stopped File). We exclude observations where there is no outstanding prior rating from the same analyst (i.e., analyst initiations or re-initiations are excluded). We remove analysts coded as anonymous by I/B/E/S since it is not possible to track their recommendation revisions.



We measure unadjusted individual analyst *i*'s earnings forecast revision of firm *j*, F_{ij} as the change in the analyst forecast of annual earnings per share deflated by the firm's stock price.

$$FR_{i,j} = \frac{(F_{i,j,t1} - F_{i,j,t0})}{P_{j,t1}},$$

where t_0 is the date of the previous forecast revision by analyst *i* on firm *j* prior to a rating change, and t_1 is the date of the current forecast revision by analyst *i* on firm *j* after the rating change.

Prior studies (O'Brien (1988), Chan, Jegadeesh, and Lakonishok (1996)) show possible optimism biases among analysts, early forecasts are consistently being revised downwards over time. To correct for possible optimism biases among analysts, we employ an adjustment procedure. The procedure randomly picks $FR_{i,j}$ for for analyst *i*, and then compute the average of the pool of randomly chosen $FR_{i,j}$. Then, we estimate the expected forecast revision for individual analyst *j* as follows:

$$E(FR_i) = \frac{1}{n}\sum_{j=1}^{n-1} FR_{i,j}$$

Lastly, I estimate abnormal forecast revisions for sample firms as the difference between unadjusted forecast revision and expected forecast revision as follows:

$$AFR_{i,j} = FR_{i,j} - E(FR_i)$$

5. Empirical Analysis

5.1. Market reactions

The objective of this study is to examine the effect of RFD and Dodd-Frank Act on the information content of credit rating actions. Our first test is to examine the stock market reactions around the implementation of RFD and Dodd-Frank Act (The repeal of CRA's exemption). We employ the standard event study methodology, the daily abnormal return is estimated as the difference between the daily stock return R_{jt} and the value-weighted NYSE/AMEX/NASDAQ index return R_{mt}. Cumulative abnormal returns, CAR, are cumulated over the three-day event window (-1,+1), where day 0 is the credit rating action date. Therefore,

$$CAR_j = \sum_{-1}^{+1} (R_{j,t} - R_{m,t})$$

Table 2 summarizes the mean and median stock market reaction to credit rating actions the two years around RFD and its subsequent repeal during Dodd-Frank. There are several notable trends. For the downgrade sample, the mean and

median CARs over the three-day window are negative and significant pre-RFD, post-RFD, and pre-Repeal. However, the price impact becomes insignificant post-Repeal. The mean CAR increases from -2.32% pre-RFD to -3.60% post-RFD, but declines from -3.63% pre-RFD to -0.86% post-RFD. [18] The non-contaminated samples exhibit the same pattern.

For the upgrades, consistent with the extant literature, the magnitude is smaller (Jorion et al 2005). The market reaction to our full sample from October 23, 1998 to October 3, 2012 is only 0.71%. Similar to the downgrades, market reaction becomes insignificant post-Repeal. The mean CAR decreases from 0.86% pre-Repeal to 0.47% post-Repeal. Again, the results hold for the non-contaminated samples.

Next, we turn to examine the change in S&P's market influence surrounding RFD and Dodd-Frank. Following Loh and Stulz (2011), we identify an influential credit rating action as one when a correct-signed CAR is 1.96 standard deviations greater than expected based on the firm's three-month idiosyncratic volatility of daily return prior to the rating change. Idiosyncratic risk is the risk unique to a specific firm. Following Fu (2009), we measure the idiosyncratic risk of a specific stock as follows. Each month, daily excess returns of a firm are regressed on the daily Fama-French (1993, 1996) three factors:

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_i \left(R_{m,t} - R_{f,t} \right) + s_i SMB_t + h_i HML_t + \varepsilon_{i,t}$$

[18] The results are qualitatively similar if we split the sample into three subperiods: Pre-RFD, During RFD, and After the Repeal.

where (R_m - r_f) is the excess return on a market portfolio, (SMB, small minus big) is the spread in returns between a portfolio of small stocks and large stocks and (HML, high minus low is the spread in returns between a portfolio of high book-to-market stocks and low book-to-market stocks.

We run a time-series regression for each stock for the period [-69,-3], where day 0 is the rating change day. Each stock's idiosyncratic volatility is measured as the standard deviation of the regression residuals. Then, we transform the standard deviation of daily return residuals to a return residual over the event window (-1,+1) by multiplying the daily standard deviation by the square root of 3.

Table 3 presents the proportion of influential S&P's rating actions around RFD and Dodd-Frank, respectively. First of all, as expected, downgrades are more influential than upgrades. For example, while 16.4% of downgrades are influential, only 9.8% of upgrades are influential post-RFD. Second, S&P's overall influence appears to increase post-RFD, but decrease post-Repeal. Influential downgrades increase from 10.1% pre-RFD to 16.4% post-RFD, significant at 1% level. Consistent with the results for market reactions, the evidence here suggests that informational effect of credit rating changes increases post-RFD, but declines post-Repeal. In what follows, we examine stock analysts' behavior surrounding rating changes.

5.2. Stock analysts' behavior

We restrict our sample to 1) individual forecast revisions with the same forecast period end date, 2) individual forecast revisions whose time from previous

revision is less than or equal to 120 trading days[19], and 3) rating changes that do not coincide with earnings announcements within a three-day window surrounding the event day. The final sample consists of all equity analysts who cover firms that are re-rated by the S&P's.

Table 4 presents the fraction of equity analysts who revise their earnings forecast from 1 quarter before to 1 quarter after a rating change. There are three notable trends here. First, there are significantly more revisions both prior to and after downgrades after RFD. There are 10.97%, 8.29%, and 9.85% more revisions a quarter, a month, and a week before downgrade during the post-RFD period, and all of them are significant at 1%. The more frequent revisions prior to downgrades are consistent with the increased frequencies of public disclosures (e.g. management forecasts, conference calls, and public pre-announcements of earnings) after RFD (Brown et al. 2002, Bushee et al. 2002, and Heflin et al. 2003). Also, there are significantly more revisions 1 week after a downgrade, the fraction of analyst revising their forecasts increase from 19.37% pre-RFD to 30.42% post-RFD, and the difference of 11.05% is significant at 1 % level. Similarly, upgrades show an increase post-RFD, but insignificantly. Overall, the evidence is consistent with the stronger informational effect of rating changes following RFD.

Second, the fraction of analysts revising their forecasts 1 week after downgrade declines significantly post-repeal, from 15.98% down to 13.85%. The decline of 2.13% is significant at 1% level. The fraction also declines for upgrades,

[19] The choice of 120 trading days is consistent with IBES, which treats an analyst forecast as stale after 180 calendar days.

but insignificantly. Putting them together, the evidence suggests that the repeal weakens the informational effect of rating changes.

Third, for upgrades, the fraction of analyst revising their forecasts increases significant 1 week before upgrade after both RFD and its subsequent repeal. There is 3.85% (0.68%) more revisions post-RFD (post-repeal). This evidence is consistent with firms' tendency to publicly release positive news sooner than they would negative (Hong, Lim, and Stein, 2002). As a result, there is little, if any, subsequent price reaction and analyst revision to the positive rating announcements.

Next, we examine the impact of rating changes on analyst forecast revisions around RFD and Dodd-Frank. Unadjusted forecast revision is the change in forecast annual earnings per share around a rating change, deflated by stock price. Adjusted forecast revision adjusts the raw forecast revisions to account for analyst optimism. Specifically, we randomly pick a pool of forecast revisions for a specific analyst and computes the average forecast revisions (expected forecast revision for the analyst). The difference between the unadjusted forecast revision and the expected forecast revision for an analyst is the adjusted forecast revision. The procedure accounts for possible optimism bias, which is the tendency to revise their forecasts downwards over time, among analysts.

Table 5 presents the mean and median unadjusted and adjusted analyst forecast revisions. There are three notable trends here. First, analysts lower their forecasts significantly more after downgrades post-RFD. The revision increases from -0.87% pre-RFD to -2.46% post-RFD, and the difference is significant at 1% level. The results are consistent for both the unadjusted and adjusted revisions. Therefore,

not only are there more analysts who revise their forecasts right after downgrade post-RFD, those who revise lower their forecasts more. Second, the magnitude of downward revision after downgrade falls after the repeal, from -2.21% pre-Repeal to -1.24% post-Repeal. The difference is significant for both unadjusted and adjusted revisions. Contrary to RFD, there are fewer analysts who revise right after downgrade post-repeal, and those who revise lower their forecasts less. Third, while analysts do increase their forecast after upgrade, the increase is less dramatic. Furthermore, the change is no significant across RFD and across its repeal. This is in line with previous table which shows significantly more analysts revising right before upgrades possibly reacting to public disclosure of positive developments by the re-rated firms. The evidence so far supports that argument that RFD (Dodd-Frank) strengthens (weakens) the informational effect of rating changes. The effect for downgrades is stronger than that of upgrades, in part, because managers have different incentive to disclose good versus bad news. While managers are willing to disclose publicly positive developments in their firms, they have incentive to keep negative ones private (Hong, Lim, and Stein, 2002). This is when CRA's privileged access to issuer's nonpublic information is valuable.

So far, we have established that the average analysts revise their forecasts in response to rating changes. However, Loh and Stulz (2011) document that only one tenth of the analyst recommendations are influential. Do influential analysts revise their forecasts following rating changes? To examine this question, we look at an analyst revision prior to a credit rating action, and identify an influential analyst as one when a correct-signed one-day CAR around an analyst's previous revision is 1.96

standard deviations greater than expected based on the firm's idiosyncratic volatility of daily return three months prior to the previous revision.

For downgrades, influential analysts revise significantly more than non-influential peers, except for post-repeal. The difference between influential and non-influential analysts increases from -1.2% pre-RFD to -1.4% post-RFD, but declines from -2.0% pre-repeal to -0.35% post-repeal. For upgrades, influential analysts revise significantly more than non-influential peers post-RFD, but not post-repeal. The difference between influential and non-influential peers increases from 0.08% to 0.24% across RFD, but falls from 0.43% to 0.12% across the repeal. The results suggest that influential analysts proactively revise their forecasts more than their non-influential peers upon rating changes. Hence, the average effects of rating changes on stock analysts are not driven by the 'laggards'.

5.3. Multivariate Analysis

In this section, we employ multivariate regressions to control for the other variables that may affect the informational effect of rating actions to analyst forecast revisions. Following Holthausen and Leftwich (1986), we estimate the regressions separately for the upgrades and downgrades sample. We specify our regression as follows:

$$AFR_{i,j}=\alpha_0+\alpha_1 RFD_j+\alpha_2 DODD\text{-}FRANK_j+\alpha_3 CW_j+\alpha_4 CAR_j+\alpha_5 IRC_j+\alpha_6 IANALY_{i,j}$$

$$+\alpha_7 LOG(FORECAST\ INTERVAL_{i,j})+\alpha_8 ANALY\ EXP_{i,j}+$$

$$+\alpha_9 LEV_j+\alpha_{10} TOBIN'S\ Q_j+\alpha_{11} LOG(MARKETCAP_j)+\alpha_{12} TANGIBILITY$$

$$+\alpha_{13} CROSSOVER_j + \alpha_{14} LOG(DAYS_j) + \alpha_{15} ABS(RCHANGE_j) + \alpha_{16} EARNANN_j$$

where for analyst *i* and re-rated issuer *j*, $AFR_{i,j}$ is the adjusted analysts' forecast revision defined as the unadjusted forecast revision less the average of a randomly chosen pool of revisions from an analyst. RFD_j is an indicator variable equals 1 if a rating change is between October 23, 2000 and October 4, 2010. DODD-$FRANK_j$ is an indicator variable equals 1 if a rating change is after October 4, 2010 (effective date of the repeal of CRA's exemption). CW_j indicates whether a firm is placed under credit watch. CAR_j is the abnormal stock return around a rating change, defined as stock return of a re-rated firm less the value-weighted market return, cumulated over the three-day event window (-1,+1), where day 0 is the rating action day. IRC_j is influential rating change, defined as a correct-signed three-day CAR around a rating change that is 1.96 standard deviations greater than expected based on the firm's idiosyncratic volatility of daily return three months prior to rating change. $IANALY_j$ is influential analyst forecast revision, defined as a correct-signed three-day CAR around an analyst's previous revision that is 1.96 standard deviations greater than expected based on the firm's idiosyncratic volatility of daily return three months prior to the previous revision. FORECAST $INTERVAL_{i,j}$ is the duration between the previous and current forecast revision (in days). ANALY $EXP_{i,j}$ is the duration an analyst has covered a firm (in days). LEV_j is (dlc + dltt)/(dlc + dltt + csho * prcc_f). TOBIN'S Q_j is (at - seq + csho * prcc_f)/at. $MARKETCAP_j$ is the firm size at the start of the fiscal year. $TANGIBILITY_j$ is ppent/at. $CROSSOVER_j$ is an indicator

variable equals 1 if a firm's credit rating crosses from investment to speculative grade or vice versa. $DAYS_j$ is the duration between the previous and current rating change (in days). $RCHANGE_j$ is the change in the cardinal value of a rating. $EARNANN_j$ indicates whether there is an earnings announcement within a three-day window surrounding a rating change.

The variables of interest are RFD and DODD-FRANK, which estimate the informational impact of RFD and Dodd-Frank, respectively. If rating actions become more informative after RFD, we would expect the coefficient for RFD to be negative (positive) for downgrades (upgrades) because these rating changes may contain additional information to which stock analysts have no access to. On the contrary, we would expect the coefficient for Dodd-Frank to be positive (negative) for downgrades (upgrades) as the informational advantage is lost.

While Jorion et al. (2005) find greater stock price reaction to both downgrades and upgrades post-RFD, the effect of RFD on stock analysts is less clear. Studies generally do not find significantly lower forecast accuracy, which proxies for analysts' possession of relevant information, after the implementation of RFD (Bailey et al. 2003; Mohanram and Sunder 2002). The implication is ambiguous because unchanged accuracy can either be selective and public disclosure remaining at the pre-FRD level, or increase in public disclosure in place of selective disclosure post-RFD (Brown et al. 2002; Bushee et al. 2002; Heflin et al. 2003). On the contrary, some studies find analysts' earnings forecast quality to decline post-RFD, supporting RFD effectiveness in curtailing selective disclosure (Gintschel and Markov, 2004, Agrawal et al. 2006).

Table 7 reports the multivariable regression analysis. Model 1 shows that the coefficient on RFD for downgrades regression is -0.011 and significant at the 1% level, implying that the average analyst revision to downgrades is significantly stronger after FD than before FD. The magnitude of the excess analyst forecast revision for the average stock is about -0.011 * 1.63%, or - 0.18%. The coefficient on IANALY implies that the marginal effect of downgrade on forecast revision is -0.0264. FORECAST INTERVAL, the interval between previous and current revision, is significantly negative. This is consistent with the argument that less frequent revisions are less timely, and therefore more likely to be follow cues from the rating change. The significantly negative coefficient on analyst experience covering the sample firm is consistent with seasoned analysts taking cue from rating changes more seriously.

Model 2 shows that the coefficient on Dodd-Frank for downgrades regression is 0.0104 and significant at 1% level. This implies that analyst response to downgrades is significantly weaker after Dodd-Frank than before Dodd-Frank, consistent with weaker informational effect of rating change due to the removal of privileged access to private and material information of the firms CRAs rate. Model 3 and 4 test the robustness of these results using an alternative sample: one year window around RFD and Dodd-Frank. The results are qualitatively similar.

For upgrades, model 5 shows that the effect of RFD is insignificantly positive, while model 6 shows that the impact of Dodd-Frank is insignificantly negative. Even though the direction is as expected, the informational effect of the two changes in regulation is not statistically significant for upgrades. This is not surprising because

prior studies suggest that there is more public disclosure, especially good news, post-RFD when the practice of selective disclosure to disclose information to select analysts is curtailed. The fact that most analysts revise right before upgrades post-RFD supports this view.

6. Conclusion

The empirical evidence in this paper shows that RFD and Dodd-Frank implementation changes the relative information advantage of CRAs. During RFD, rating agencies keep their informational edge being one of the remaining conduits of selective disclosure to the public. As a result, we find that the effect of ratings change on stock prices and analyst forecast revisions to be more pronounced, especially for the downgrades. However, the edge conferred to the agencies during RFD is removed during the implementation of Dodd-Frank, when the exemption to CRA under RFD is repealed. As a result, the impact on stock prices and analysts are weakened.

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Table 1: Rating Sample Summary Statistics

This table presents the summary statistics for S&P's rating during the two years around RFD and its subsequent repeal during Dodd-Frank. The sample is split equally into four 24-month periods: pre-RFD from October 23, 1998 to October 22, 2000 and post-RFD from October 23, 2000 to October 22, 2002, while pre-repeal from October 4, 2008 to October 3, 2010 and post-repeal from October 4, 2010 to October 3, 2012. Panel A shows the distribution of number, size of issuer bond rating changes, and the contamination rate by period. Issuer bond ratings are converted into a cardinal scale (1 for AAA, 23 for rating D). The size of rating changes is the change in the cardinal value. A rating change is considered as contaminated if there is earnings announcement within a three-day window surrounding the event day of rating change. Panel B presents sample distribution by rating changes within investment grade, within speculative grade, and across grade. Within investment and speculative grade indicates whether the rating change is within investment (BBB- or higher) and speculative grade (below BBB-), respectively. Across grade indicates whether a rating is revised from investment to speculative grade, or vice versa.

Panel A: Distribution of Number, Size of Bond Rating Changes, Contamination Rate by Period

Period	Downgrades			Upgrades		
	Number	Size	Contaminated	Number	Size	Contaminated
Pre-RFD	169	-1.38	10.65%	122	1.25	9.02%
Post-RFD	292	-1.37	8.90%	103	1.17	7.77%
Total	461	-1.37	9.54%	225	1.21	8.44%
Pre-Repeal	326	-1.29	11.35%	181	1.12	7.73%
Post-Repeal	152	-1.16	6.58%	243	1.07	3.29%
Total	478	-1.25	9.83%	424	1.09	5.19%

Period	Downgrades						Upgrades					
	Within Investment		Within Speculative		Across		Within Investment		Within Speculative		Across	
Pre-RFD	114	67.5%	33	19.5%	22	13.0%	47	38.5%	60	49.2%	15	12.3%
Post-RFD	185	63.4%	76	26.0%	31	10.6%	24	23.3%	65	63.1%	14	13.6%
Total	299	64.9%	109	23.6%	53	11.5%	71	31.6%	125	55.6%	29	12.9%
Pre-Repeal	136	41.7%	169	51.8%	21	6.4%	30	16.6%	134	74.0%	17	9.4%
Post-Repeal	52	34.2%	86	56.6%	14	9.2%	58	23.9%	166	68.3%	19	7.8%
Total	188	39.3%	255	53.3%	35	7.3%	88	20.8%	300	70.8%	36	8.5%

Table 2: Announcement Returns

This table presents the announcement returns for S&P's credit rating changes the two years around RFD and its subsequent repeal during Dodd-Frank. The sample is split equally into four 24-month periods: pre-RFD from October 23, 1998 to October 22, 2000 and post-RFD from October 23, 2000 to October 22, 2002, while pre-repeal from October 4, 2008 to October 3, 2010 and post-repeal from October 4, 2010 to October 3, 2012. CAR is stock return less the value-weighted market return, cumulated over the three-day event window (-1,+1), where day 0 is the rating action day. P-values are given in parentheses. Mean and Median differences are tested using T and Wilcoxon two-sample tests, respectively. *, ** and *** denote statistical significance at 10%, 5% and 1%, respectively.

Period	Downgrade		Upgrade	
	Mean	Median	Mean	Median
Pre-RFD	-0.0232 ***	-0.0100 ***	0.0132 ***	0.0081 **
	(0.0015)	(0.0015)	(0.0076)	(0.0305)
Post-RFD	-0.0360 ***	-0.0104 ***	0.0110 **	0.0045
	(0.0003)	(0.0001)	(0.0403)	(0.1423)
Difference	-0.0128	-0.0005	-0.0022	-0.0036
	(0.3608)	(0.8929)	(0.7594)	(0.7332)
Pre-Repeal	-0.0363 ***	-0.0276 ***	0.0086 **	0.0076 **
	(0.0000)	(0.0000)	(0.0296)	(0.0210)
Post-Repeal	-0.0086	-0.00308	0.0047	0.0025
	(0.1953)	(0.2295)	(0.0618)	(0.1069)
Difference	0.0277 **	0.0245 ***	-0.0039	-0.0051
	(0.0426)	(0.0002)	(0.3858)	(0.2210)

Table 3: S&P's Market Influence

This table presents the proportion of influential for S&P's credit rating changes the two years around RFD and its subsequent repeal during Dodd-Frank. The sample is split equally into four 24-month periods: pre-RFD from October 23, 1998 to October 22, 2000 and post-RFD from October 23, 2000 to October 22, 2002, while pre-repeal from October 4, 2008 to October 3, 2010 and post-repeal from October 4, 2010 to October 3, 2012. An influential rating action is one when a correct-signed three-day CAR around a rating change is 1.96 standard deviations greater than expected based on the firm's idiosyncratic volatility of daily return three months prior to the rating change. P-values are given in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1%, respectively.

Period	Downgrade		Upgrade	
	Obs	%	Obs	%
Pre-RFD	17	0.1006	11	0.0924
Post-RFD	48	0.1644	10	0.0980
Difference	0.0638***		0.0056	
$\chi 2$	3.597		0.020	
P-Value	(0.0000)		(0.8874)	
(B1) Pre-Repeal	42	0.1288	11	0.0615
(B2) Post-Repeal	15	0.0987	17	0.0702
Difference	-0.0302		0.0088	
$\chi 2$	0.897		0.128	
P-Value	(0.3435)		(0.7203)	

Table 4: Equity Analyst Reaction Times

This table presents the summary statistics for analysts' reaction around S&P's credit rating changes the two years around RFD and its subsequent repeal during Dodd-Frank. The sample is split equally into four 24-month periods: pre-RFD from October 23, 1998 to October 22, 2000 and post-RFD from October 23, 2000 to October 22, 2002, while pre-repeal from October 4, 2008 to October 3, 2010 and post-repeal from October 4, 2010 to October 3, 2012. We restrict the sample to 1) individual forecast revisions with the same forecast period end date, 2) individual forecast revisions whose time from previous revision is less than or equal to 120 trading days, and 3) rating changes that do not coincide with earnings announcements within a three-day window surrounding the event day.

Rating Change	Period	1Q Prior	1M Prior	1W Prior	1W After	1M After	1Q After
Downgrade	Pre-RFD	84.29%	40.84%	13.09%	19.37%	46.60%	83.77%
	Post-RFD	95.26%	49.13%	22.94%	30.42%	56.36%	88.28%
	Difference	10.97% ***	8.29% ***	9.85% ***	11.05% ***	9.76% ***	4.51% ***
	$\chi 2$	14.05	8.78	7.87	13.72	11.54	37.21
	P-Value	(0.000)	(0.003)	(0.005)	(0.000)	(0.001)	(0.000)
	Pre-Repeal	94.06%	55.53%	21.72%	15.98%	44.06%	94.26%
	Post-Repeal	94.59%	39.53%	14.53%	13.85%	47.64%	95.95%
	Difference	0.54%	-16.01%	-7.19%	-2.13% **	3.58% ***	1.68%
	$\chi 2$	2.40	1.83	0.86	6.00	17.07	0.04
	P-Value	(0.122)	(0.176)	(0.354)	(0.014)	(0.000)	(0.839)
Upgrade	Pre-RFD	88.05%	43.82%	10.76%	5.98%	45.82%	92.03%
	Post-RFD	92.13%	41.57%	14.61%	13.48%	47.19%	92.70%
	Difference	4.09% **	-2.25%	3.85% ***	7.51%	1.37%	0.66%
	$\chi 2$	5.79	0.78	8.82	1.51	0.09	0.27
	P-Value	(0.016)	(0.377)	(0.003)	(0.219)	(0.771)	(0.606)
	Pre-Repeal	96.37%	52.38%	15.19%	18.59%	41.04%	92.74%
	Post-Repeal	92.77%	50.09%	15.87%	12.52%	40.21%	92.59%
	Difference	-3.60%	-2.29%	0.68% **	-6.07%	-0.83%	-0.15%
	$\chi 2$	0.36	0.01	5.91	0.26	0.17	1.68
	P-Value	(0.551)	(0.907)	(0.015)	(0.610)	(0.679)	(0.195)

Table 5: Analysts' Forecast Revision

This table presents individual analysts' forecast revision around S&P's credit rating changes the two years around RFD and its subsequent repeal during Dodd-Frank. The sample is split equally into four 24-month periods: pre-RFD from October 23, 1998 to October 22, 2000 and post-RFD from October 23, 2000 to October 22, 2002, while pre-repeal from October 4, 2008 to October 3, 2010 and post-repeal from October 4, 2010 to October 3, 2012. We restrict the sample to 1) individual forecast revisions with the same forecast period end date, 2) the interval of forecast revision is less than or equal to 120 trading days, and 3) rating changes that do not coincide with earnings announcements within a three-day window surrounding the event day. *Unadjusted* forecast revision is the change in one-year earnings forecast deflated by the firm's stock price. *Adjusted* forecast revision the unadjusted forecast revision less the average of a randomly chosen pool of revisions of an individual analyst. P-values are given in parentheses. Mean and Median differences are tested using T and Wilcoxon two-sample tests, respectively. *, ** and *** denote statistical significance at 10%, 5% and 1%, respectively.

	Downgrade				Upgrade			
	Unadjusted		Adjusted		Unadjusted		Adjusted	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Pre-RFD	-0.0087 ***	-0.0019 ***	-0.0042 **	0.0005	0.0008	0.0005 ***	0.0042 ***	0.0033 ***
	(0.000)	(0.000)	(0.045)	(0.939)	(0.137)	(0.000)	(0.000)	(0.000)
Post-RFD	-0.0246 ***	-0.0078 ***	-0.0192 ***	-0.0037 ***	0.0020 *	0.0006 ***	0.0056 ***	0.0031 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.052)	(0.001)	(0.000)	(0.000)
Difference	-0.0158 ***	-0.0059 ***	-0.0150 ***	-0.0041 ***	0.0013	0.0001	0.0014	-0.0002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.234)	(0.869)	(0.228)	(0.949)
Pre-Repeal	-0.0221 ***	-0.0040 ***	-0.0181 ***	-0.0017 ***	-0.0011	0.0004 **	0.0014	0.0018 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.209)	(0.039)	(0.138)	(0.000)
Post-Repeal	-0.0124 ***	-0.0035 ***	-0.0095 ***	-0.0013 ***	-0.0007	0.0004 ***	0.0013 **	0.0020 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.208)	(0.005)	(0.024)	(0.000)
Difference	0.0097 ***	0.0006	0.0086 **	0.0004	0.0004	0.0000	-0.0001	0.0002
	(0.005)	(0.282)	(0.010)	(0.478)	(0.662)	(0.915)	(0.952)	(0.596)

Table 6: Influential Analysts' Forecast Revision

This table presents the proportion of influential S&P's credit rating changes the two years around RFD and its subsequent repeal during Dodd-Frank. The sample is split equally into four 24-month periods: pre-RFD from October 23, 1998 to October 22, 2000 and post-RFD from October 23, 2000 to October 22, 2002, while pre-repeal from October 4, 2008 to October 3, 2010 and post-repeal from October 4, 2010 to October 3, 2012. We restrict the sample to 1) individual forecast revisions with the same forecast period end date, 2) the interval of forecast revision is less than or equal to 120 trading days, and 3) rating changes that do not coincide with earnings announcements within a three-day window surrounding the event day. An influential analyst forecast revisions is one when a correct-signed three-day CAR around an analyst's previous revision is 1.96 standard deviations greater than expected based on the firm's idiosyncratic volatility of daily return three months prior to the previous revision. Adjusted analysts' forecast revision is the unadjusted forecast revision less the average revisions of the individual analyst. P-values are given in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1%, respectively.

Downgrade	Influential		Non-Influential		Difference	
	Mean	Median	Mean	Median	Mean	Median
Pre-RFD	-0.0211 ***	-0.0068 ***	-0.0091 ***	-0.0009 ***	-0.0120 ***	-0.0059 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)
Post-RFD	-0.0258 ***	-0.0015 ***	-0.0119 ***	0.0001 ***	-0.0140 ***	-0.0017 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pre-Repeal	-0.0353 ***	-0.0055 ***	-0.0153 ***	-0.0010 ***	-0.0200 ***	-0.0045 **
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.023)
Post-Repeal	-0.0120 **	-0.0009 *	-0.0085 ***	-0.0013 ***	-0.0035	0.0003
	(0.025)	(0.086)	(0.000)	(0.000)	(0.518)	(0.965)

Upgrade	Influential		Non-Influential		Difference	
	Mean	Median	Mean	Median	Mean	Median
Pre-RFD	0.0040 ***	0.0036 ***	0.0032 ***	0.0029 ***	0.0008	0.0007
	(0.000)	(0.000)	(0.000)	(0.000)	(0.560)	(0.163)
Post-RFD	0.0050 ***	0.0036 ***	0.0026 ***	0.0022 ***	0.0024 **	0.0015 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.026)	(0.000)
Pre-Repeal	0.0053 ***	0.0028 ***	0.0010	0.0020 ***	0.0043 *	0.0008 **
	(0.000)	(0.000)	(0.347)	(0.000)	(0.075)	(0.030)
Post-Repeal	0.0023 ***	0.0023 ***	0.00109	0.00194 ***	0.00118	0.00033
	(0.002)	(0.000)	(0.105)	(0.000)	(0.430)	(0.363)

Table 7: Analysts' Forecast Revision

This table presents the OLS regression on a sample of S&P's credit rating changes the two years around RFD and its subsequent repeal during Dodd-Frank. The sample is split equally into four 24-month periods: pre-RFD from October 23, 1998 to October 22, 2000 and post-RFD from October 23, 2000 to October 22, 2002, while pre-repeal from October 4, 2008 to October 3, 2010 and post-repeal from October 4, 2010 to October 3, 2012. RFDj is an indicator variable equals 1 if a rating change is between October 23, 2000 and October 4, 2010. DODD-FRANKj is an indicator variable equals 1 if a rating change is after October 4, 2010 (effective date of the repeal of CRA's exemption). CWj indicates whether a firm is placed under credit watch. CARj is the abnormal stock return around a rating change, defined as stock return of a re-rated firm less the value-weighted market return, cumulated over the three-day event window (-1,+1), where day 0 is the rating action day. IRCj is influential rating change, defined as a correct-signed three-day CAR around a rating change that is 1.96 standard deviations greater than expected based on the firm's idiosyncratic volatility of daily return three months prior to the rating change. IANALYj is influential analyst forecast revision, defined as a correct-signed three-day CAR around an analyst's previous revision that is 1.96 standard deviations greater than expected based on the firm's idiosyncratic volatility of daily return three months prior to the previous revision. FORECAST INTERVALi,j is the duration between the previous and current forecast revision (in days). ANALY EXPi,j is the duration an analyst has covered a firm (in days). LEVj is (dlc + dltt)/(dlc + dltt + csho * prcc_f). TOBIN'S Qj is (at - seq + csho * prcc_f)/at. MARKETCAPj is the firm size at the start of the fiscal year. TANGIBILITYj is ppent/at. CROSSOVERj is an indicator variable equals 1 if a firm's credit rating crosses from investment to speculative grade or vice versa. DAYSj is the duration between the previous and current rating change (in days). RCHANGEj is the change in the cardinal value of a rating. EARNANNj indicates whether there is an earnings announcement within a three-day window surrounding a rating change. Standard errors are robust and clustered by analyst and firm, and given in parentheses. *, ** and *** denote statistical significance at 10%, 5% and 1%, respectively.

	Dependent Variable: Analyst Forecast Revision							
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample:	Downgrade				Upgrade			
Subperiod:	[-2 Years, +2 Years]		[-1 Year, +1 Year]		[-2 Years, +2 Years]		[-1 Year, +1 Year]	
Regulation:	RFD	Repeal	RFD	Repeal	RFD	Repeal	RFD	Repeal
RFD	-0.0111		-0.0193		0.00178		-0.00107	
	[0.00360]***		[0.00567]***		[0.00122]		[0.00106]	
DODD-FRANK		0.0104		0.0105		-3.97e-05		-0.000394
		[0.00355]***		[0.00633]*		[0.000991]		[0.00135]
CW	0.00332	-0.00115	0.00650	0.00313	0.000431	-0.00370	0.00124	-0.00282
	[0.00365]	[0.00454]	[0.00490]	[0.00687]	[0.001000]	[0.00187]**	[0.00121]	[0.00209]
CAR	0.0300	0.0145	-0.0359	0.146	-0.00249	0.00708	-0.0196	0.0221
	[0.0188]	[0.0238]	[0.0330]	[0.0679]**	[0.0138]	[0.0166]	[0.0159]	[0.0306]
IRC	-0.00516	-0.00969	0.0122	-0.00869	-0.000882	0.00236	-0.00164	0.00130
	[0.00549]	[0.00511]*	[0.00938]	[0.00730]	[0.000986]	[0.000928]**	[0.00131]	[0.00129]
IANALY	-0.0264	-0.00661	-0.0449	-0.00151	-0.00281	-0.00617	0.00428	-0.0164
	[0.00658]***	[0.00796]	[0.00894]***	[0.0113]	[0.00215]	[0.00341]*	[0.00280]	[0.00559]***
LOG(FORECAST INTERVAL)	-0.00531	-0.00272	-0.00205	-0.00220	-0.00115	-0.000363	-0.000935	-0.000505
	[0.00208]**	[0.00282]	[0.00316]	[0.00335]	[0.000645]*	[0.000941]	[0.000730]	[0.00135]
LOG(ANALYS EXP)	-0.00809	-0.00955	-0.0167	-0.0323	-0.00397	0.000197	1.90e-05	0.000193
	[0.00188]***	[0.00193]***	[0.0162]	[0.0189]*	[0.00224]*	[0.000152]	[0.00190]	[0.000156]
LEV	0.00492	0.00560	0.00423	-0.00628	-0.000448	0.000124	4.57e-07	-0.000879
	[0.00195]**	[0.00138]***	[0.00382]	[0.00506]	[0.000332]	[0.000464]	[0.000239]	[0.000666]

	Dependent Variable: Analyst Forecast Revision (Con't)							
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample:	Downgrade				Upgrade			
Subperiod:	[-2 Years, +2 Years]		[-1 Year, +1 Year]		[-2 Years, +2 Years]		[-1 Year, +1 Year]	
Regulation:	RFD	Repeal	RFD	Repeal	RFD	Repeal	RFD	Repeal
TOBIN'S Q	-0.00137	0.00366	-0.00113	0.00321	-0.000667	0.000122	0.000125	0.00129
	[0.00166]	[0.00125]***	[0.00268]	[0.00202]	[0.000388]*	[0.000495]	[0.000522]	[0.000689]*
LOG(MARKETCAP)	0.0181	0.00624	0.0213	0.00578	3.48e-05	-0.000440	0.00429	0.00250
	[0.00565]***	[0.00706]	[0.00882]**	[0.00788]	[0.00201]	[0.00230]	[0.00191]**	[0.00316]
TANGIBILITY	-0.0146	-0.00430	0.00684	0.00419	0.00263	0.00223	0.00226	0.00458
	[0.00725]**	[0.00696]	[0.00854]	[0.00693]	[0.00160]	[0.00112]**	[0.00148]	[0.00168]***
CROSSOVER	0.00384	0.00511	0.00357	0.00197	0.000237	0.000845	-0.000128	0.000204
	[0.00150]**	[0.00170]***	[0.00229]	[0.00238]	[0.000526]	[0.000780]	[0.000683]	[0.000974]
LOG(DAYS)	0.00431	0.00314	0.00204	-0.00731	0.000230	-0.00111	-0.000239	0.000302
	[0.00313]	[0.00631]	[0.00292]	[0.00912]	[0.00103]	[0.00181]	[0.000756]	[0.00374]
ABS(RCHANGE)	-0.00738	-0.0285	-0.0115	-0.0101	0.000751	0.00279	-0.000245	0.00909
	[0.00546]	[0.00762]***	[0.0110]	[0.0102]	[0.000915]	[0.00198]	[0.00109]	[0.00462]**
EARNANN	-0.00268	-0.00127	-0.00549	0.00461	0.000601	-0.000292	0.00105	-0.000149
	[0.00126]**	[0.00138]	[0.00150]***	[0.00213]**	[0.000384]	[0.000456]	[0.000500]**	[0.000540]
CONSTANT	0.00123	-0.0747	0.00857	-0.0347	0.00869	-0.00366	-0.00337	-0.00912
	[0.0172]	[0.0173]***	[0.0272]	[0.0183]*	[0.00509]*	[0.00752]	[0.00598]	[0.0125]
Observations	717	823	289	281	517	1,080	297	698
R^2	0.194	0.134	0.307	0.205	0.049	0.023	0.088	0.053

CHAPTER THREE

Open Market Share Repurchase Programs and Corporate Governance: Revaluation and Company Performance

Abstract

We study the relation between company corporate governance and company valuation and operating performance around open market share repurchase program announcements, using the Bebchuk, Cohen, and Ferrell (2009) entrenchment index as a measure of corporate governance strength. We find that announcement period stock returns, long-term post-announcement stock returns, and post-announcement adjusted operating performance are all significantly higher for firms with stronger relative to weaker governance. The results are robust to accounting for various controls. We conclude that the strength of the corporate governance system is an ex ante indicator of whether the managers announcing a share repurchase program do so to create value for shareholders.

1. Introduction

We study the relation between company *corporate governance* and company valuation and operating performance surrounding and after *open market share repurchase program* announcements (henceforth 'share repurchase programs'). We find that companies with strong corporate governance systems engage in repurchase offers that are associated with value creation and improvements in company operating performance while the result is not true for companies with weak corporate governance systems. This result is new to the literature and suggests that the strength of a company's corporate governance system plays an important role in framing the market's response to a share repurchase program and that the market's perception is upheld following the repurchase program's announcement. We conclude that the strength of a company's corporate governance system is an indicator of whether the managers promoting a share repurchase offer are seeking to create value for shareholders.

Chan, Ikenberry, and Lee (2004) present three potential value-increasing motivations for repurchasing stock: (1) as a signal of perceived undervaluation, (2) to disgorge excess cash in order to reduce agency costs, or (3) to financially restructure the firm in order to attain a more optimal debt level. Share repurchase announcements are indeed associated with positive *average* abnormal announcement-period returns for shareholders on the order of 3% (see e.g. Ikenberry, Lakonishok and Vermaelen (1995), and Grullon and Michaely (2002)). Despite a positive *average* revaluation, many share repurchase announcements are associated with zero or negative share price reactions indicating that not all share repurchase announcements are perceived

as value-increasing decisions. One explanation for this result is that the firms whose stock prices are not positively rewarded by the market may instead be perceived as falling under the control of managers attempting to artificially inflate the stock price by falsely mimicking the behavior of value-increasing firms, when the truth is they are fundamentally inferior companies (Massa, Rehman, and Vermaelen, 2007). We report empirical evidence that supports this hypothesis.

Gong, Louis and Sun (2008) posit that managers, in general, may use discretionary accruals to manage reported earnings downward prior to announcing a share repurchase program in an effort to drive down the price at which they will ultimately repurchase their firm's shares. An empirical implication of this hypothesis is that the share price will eventually revert upwards to its fundamental value, barring the market does not penalize the firm for lying. Gong et al. find that share repurchase announcements tend to be associated with positive abnormal long-term returns after the share repurchase, gains that are lost by those who chose to sell at the artificially low repurchase price offer. Gong et al. note that to the extent future performance is not captured by the market reaction at the share repurchase announcement, shareholders with the lowest marginal reservation selling prices, who sell at the announcement, are those who suffer the largest opportunity losses. Long-term shareholders with higher reservation selling prices continue holding their shares and gain as the share price reverts to its higher fundamental value after being artificially deflated. Managers are part of the group of long-term shareholders often due to institutional arrangements that prohibit them from selling stock they have been awarded as part of their compensation agreements before an extended vesting period

has expired.[20] Through a combination of stock ownership, incentive stock options, bonuses, and continuing tenure with the company, managerial fortunes will rise and fall with those shareholders who do not sell at the repurchase offer price. Thus managers may have personal incentives to engage in earnings manipulation, at least to the extent legally possible, followed by share repurchase programs that essentially expropriate wealth from the marginal selling shareholders, to the benefit of themselves and indirectly other long-term shareholders. Chan et al. (2010) and Gong et al. (2008) both show that earnings management techniques are used by managers surrounding share repurchase announcements and argue that earnings quality can be used as a proxy for managerial intentions. We suggest that earnings management is also an indicator of the extent of any agency problems around the time of the share repurchase program. Earnings management, especially accrual management, is however difficult for market participants to discern in real time, making a measure of earnings quality during a given year a useful ex post indicator but not discernible ex ante. Hence, earnings management as a tactic might be used successfully by managers prior to a share repurchase to fool the market. The question is whether there are counterweights that for some firms will minimize the agency problem just described and motivate managers to engage in share repurchases that are value enhancing. We conjecture that the corporate governance characteristics of the firm, excluding the ownership and compensation arrangements for managers which can in fact fuel the problem, have the potential to act as such a counterweight.

[20] See for instance Kole (1997).

The strength of a company's corporate governance system may act as a counterweight to the managerial choice to engage in earnings manipulation followed by a share repurchase program. If corporate governance is strong and acts to motivate managers to pursue shareholder interests then we would expect the choice to conduct a share repurchase to be driven by a value enhancing motive and that this should be reflected in the value and performance of the repurchasing firm following the repurchase. We present evidence consistent with this hypothesis.

Following Bebchuk et al. (2009) we construct and use what those authors refer to as the Entrenchment index, henceforth the E index, for each of our sample firms. We classify share repurchase announcing firms into shareholder-friendly, low E index values, and manager-friendly, high E index values. Our primary hypothesis is that corporate governance can act as a counterweight against managerial agency problems, leading managers of firms characterized by strong governance, e.g., shareholder-friendly firms, to engage in value enhancing share repurchases. Conversely, we conjecture that managers of weakly governed firms, e.g., manager-friendly firms, engage in share repurchase programs which do not enhance value but may be undertaken for reasons benefiting managers but not shareholders. The latter might involve attempting to mimic shareholder-friendly announcing firms in order to temporarily boost the stock price. A temporary boost in the stock price could benefit managers through fending off an unwanted takeover attempt (Bagwell (1991)), by boosting stock price-based compensation schemes (Jolls (1998)), or by helping to meet or beat expected earnings per share through a reduction in the number of shares outstanding (Hribar and Jenkins (2006)) possibly influencing managerial accounting-

based bonuses. Empirical studies show that CEO bonuses are often tied to earnings and that CEOs manipulate earnings to maximize their bonuses (Healy, 1985; Holthausen et al., 1995). Larcker et al. (2007) find that abnormal accruals (earnings manipulation) are higher when managerial compensation is weighted towards accounting-based plans.

We find that shareholder-friendly firms announcing share repurchase programs experience immediate positive and statistically significant abnormal revaluations while the result is insignificantly different from zero for manager-friendly firms. The difference between the abnormal revaluations for the shareholder- and manager-friendly subsamples is statistically significant at the 5% level. We also study the behavior of long-term abnormal stock returns for the sample firms, and find positive and significant abnormal returns over the 12 or 24 months, following the share repurchase announcement, averaging about 5% and 10%, respectively for the full sample. We also find that shareholder-friendly firms average about 10% and 17%, while manager-friendly firms average only 4% and 8%, respectively. These differences are statistically and economically significant.

Finally, we study announcing firms' operating performance for the one and two years after share repurchase announcements. Median abnormal operating performance is significantly positive for shareholder-friendly firms only and is statistically significantly greater than the performance of manager-friendly firms which themselves have negative performance results.

In summary, we find that well-governed firms announcing a share repurchase are associated with more value creation and better long-term performance than weakly governed firms. The result holds for share revaluation at the announcement of the program as well as long-term share revaluation and operating performance following the announcement. We conclude that the managers of firms with stronger corporate governance profiles choose to engage in share repurchase programs that create value for shareholders indicating that corporate governance is a motivating factor in this decision.

In Section II, we review the literature on repurchase programs and develop our hypotheses. We explain the methodology for testing our hypotheses in Section III. Section IV contains a discussion of our sample selection and provides a brief description of our sample. We present and discuss the results in Section V. Section VI presents a summary of the paper and our conclusions.

2. Literature Review

Chan, Ikenberry, and Lee (2004) argue that the share repurchase literature has muddled the understanding of the economic motivations for share repurchase programs. They present three theories of share repurchase activity in which managers are driven by the underlying motive to create shareholder wealth, which include (1) mispricing, (2) disgorging free cash flow and (3) altering capital structure. First, a firm may announce a repurchase program when it believes, based on its own estimate of intrinsic value, that its shares are undervalued (mispricing). If the signal is believed,

then the market will re-price the undervalued shares upon the announcement, perhaps making actual share repurchases unnecessary. In this case, only when the signal is not believed will the firm have to actually repurchase shares. Second, a firm will use excess free cash flow to buy back shares in order to tax-efficiently mitigate any discount in the share price due to the agency costs associated with free cash flow (will disgorge cash). Third, successful firms grow the book as well as market value of their shares, thus decreasing their debt-to-equity ratio, possibly to a suboptimal level. A share buyback program, especially when coupled with additional borrowing, can move the capital structure balance back toward the optimal level of debt financing.

Using an analysis of short-term and long-term abnormal stock returns, Chan et al. (2004) find support for the mispricing and free cash flow theories, and no support for the leverage rebalancing theory. Specifically they find that average announcement period returns at the time of a repurchase offer are greater for small firms, for firms announcing a higher percentage of outstanding shares to be repurchased, and for firms whose abnormal returns were negative over the previous year. Independent variables designed to capture the free cash flow and leverage theories were insignificant. Results using long-term abnormal stock returns lead to similar conclusions for the mispricing hypothesis, but also provide support for the free cash flow hypothesis. Firms in their sample with higher levels of free cash flow tended to have higher long-term abnormal stock returns. Results for the independent variables designed to capture the leverage hypothesis did not support the theory.

Lie (2005) studies the post-repurchase operating performance of a sample of firms that announce a share repurchase. He argues that in order to significantly

influence market perceptions, that is, to provide a signal, such announcements must be bonded by actual share repurchases. Lie finds that only firms that bond their announcements with actual repurchases show significant improvement in operating performance after the announcement. Firms who do not back up their repurchase offers with actual cash repurchases do not show significant operating performance improvement, and in fact show a marginally significant negative change in performance. Despite the raw evidence, industry-adjusted operating performance changes are insignificant for bonded announcements. Only when Lie adjusts operating performance with a sample firm's prior performance does the performance improvement become evident. Interestingly, firms that do not repurchase in the quarter after the announcement, but then repurchase in subsequent quarters show significantly improved mean (not median) operating performance in the quarters after the buybacks. Finally, Lie finds that only firms that actually repurchase shares show significantly positive abnormal stock returns when the program is announced. Clearly, the market is keying on an indicator available at the initial announcement that predicts whether the firm will actually repurchase shares. Lie's evidence however does not provide any clues as to what that indicator may be. A recent study by Gong, et al. (2008) does however bring us closer to understanding what the observable company characteristic is that the market keys on.

Gong et al. (2008) study the effect of earnings management on long-term operating and stock performance following share repurchase announcements. They argue that it is the marginal shareholders, those with the lowest reservation prices for their firm's stock, who are willing to sell their shares upon a repurchase

announcement. Managers, because of personal wealth interests due to stock ownership, stock options, equity-based bonuses, etc., have an incentive to repurchase shares at a price below fundamental value, in the process creating a wealth transfer to themselves and incidentally to all remaining shareholders. A key ingredient of this hypothesis is that managers make choices before a share repurchase that give the appearance that fundamental share value is lower than what the managers know it to be. Such choices include deflation of reported earnings through accrual manipulation, within the guidelines of GAAP. Gong et al. (2008) posit that managers making share repurchase announcements for reasons designed to enhance their own wealth through wealth transfers will manage earnings downwards in the quarter prior to making the announcement in an effort to lower the price at which they may repurchase shares. We would not expect to see such earnings management practices being implemented by managers who believe the market is underpricing the shares. Gong et al. (2008) find that firms making share repurchase announcements manage accruals in such a way as to deflate earnings immediately prior to the announcement. However, they also find that this behavior is limited to firms that actually repurchase shares immediately after the announcement. They find that average abnormal accruals for repurchasing firms are significantly negative in quarters -1 and 0, and are significantly positive in quarters +1 through +8. Accounting for the concern that abnormal accruals and the fraction of shares repurchased are jointly determined, Gong et al. (2008) find a negative relation between these two variables and conclude that firms planning to buy back more shares tended to deflate earnings more. Gong et al. (2008) also find that the more heavily a firm uses abnormal accruals, the better its

subsequent stock and operating performance. Finally, after adjusting for earnings management activities immediately prior to the announcement, abnormal operating performance after share repurchase announcements disappears.

Grullon and Michaely (2004) study operating performance, risk characteristics, and the cost of capital for firms announcing a share repurchase. They posit that a necessary condition for the signaling hypothesis to be correct is for subsequent actual operating performance to improve and/or that operating performance is expected to improve. For the agency hypothesis to be correct, firms must have a possible agency problem, which can manifest itself as a reduction in growth opportunities, implying a reduction in actual investment and in risk. This risk reduction requires that growth opportunities be more risky for the firm than the assets in place, and that as such opportunities fade in importance, the firm's weighted average risk (the weighted average of risk of assets in place and growth opportunities) declines. A risk reduction implies that the cost of capital may decline. This would lead to an increase in value at the share repurchase announcement as the discount rate falls if the slowing growth has already depressed market prices and the reduction in agency costs, which is not yet reflected in market prices, is signaled by the announcement.

Grullon and Michaely (2004) follow Lie (2001) in measuring operating performance, and use a nonlinear regression model to test for unexpected operating performance changes. They find unexpected negative changes in operating performance after the share repurchase announcement and reductions in analyst's earnings forecasts, which are both inconsistent with the signaling hypothesis, but are consistent with a reduction in growth opportunities. Further exploring the reduction in

agency cost-reduction hypothesis, they find post-announcement reductions in capital expenditures, research and development expenditures, and cash reserves, all consistent with a reduction in growth options. They also test for reductions in capital market risk characteristics using monthly returns data and find that loadings on beta, firm size and book-to-market variables decrease in the 36 months after the announcement and confirm that these reduced loadings result in a reduction in the cost of capital. Finally, they report that the announcement period return is not related to changes in operating performance, is positively related to the reductions in risk, and is especially pronounced for firms with high cash levels and low growth opportunities (proxied by Tobin's q).

Harford, Mansi, and Maxwell (2008) develop three hypotheses to study the effect of corporate governance on the cash holdings of U.S. firms. These include the (1) flexibility, (2) spending, and (3) shareholder power hypotheses. Under the flexibility hypothesis, self-interested managers make a tradeoff between the flexibility afforded by, and the increased scrutiny associated with hoarding excess cash. The less effective a firm's corporate governance, the more excess cash a firm will hold presumably because managers can exploit the use of such funds for their own benefit at little or no cost to themselves. Under the spending hypothesis, managers will quickly spend cash in order to expand the firm and avoid the increased scrutiny that may accompany a cash buildup. In this case, the less effective a firm's corporate governance, the less excess cash a firm will hold. Under the shareholder power hypothesis, the firm's owners allow managers to build up excess cash holdings in order to prevent underinvestment due to costly external funding options. Here, the

less effective a firm's corporate governance, the lower the cash reserves. The latter two hypotheses both predict the same outcome, but for opposite reasons.

Harford et al. (2008) report that firms with entrenched management tend to hold less cash reserves than do well-governed firms. In order to explain this finding, they examine the investment and dividend payout behavior of their sample firms, conditional on an increase in cash. Entrenched firms tend to respond to increases in cash by increasing capital expenditures and acquisitions activity, but tend to underinvest in R&D relative to more well-governed firms. Further, entrenched firms tend to have a higher level of dividends and they tend to pay out less of an increase in cash relative to well-governed firms. Finally, entrenched firms tend toward paying out excess cash in the form of nonbinding repurchases, while well-governed firms are more likely to choose an increase in dividends which better binds managers to continuing the payout.

Babenko, Tserlukevich and Vedrashko (2012) develop a model in which prior insider trading is informative upon announcement of open market share repurchase programs. They argue, specifically, that insider stock purchases leading up to the announcement lends credibility to the undervaluation motive for repurchases. They find that insiders at announcing firms purchase more stock in the period leading up to the announcement, and that announcement period returns are positively related to the size of insider pre-announcement purchases of their firms' stock.

We argue that corporate governance offers an ex ante glimpse at managerial intent and the motivation for a share repurchase program. Managers of well-

governed firms face more stringent internal company governance structures than their counterparts in weakly governed firms. Well-governed firms will also tend to more closely align managers' interests with those of shareholders' via compensation contracts containing market-based incentives than will more entrenched firms (see Fahlenbrach (2009)). In this view, corporate decisions, including a share repurchase, are made in the context of the firm's existing governance structure, but do not affect the structure itself, which evolves over the course of years or even decades. We posit that companies with strong corporate governance systems engage in repurchase offers that are associated with value creation and improvements in company operating performance while the result is not true for companies with weak corporate governance systems.

3. Empirical Methods

3.1 Announcement period stock return calculations

We use standard event study methods and daily with-dividend return data from the Center for Research in Security Prices (CRSP) data files to measure the average abnormal stock return for our sample of share repurchase announcing companies over the three-day period centered on the dates the programs are announced.[21]

[21] See Campbell, Lo and MacKinlay (1996) or MacKinlay (1997) for a review of standard event study methods. We estimate the single index market model parameters using daily returns over the 255 trading days from day +91 to day +345 using the equally-weighted daily with-dividend return index from CRSP as the benchmark index. Prior studies (Peyer and Vermaelen, 2009; Ikenberry, Lakonishok, and Vermaelen, 1995) have documented that share prices tend to drift upwards for as long as four

3.2 Long-term stock return calculations

We compute abnormal post-repurchase long-term stock returns using monthly with-dividend returns from CRSP and three alternative benchmarking approaches, two of which use the Daniel, Grinblatt, Titman, and Wermers (1997) benchmark adjustment procedure controlling for company size (market capitalization), the industry-adjusted book-to-market ratio and the previous 12-month total stock return. The third approach makes use of the Carhart (1997) four-factor model and the calendar time test method of Fama and MacBeth (1973).

We implement the Daniel et al. (1997) benchmarking procedure in July of each sample year, by forming 125 benchmark portfolios. Data requirements for inclusion in the benchmark portfolio include COMPUSTAT data for at least two years prior to benchmark formation, and market equity value data on CRSP at the end of trading in the months of December, May and June prior to benchmark formation. First, we sort all firms that meet our data requirements into five market equity size-based portfolios (using NYSE size quintiles) using market prices from the last trading day in June in the benchmark year. We next sort the five size-based portfolios based on the industry-adjusted book-to-market ratio, and form five book-to-market-based portfolios in each. The book value of equity is measured as of the end of the firm's fiscal year in the calendar year preceding benchmark formation and the market value

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years following repurchases. As such, the coefficient estimates for the basic market model may be biased relative to their true values on the announcement date. We repeat our tests using market-adjusted returns and find the results are qualitatively similar to those obtained using the market model benchmark. The results are available from the authors upon request.

is as of the last trading day in June of the benchmark year. We form 50 industries using the primary Standard Industrial Classification codes as reported by CRSP. We adjust a given firm's book-to-market ratio by subtracting from it the long-run industry average ratio. Within each of these 25 size and book-to-market sub-portfolios, we do one more sort based on the prior 12-month return of each stock ending on the last trading day in May of a given year. This process results in a total of 125 benchmark portfolios that are based on market equity size, book-to-market ratio, and prior stock return performance. We re-sort the benchmark portfolios annually in July throughout the sample period. For each of the 125 benchmark portfolios, we compute a monthly value-weighted buy-and-hold return. We then compute an abnormal return for each announcing firm in a given month equal to the firm's actual return minus the return on the benchmark subportfolio to which it belongs for that month.

We compute the *long-term cumulative abnormal return* (LCAR), and the *buy-and-hold abnormal return* (BHAR) for 12 and 24 months after a share repurchase announcement for each security in the sample. The LCAR for an individual security is the sum of the differences between a firm's monthly raw return and the monthly return for the benchmark portfolio to which it belongs and is given by:

(1) $$LCAR_{i,t} = \sum_{t=1}^{T}\left(R_{i,t} - R_{i,t}^{b}\right)$$

where T is the length of the accumulation period (12 or 24 months), R_{it} is the actual return on the security in the t^{th} calendar month following the share repurchase announcement, and $R_{i,t}^{b}$ is the return on the benchmark portfolio *b* to which security *i*

belongs in the t^{th} month following the announcement. The average LCAR equals the simple average computed across the N sample cases. The test statistic follows:

(2) $$t_{LCAR} = \overline{LCAR} \,/(\sigma_{LCAR}/\sqrt{n})$$

We compute the BHAR for an individual security as the difference between the compound growth of a $1 investment in an announcing firm's stock over T monthly periods less the compound growth of a $1 investment in the appropriate benchmark portfolio for the same time horizon.

(3) $$BHAR_{i,t} = \{(\prod_{t=1}^{T}(1 + R_{i,t})) - (\prod_{t=1}^{T}(1 + R_{i,t}^{b}))\}$$

where the variables are defined as above. The average BHAR is equal to the simple average computed across the N sample cases. The test statistic follows:

(4) $$t_{BHAR} = \overline{BHAR} \,/(\sigma_{BHAR}/\sqrt{n})$$

We also compute portfolio abnormal returns using the Carhart (1997) four-factor model. For each calendar month in our sample period, we form value-weighted portfolios of firms that announced share repurchase within the last 12 and 24 months. For each of these monthly sample portfolios, we calculate the portfolio excess return (raw return on the portfolio minus the risk-free rate) for that calendar month. This process produces a time series of monthly portfolio excess returns for each calendar month in the sample period. We then estimate the following model relating the monthly time series of portfolio excess returns to the following variables: (1) the market excess return ($R_{m,t} - R_{f,t}$), (2) the small-minus-large capitalization factor (SMB), (3) the high-minus-low book-to-market factor (HML), and (4) the market momentum factor (UMD):

(5) $$R_{p,t} - R_{f,t} = \alpha_i + \beta_i(R_{m,t} - R_{f,t}) + s_i SMB_t + h_i HML_t + u_i UMD_t + \varepsilon_{i,t}$$

We collect values for these variables and the risk-free rate from Ken French's website at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html. The intercept of the time-series regression equals an estimate of the mean monthly abnormal return on the portfolio composed of shares of the firms announcing repurchase programs. Even though calendar time regression controls for problems associated with event-time clustering, the t-statistics may suffer from heteroskedasticity caused by variations in the number of firms in the calendar time portfolios (Mitchell and Stafford, 2000). We therefore used heteroskedasticity-adjusted standard errors following the methods proposed by White (1980).

3.3 Operating performance calculations

We follow the methods employed by Lie (2005) when computing adjusted long-term operating performance. Operating data are obtained from the COMPUSTAT data files. Unadjusted operating performance is defined as operating income standardized by cash-adjusted total assets.[22] We adjust sample firms' operating performance by subtracting the operating performance of a matched control firm. Control firms are chosen based on matches on industry, pre-announcement operating performance, and the market-to-book ratio, where our objective is to find the firm closest economically to a

[22] Subtracting cash from total assets eliminates potential bias in operating performance from reductions in the asset base from using cash to implement the share repurchase program. Operating performance is defined using COMPUSTAT data items as follows: Operating Performance = OIBDPQ/(ATQ-CHEQ). All items are quarterly and include operating income before depletion divided by total assets minus cash and cash equivalents.

sample firm in the period immediately prior to the share repurchase announcement. For each sample firm, we select all firms with the same two-digit Standard Industrial Classification (SIC) code that are within (1) 20% of the sample firm's operating performance in the announcement quarter, (2) 20% of the sample firm's operating performance for the four quarters ending with the announcement quarter, and (3) 20% of the sample firm's pre-announcement market-to-book value. From this set of potential control firms, we select the firm with the lowest sum of absolute performance difference (APD) as follows:

(6) $$APD = \left|OP_{t,si} - OP_{t,ci}\right| + \left|\sum_{t=-4}^{-1} OP_{t,si} - \sum_{t=-4}^{-1} OP_{t,ci}\right|$$

where OP is the unadjusted operating performance for sample company s or control company c.

If the screening process results in no qualifying control firms, following Lie (2005) we relax the industry constraint and include all firms in the one-digit SIC code industry. If there are still no potential control firms, we relax all screening criteria and select the firm with the lowest APD. Finally, if sample firms lack the necessary data for the four quarters ending with quarter 0, we use only the first term of Equation 6 as the basis for selection.[23] We evaluate operating performance over the first 4 and 8 quarters following the repurchase announcement.

[23] For our sample of 1515 firms, 1312 firms meet our full screening criteria, 117 firms enter the sample at the 1-digit SIC level, and 86 firms enter the sample without screening for industry.

4. Sample Selection and Description

Our initial sample consists of all 18,337 companies identified by Securities Data Corporation, SDC, as having announced an open-market share repurchase program between January 1, 1991 and December 31, 2006. We exclude all share repurchase tender offers which are typically made at a premium relative to the market price. [24] We collect E index data from Lucian Bebchuk's Website (http://www.law.harvard.edu/faculty/bebchuk/data.shtml). [25] There are 5640 repurchase program announcing companies with E index values. Quarterly financial reports are used to compute operating performance. We obtain quarterly financial data from the COMPUSTAT files which reduces our sample to 1,515 repurchase cases.

Table 1 presents the distribution of our sample through time. Note the wave of share repurchase announcements around the turn of the century, and another apparent wave forming at the end of our sample in 2006. The low number of share repurchase announcements in the early 1990s and early 2000s may be a result of recessionary periods.

Panel A of Table 2 presents various descriptive statistics for our sample firms. Sample firms have mean (median) total assets of around $6.7 billion ($1.7 billion), and market capitalization of around $10.2 billion ($1.9 billion). Panel B presents the industry distribution of the sample. Computer hardware, chemical products, electronic

[24] For a discussion of share repurchase tender offers see Dann (1981) and Vermaelen (1981).
[25] Appendix A describes the governance characteristics that are included in the calculation of the entrenchment index. The data on governance characteristics are from the IRRC/Risk Metrics Group , Inc. databases. This data is collected by IRRC/Risk Metrics every two or three years. We use the lagged measure of E index in our analysis to avoid forward-looking bias.

equipment, electric and gas services, and specific instruments are the top five industries represented by sample companies and make up about 20%, 12%, 12%, 8%, and 7%, respectively, of the overall sample. Throughout our analyses we control for industry effects in a variety of ways.

Table 3 presents the distribution of the E index for our sample. The E index takes a value in the range (0,6). One hundred and sixty-two (162) of our sample firms have none of the provisions Bebchuk et al. include in the calculation of the entrenchment index, while just four firms have the maximum of six provisions.[26] In order to facilitate comparisons between well-governed, shareholder-friendly and entrenched, manager-friendly firms, we separate our sample into three groups based on the E index values. We define shareholder-friendly firms as those with one or fewer provisions, and we define manager-friendly firms as those with four or more provisions. The third group includes firms with two or three provisions that we consider to be neither shareholder- nor manager-friendly. These three groups contain approximately 30%, 50%, and 20% of the sample.

5. Results

5.1 Announcement-period abnormal stock returns

Table 4 presents the 3-day cumulative average abnormal return centered on the repurchase program announcement date. We find a 3-day CAR of about 1.1% for the full sample (col. 1). This result is consistent with, although somewhat smaller than

[26] See Appendix A for a list of the components of the E index.

previous studies (for instance, Grullon and Michaely, 2002). Columns 2, 3, and 4 present announcement period abnormal returns for firms segregated by governance classification: shareholder-friendly, manager-friendly and between-friendly. The manager-friendly group's CAR, is not significantly different from zero, while the CARs for the other two governance groups are both significantly positive and are roughly each equal to 1.3%. The final column shows that the difference in the averages of the shareholder- and manager-friendly CARs is significantly different from zero at the 5% level. These results are consistent with our hypothesis that the strength of a company's corporate governance system plays an important role in framing the market's response to a share repurchase program and is consistent with the view that the market believes good governance leads to value creation. The result is only part of the story however. In the next two sections we examine the relation between corporate governance and the long-run stock returns as well as operating performance of the firms in our sample following the share repurchase announcements.

5.2 Long-term stock returns

As discussed above, we use three different methods to compute post-repurchase long-term abnormal stock returns. In Table 5, we present the results of the two methods based on cumulating the monthly adjusted returns computed using the benchmark adjustment procedure of Daniel et al. (1997). We find the cumulative average sum of the abnormal returns (LCAR) and the average buy-and-hold abnormal returns (BHAR) results are similar, and so focus our discussion on BHAR. The first

column of Table 5 contains the BHARs for the full sample, which are 5.2% and 9.4%, respectively, over the 12 and 24-month accumulation periods. The aggregate results are consistent with previous findings reported in the literature (Ikenberry et al., (1995)).

The BHARs for the shareholder-friendly group of announcing firms are 9.8% and 16.9%, respectively, while the BHARs for the manager-friendly group are significantly smaller, 3.3% and 6.2%, respectively. As shown in the last columns, the differences between the abnormal returns associated with the shareholder-friendly firms and the manager-friendly firms are statistically significantly different from zero. These results are consistent with the announcement period results reported in Table 4, and further support the view that the market's perception is that repurchase offers made by strongly governed firms are the product of managerial intentions to create value.

As a robustness check, we also compute long-term abnormal stock returns using the Carhart (1997) four-factor model in the context of the Fama and MacBeth (1973) calendar time approach. This approach produces monthly abnormal returns for the entire portfolio of sample firms over the 12 and 24 months after a share repurchase announcement. The first two columns of Table 6 contain the monthly abnormal returns for the full sample. For both the value- and equal-weighted portfolios, the monthly abnormal returns are 0.7% over each of the three accumulation periods, and are statistically significant.

The monthly abnormal returns for the shareholder-friendly group suggests once again that the abnormal returns of shareholder-friendly firms following repurchase announcements are positive and significantly different from zero. While the abnormal returns for the manager-friendly firms are generally significant, they are about half as large as those of shareholder-friendly firms. This method of computing abnormal returns does not permit across subsample tests of means, but the level of the differing monthly abnormal returns suggests that shareholder-friendly firms outperform manager-friendly firms in an economically meaningful way. The results reported in Table 6 are consistent with our central hypothesis. Long-run abnormal returns for shareholder-friendly firms are higher than for manager-friendly firms, again supporting the conclusion that the market frames its response based upon the strength of the corporate governance system of the firm.

5.3 Long-term operating performance

Table 7 presents the results of an analysis of long-term operating performance for our sample firms. The first column presents the difference in operating performance between the announcement quarter (quarter 0) and quarters +4, and +8 for the full sample. We find no statistically significant adjusted performance for the full sample. However, when we examine the three governance classes individually we find statistically significant positive adjusted operating performance is present for the shareholder-friendly firms. Manager-friendly firms in contrast show no such positive performance. We report the difference between adjusted shareholder- and manager-friendly firms' operating performance in the last column, which shows that

shareholder-friendly firms perform statistically significantly better than manager-friendly firms in the first 4 and 8 quarters after the announcement. These results along with those presented in the prior two sections suggest that the strength of a company's corporate governance system plays an important role in framing the market's response to a share repurchase program and that the market's perception is upheld following the repurchase program's announcement.

5.4 Multivariate analysis of long-term performance

Table 8 presents more refined tests of the relation between the 24-month post announcement BHAR and the strength of corporate governance at the repurchasing firm.[27] Throughout we use the E index as our measure of the strength of corporate governance. Recall that smaller values of the E-index reflect more shareholder-friendly environments, that is, stronger governance. All models in Tables 8 and 9 are estimated controlling for the year of announcement using year dummies (excluding the dummy for year 2006). Coefficient tests are based upon White heteroskedasticity-consistent standard errors.[28]

Model 1 of Table 8 presents the estimated relation between the 24-month BHAR and the E index of the announcing firm, and shows a negative and significant relation between the two. Thus the more manager-friendly the firm's governance structure, the lower the 24-month post-announcement abnormal return. This finding

[27] Regressions results using the 12- month BHAR as the dependent variable are qualitatively similar to the results presented in Table 8 and so are not reported.

[28] All inferences are unchanged when we estimate the regressions excluding the year dummies. Likewise, we also conducted coefficient tests using bootstrapped standard errors and found the inferences from those tests were the same as those reported. The supplemental results are available from the authors upon request.

is consistent with that of Babenko et al. (2012), who find a negative relation between 1-year stock returns and E index.[29] This is the heart of our study: The more shareholder-friendly a firm is, the greater its long-term performance following a share repurchase announcement. Model 2 adds the set of control variables used in Gong et al. (2008), which include measures of sample firms' leverage, size, book-to-market ratio and cash holdings. Inclusion of these control variables does not affect the sign of the estimated coefficient on the E index or its statistical significance.

Gong et al. show that firms repurchasing shares for other than signaling purposes tend to manage accruals downwards. They find a negative relation between discretionary accruals and post-announcement, long-term stock returns. We replicate their regression in Model 3.[30] We measure abnormal accruals in the same manner as Gong et al. using COMPUSTAT as the source for the raw data. Appendix B provides details on how abnormal accruals are calculated. The estimated coefficient on our measure of abnormal accruals, AbAcc, shows that the results for our sample are consistent with those of Gong et al. As earnings management efforts increase, long-term stock performance tends to increase consistent with the hypothesis that some managers may engage in earnings manipulation prior to repurchase offers in order to distort downward the market price at which the repurchases are executed. This

[29] While negative, the estimated coefficients on E index reported by Babenko et al. (2012) are insignificantly different from zero. This may be attributed to different sample screens. Our requirement for quarterly operating performance data limits our sample to less than one-third that of Babenko et al. (2012).

[30] To account for the fact that we do not screen our sample for executed share repurchases, we define a regression variable SHREP that is the sum of the shares actually repurchased during quarter 0 and quarter +1, including zero, deflated by the market value at the beginning of quarter 0 and quarter +1. The estimated coefficients on this variable are all insignificantly different from zero and so they are not reported in the table.

behavior is emblematic of the governance problem we have alluded to in the prior sections. Stronger governance should reflect itself in the market's reaction to a repurchase offer and the subsequent creation of value. As noted above, however, contemporaneous earnings management efforts are difficult to detect ex ante.

In Model 4, we include the E index, AbAcc and the additional control variables. The estimated coefficients on both E index and AbAcc change little in terms of magnitude and both continue to have a negative sign and both continue to be significantly different from zero. We conclude that the strength of the governance system, whether measured and proxied by E index or AbAcc, is significantly related to the long-term stock performance of the company and is an indication of managerial intentions to create value of shareholders. As noted earlier, however, earnings management efforts are difficult to detect ex ante while the E index is based upon publicly available information.

Table 9 presents a regression analysis of the 8-quarter adjusted operating performance on the same independent variables as in Table 8. Model 1 tests the relation between the 8-quarter adjusted operating performance and the E index of the announcing firm, and shows a negative and significant relation between the two. Since a lower E index indicates a more well-governed firm, the more shareholder-friendly the firm's corporate governance structure, the higher the adjusted operating performance. This finding is consistent with our results using long-term abnormal stock returns. Model 2 adds the set of control variables used in Gong et al. (2008), and indicates that inclusion of these control variables does not affect the sign or statistical significance of the estimated coefficient on the E index.

In Model 3 we replace the E index with the abnormal accrual variable AbAcc and find that the estimated coefficient on AbAcc is not significantly different from zero. Gong et al. in contrast report a negative and significant coefficient for the variable AbAcc in their study In Model 4, we include the E index, AbAcc and the control variables. The estimated coefficient on E index is negative as in Model 2 and remains significant, while the estimated coefficient on AbAcc remains insignificant. Overall, the results reported in Table 9 examining abnormal operating performance are consistent with our hypothesis that stronger governance is an ex ante measure of better operating performance.

6. Conclusion

The mean abnormal return for firms announcing open market share repurchase programs is positive, implying significant expected economic benefits from the announcement. Chan et al. (2004) present three possible economic benefits to these announcements: (1) a signal of undervaluation, (2) a reduction of agency costs and (3) adjustments to a more optimal capital structure. There are firms, however, whose returns are 0 or even negative. For these firms, there is no expectation of economic benefits from the share repurchase announcement and perhaps even an expected detriment. Massa et al. (2007) develop a model where firms can mimic those expected to gain economically from a share repurchase by simply announcing their own share repurchase. Such an announcement is nonbinding in a legal sense, and

some firms that announce a share repurchase ultimately repurchase fewer shares than announced or none at all.

We have set out to examine whether corporate governance measures can be used to separate firms announcing share repurchase for economically valid reasons from those mimicking these firms for short-term gain. Our results indicate that the Bebchuk et al. (2009) E index identifies announcing firms, ex ante, that tend to outperform over both the short-term and the long-term. Announcement period returns are significantly higher for firms in the shareholder-friendly group of firms compared to those in the manager-friendly group. Long-term abnormal stock returns, whether accumulated over 12 or 24 months using the Daniels et al. (1997) benchmark methodology or calculated monthly using the Carhart (1997) calendar time approach, are higher for shareholder-friendly firms. Finally, adjusted operating performance is significantly higher for well-governed firms relative to manager-friendly firms. In short, it appears that well-governed, shareholder-friendly firms announcing share repurchases create more value in the long-term than do weakly-governed, manager friendly firms. In other words, the corporate governance measure we study appears able to identify ex ante the firms that will benefit most from an open market share repurchase program.

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Table 1: Distribution of Share Repurchases Across Time

Distribution of firms that announce open market share repurchases from 1991-2006. Our sample contains all companies in the Securities Data Corporation database announcing open market share repurchases. To be included in the final sample announcing firms must have E index data available at Lucian Bebchuk's Website (http://www.law.harvard.edu/faculty/bebchuk/data.shtml), the Center for Research in Securities Prices, and COMPUSTAT Quarterly.

Year	Frequency	Cumulative Frequency
1991	4	4
1992	6	10
1993	6	16
1994	62	78
1995	64	142
1996	94	236
1997	129	365
1998	230	595
1999	206	801
2000	225	1026
2001	69	1095
2002	57	1152
2003	41	1193
2004	84	1277
2005	89	1366
2006	149	1515

Table 2: Sample Description

Descriptive industry and firm statistics for sample firms, respectively. Financial variables and SIC codes are obtained from COMPUSTAT. All dollar figures are in millions.

Panel A: Firm-Level Statistics

Variable	Mean	Median	75^{th} percentile	25^{th} percentile
Total Assets	$6,676.30	$1,633.50	$4,777.60	$604.80
Market Capitalization	$10,174.00	$1,851.00	$5,773.50	$694.60
Book-to-Market Ratio	1.15	0.86	1.43	0.49
Return on Assets	5.40%	4.70%	6.70%	3.30%
Leverage Ratio	46.20%	46.00%	57.20%	32.50%

Panel B: Sample Firm Industries

Industry Classification Code	Frequency	Cumulative Frequency	Percent
Chemical Products	186	186	12.30%
Communications	40	226	14.90%
Computer Hardware and Software	308	534	35.30%
Durable Goods	25	559	36.90%
Eating and Drinking Establishments	38	597	39.40%
Electric and Gas Services	129	726	47.90%
Electronic Equipment	175	901	59.50%
Entertainment Services	6	907	59.90%
Food Products	66	973	64.20%
Health	40	1013	66.90%
Manufacturing	91	1104	72.90%
Oil and Gas	65	1169	77.20%
Paper and Paper Products	81	1250	82.50%
Retail	48	1298	85.70%
Specific Instruments	108	1406	92.80%
Transportation	67	1473	97.20%
All Others	42	1515	100.00%

Table 3: Entrenchment Index Distribution

Distribution of the entrenchment index (E index), for firms that announce open market share repurchases. E index is developed by Bebchuk, Cohen and Ferrell (2009) and is simply a tally of the total number of six different protective governance provisions contained in a company's corporate charter. This data was collected from Lucian Bebchuk's Web site (http://www.law.harvard.edu/faculty/bebchuk/data.shtml).Sample firms are assigned to a corporate governance group based on their values for E index: shareholder-friendly (1), between-friendly (2), manager-friendly (3) Refer to Appendix A for a list of the components used in constructing the E index.

Eindex	Frequency	Percent	Cumulative Frequency	Governance Group Number
0	162	10.7	162	1
1	295	19.5	457	1
2	362	23.9	819	2
3	393	25.9	1212	2
4	253	16.7	1465	3
5	46	3	1511	3
6	4	0.3	1515	3

Table 4: Announcement Period Stock Returns

The table reports the average 3-day cumulative abnormal stock return (decimal) around the announcement of open-market share repurchases occurring during the period 1991-2006 inclusive. Market model parameters are estimated over 255 days beginning 91 days after the announcement using the equally-weighted with dividend CRSP return index. *, **, and *** indicate rejection of the null that the average equals zero at less than the 10%, 5%, and 1% level using two-tail test, respectively, p-values for the tests are shown in parentheses.

	Full sample	Shareholder-friendly	Between-friendly	Manager-friendly	Shareholder-friendly minus Manager-friendly
Return	0.011***	0.013***	0.013***	0.005	0.008**
p-value	(0.000)	(0.000)	(0.000)	(0.125)	(0.044)
Sample Size	1515	457	755	303	

Table 5: Cumulative abnormal return and buy-and-hold abnormal return

Monthly long-term cumulative average abnormal returns (LCAR) and buy-and-hold abnormal returns (BHAR) across different time periods and governance portfolios. The LCAR and BHAR are measured using the Daniel, Grinblatt, Titman and Wermers (1997) benchmark adjustment procedure. Abnormal stock returns are measured over the 12 and 24 months after the month of the open market share repurchase program announcement. The last column reports the difference between the shareholder-friendly and manager-friendly portfolios. *, **, and *** indicate significance at less than the 10%, 5%, and 1% level using two-tail test, respectively.

Accumulation Period	Full Sample		Shareholder-friendly		Between-friendly		Manager-friendly		Shareholder - Manager	
Months	LCAR	BHAR	LCAR	BHAR	LCAR	BHAR	LCAR	BHAR	LCAR	BHAR
+1 thru +12	0.053***	0.052***	0.095***	0.098***	0.033**	0.033*	0.039**	0.033	0.056**	0.065*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.012)	(0.057)	(0.025)	(0.112)	(0.030)	(0.056)
+1 thru +24	0.100***	0.094***	0.163***	0.169***	0.062***	0.063**	0.100***	0.062**	0.063*	0.106**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.022)	(0.000)	(0.048)	(0.076)	(0.038)

Table 6: Portfolio Calendar Month Alphas

Abnormal returns (portfolio monthly alphas) of value-weighted (VW) and equally weighted (EW) calendar-time portfolios using the Carhart (1997) four-factor model. In this method, event firms that have announced an open market repurchase in the past 12 or 24 calendar months form the basis of the calendar month portfolio. A single time-series regression is run with the excess return of the calendar month portfolio as the dependent variable and the excess market return, the high-minus-low book-to-market factor, the small-minus-big capitalization factor, and the momentum factor. *, **, and *** indicates significance at less than the 10%, 5%, and 1% level using two-tail test, respectively.

$$R_{pt} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + u_i UMD_t + \varepsilon_{it}$$

Accumulation Period	Full Sample		Shareholder-friendly		Between-friendly		Manager-friendly	
	VW	EW	VW	EW	VW	EW	VW	EW
[+1, +12]	0.007***	0.007***	0.010**	0.009***	0.005	0.008**	0.005	0.004*
	(0.001)	(0.001)	(0.022)	(0.003)	(0.242)	(0.016)	(0.122)	(0.059)
[+1, +24]	0.007***	0.007***	0.009**	0.008***	0.005	0.008**	0.005*	0.005**
	(0.001)	(0.001)	(0.020)	(0.009)	(0.152)	(0.019)	(0.070)	(0.039)

Table 7: Adjusted Operating Performance

Median adjusted operating performance for firms that announce open market share repurchase programs from 1991-2006. Adjusted operating performance is measured following Lie (2005) as the difference in raw operating performance of the sample firm and a firm matched on industry, pre-announcement operating performance and the market-to-book ratio from the quarter prior to repurchase to 1 year (4 quarters) or 2 years (8 quarters) after the announcement. The last column reports the difference between the shareholder-friendly and manager-friendly group results. The p-value of the median performance difference corresponds to the Wilcoxon test. *, **, and *** indicates significance at less than the 10%, 5%, and 1% level using two-tail test, respectively.

Quarter	Full Sample	Shareholder-friendly	Between-friendly	Manager-friendly	Shareholder - Manager
0 to +4	0.000	0.003***	0.000	-0.001	0.003***
	(0.131)	(0.003)	(0.617)	(0.115)	(0.001)
0 to +8	0.000	0.002**	-0.000	-0.002	0.005***
	(0.568)	(0.017)	(0.787)	(0.108)	(0.002)

Table 8: Regression Analyses of 24-month Abnormal Buy-and-hold Stock Return

Ordinary least squares regression of corporate governance and other firm-specific variables on the long-term abnormal buy-and-hold stock return (BHAR) measured over the 24 months following an open market share repurchase program announcement. The abnormal monthly return is adjusted using the Daniel, Grinblatt, Titman, and Wermers (1997) benchmark adjustment procedure. E index is a firm's Bebchuk, Cohen and Ferrell (2009) Entrenchment index; AbAcc is the average of the performance-matched abnormal total accruals for quarter -1 and quarter 0; Leverage equals the firm's total debt to total assets ratio; Size equals the natural log of the firm's market capitalization; BM is the book-to-market ratio; Cash is the cash and cash equivalents deflated by the cash-adjusted total assets at the beginning of quarter (total assets less cash or cash equivalents).P-values for tests that coefficients equal zero are reported in parentheses and are based upon White heteroskedasticity-consistent standard errors. *, **, and *** indicates significance at less than the 10%, 5%, and 1% level using a two-tailed test, respectively.

	Stock Performance			
Model	1	2	3	4
Intercept	0.167***	0.384***	0.273**	0.392***
	(0.001)	(0.006)	(0.017)	(0.005)
E index	-0.028**	-0.029**		-0.029**
	(0.022)	(0.026)		(0.029)
AbAcc			-1.337**	-1.304**
			(0.036)	(0.040)
Leverage		-0.029	-0.027	-0.025
		(0.409)	(0.438)	(0.474)
Size		-0.019*	-0.015	-0.020*
		(0.100)	(0.164)	(0.088)
BM		-0.126*	-0.120	-0.133*
		(0.077)	(0.093)	(0.063)
Cash		0.024	0.038	0.020
		(0.573)	(0.358)	(0.635)
Year Dummies Included	Yes	Yes	Yes	Yes
F statistic	1.93	1.68	1.71	1.72
P-value	0.014**	0.029**	0.026**	0.022**
Adj. R^2 (%)	0.55	0.75	0.64	2.42
N	1,441	1,429	1,429	1,429

Table 9: Regression analyses of the 8-quarter adjusted operating performance

Ordinary least squares regression of corporate governance and other firm-specific variables on the adjusted operating performance following open share market share repurchase. The dependent variable is the repurchasing firm's adjusted operating performance estimated using the matching procedure developed by Lie (2005). E index is a firm's Bebchuk, Cohen and Ferrell (2009) Entrenchment index; AbAcc is the average of the performance-matched abnormal total accruals for quarter -1 and quarter 0; Leverage equals the firm's total debt to total assets ratio; Size equals the natural log of the firm's market capitalization; BM is the book-to-market ratio; Cash is the cash and cash equivalents deflated by the cash-adjusted total assets at the beginning of quarter (total assets less cash or cash equivalents). P-values for tests that coefficients equal zero are reported in parentheses and are based upon White heteroskedasticity-consistent standard errors. *, **, and *** indicates significance at less than the 10%, 5%, and 1% level using two-tail test, respectively.

	Adjusted Operating Performance			
Model	1	2	3	4
Intercept	0.003	0.012	-0.004	0.012
	(0.436)	(0.367)	(0.742)	(0.364)
E index	-0.004***	-0.004***		-0.004***
	(0.001)	(0.002)		(0.002)
AbAcc			0.045	0.059
			(0.499)	(0.375)
Leverage		0.003	0.003	0.003
		(0.244)	(0.257)	(0.269)
Size		-0.000	-0.000	-0.001
		(0.557)	(0.975)	(0.555)
BM		-0.011*	-0.009*	-0.011*
		(0.067)	(0.093)	(0.069)
Cash		0.001	0.004	0.001
		(0.822)	(0.470)	(0.799)
Year Dummies Included	Yes	Yes	Yes	Yes
F statistic	1.94	1.74	1.17	1.70
P-value	0.014**	0.022**	0.272	0.025**
Adj. R^2 (%)	1.30	4.80	0.30	1.29
N	1,135	1,127	1,127	1,127

Appendix A

Components of the Bebchuk, Cohen and Ferrell (2009) Entrenchment Index

The index for a company receives a value of 1 for the presence of each of the six listed governance characteristics, thereby having a maximum value of 6.

a. Presence of a classified (staggered) board
b. Presence of limitations to shareholders' ability to amend the bylaws
c. Presence of supermajority voting for business combinations
d. Presence of supermajority requirements for charter amendments
e. Presence of golden parachutes for management
f. Presence of a poison pill

Appendix B

Calculation of Abnormal Accruals

Following Gong, Louis and Sun (2008), we use a version of the Jones (1991) model as modified by Louis, Robinson, and Sbaraglia (2008) and Louis and White (2007a) to calculate abnormal accruals. For each calendar quarter and 2-digit SIC industry, we estimate the following model using all firms that have the necessary data on Compustat:

$$TA_i = \sum_{j=0}^{3} \beta_j \, Q_{j,i} T + \beta_4 \Delta SALE_i + \beta_5 PPE_i + \beta_6 LTA_i + \beta_7 ASSET_i + \varepsilon_i$$

where *TA* is total accruals; Q_j is a variable that takes the value of one for fiscal quarter *j* and zero otherwise; Δ*SALE* is the quarterly change in sales; *PPE* is property, plant, and equipment at the beginning of the quarter; LTA is the lag of total accruals; ASSET is total assets at the beginning of the quarter; and ε is the regression residual and our estimate of abnormal accruals. All the variables are scaled by total assets at the beginning of the quarter. Each calendar quarter, we delete the top and bottom one percentiles of the deflated TA, ΔSALE, PPE and LTA. We also require at least 20 observations per estimation. Following Kothari, Leone, and Wasley (2005), we adjust the estimated abnormal accruals for performance. For each quarter, we sort each 2-digit SIC industry into five quintiles, with at least four firms each, based on the return-on-assets (ROA) from the same quarter in the previous year. Sample firms are then matched based on its own ROA with a performance-based, industry quintile. The performance-matched abnormal

accruals for a sample firm are the firm-specific abnormal accruals minus the median abnormal accruals for its respective industry-performance-matched portfolio.