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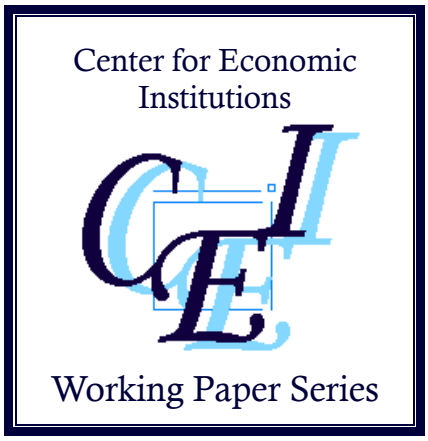

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The Effectiveness of Corporate Boards: Evidence from Bank Loan Contracting

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Abstract

This paper investigates the role of corporate boards in bank loan contracting. We find that when corporate boards are more independent, both price and non-price loan terms (e.g., interest rates, collateral, covenants and performance pricing) are more favorable and syndicated loans comprise more lenders. In addition, board size, board diversity, audit committee structure and other director characteristics also influence bank loan price. However they do not consistently affect all non-price loan terms except for audit committee independence. Moreover, the impact of board independence on bank loans varies with borrower characteristics (e.g., leverage, tangibility and anti-takeover environments) and loan characteristics (e.g., loan types and loan structures). Overall, our study provides strong evidence that banks tend to recognize the benefits of board monitoring in mitigating agency risk and information risk, and reward borrowers with higher quality boards with more favorable loan contract terms.

JEL Classification: G21; G34

Keywords: Bank loan contracting; Boards of directors; Corporate governance; Monitoring; SOX

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1. Introduction

Financial contracting is "the theory of what kinds of deals are made between financiers and those who need financing" (Hart (2001)). A number of theoretical papers study the determinants of debt contracting based on an incomplete contracts approach. A general implication of these theoretical models is that when information asymmetry and agency costs are severe in a firm, debt holders are more likely to use higher debt price and more stringent non-price terms, such as more covenant restrictions and more collateral requirements, to compensate for higher default risk, facilitate monitoring the borrower and limit potential losses (e.g., Stiglitz and Weiss (1981), Boot et al. (1991), Stulz and Johnson (1985), Chan and Thakor (1987), Diamond (1993), and Rajan and Winton (1995)). Despite the large volume of theoretical work, empirical evidence in this area is limited.

In this paper, we extend this line of research by examining whether the quality of corporate boards impacts debt contracting in the context of bank loans. Our results that banks take into consideration the quality of corporate boards when designing bank loan contracts provide empirical evidence to support those theoretical arguments in the debt contracting literature. Our results also support the traditional notion in the corporate governance literature that boards of directors are important internal corporate governance mechanisms to control agency problems and mitigate information risk between the firm and outside stakeholders (e.g., Fama and Jensen (1983)).

We focus on bank loan contracting for two primary reasons. First, Bank loans are one of the most important sources of corporate financing, not only for small firms, but also for large public companies (e.g., Chava et al. (2009) and Graham et al. (2008)). The sheer volume of bank loan

financing is larger than equity and bond financing. [1] Given the significance of bank loans, it is important to investigate whether corporate boards impact private bank debt.

Second, and more important, our paper is motivated by the significant differences between the public and private debt. Prior studies by Bhoraj and Sengupta (2003) and Anderson et al. (2004) on boards of directors and cost of debt focus on the ex-post bond yield alone. Unlike bondholders who lack monitoring incentives due to wide dispersions of ownership and resulting free rider problems, banks are special not only because they have access to proprietary information and can provide effective monitoring (see, e.g., Fama (1985) and Diamond (1984)), but also because it is easier for them to renegotiate contract terms ex-post or exercise control rights in the event of default (Rajan (1992)). Therefore, banks are more likely to design customized contracts with both price and non-price terms and with in-depth knowledge of their borrowers generated from their lending relationships (Bharath et al. (2008)).[2] As bank loan contracts reflect expert assessments of borrower's financial risk characteristics, they are more informative than public bonds.

In this study, we focus on at-issuance four important loan contract terms, including interest rates, collateral, covenants and performance pricing, and test how these loan terms are affected by different characteristics of boards of directors. Although we cannot consider every aspect of bank loan contracts, our multidimensional approach allows us to more comprehensively and precisely estimate how corporate boards affect bank loan contracts. In addition, loan contracts also allow us to uniquely analyze the impact of corporate boards on the structure of bank loans, such as the number of lenders in a syndicated loan.

Using a sample of 9,621 loans issued to the S&P 1,500 public companies between 1996 and 2006, we estimate different reduced-form OLS regressions and logistic regressions to explain

[1] For example, according to the Loan Pricing Association and Federal Reserve System, in 2005 the total amount of equity issuance was about 115 billion, and the total amount of corporate bond issuance was about 700 billion while the total amount of bank loan issuance was 1,500 billion.

[2] Bharath et al. (2008) find banks set both higher interest rates and tighter non-price loan terms for poorer accounting quality borrowers, while bondholders only react to accounting quality of borrowers in price term, but not non-price terms.

loan contract terms conditional on a range of different board characteristics. Following previous studies, we control for firm characteristics and loan characteristics that are likely to shape loan contract terms.

We draw three broad conclusions from our findings. First, when corporate boards are more independent, lenders provide credits at lower interest rates and more favorable non-price terms, such as less collateral requirements, less covenant restrictions and less performance pricing provisions. In addition, more lenders participate in syndicated loans when borrowers have more independent boards. The results show that banks view board independence as an important element in determining bank loan contracts. They also imply that board independence is one of the important indicators of the quality of boards in strengthening corporate governance, and support the Sarbanes-Oxley Act of 2002 (SOX) and the NYSE and NASDAQ new listing rules with regard to board independence requirements.[3]

Second, we find many other board characteristics also affect bank loan price. For example, board size, audit committee structure (including audit committee independence, size and financial experts on the audit committee), board diversity, and director tenure are significantly negatively related to bank loan price, while director age, director shareholdings, and block holders on boards are significantly positively related to bank loan price. When we examine the effects of those board characteristics on non-price loan terms, we find most of them do not consistently affect the likelihood of using all non-price terms considered here, except for audit committee independence. This result further demonstrates the importance of independence in determining board committee quality, and supports SOX and new listing requirements regarding full independence of board committees.

[3] SOX does not specifically require boards to have majority outside board members. However, it does mandate that the audit, compensation and nominating committees be composed entirely of outside directors. Both the NYSE and NASDAQ new listing rules pursuant to SOX require firms to have majority outside boards.

Third, the effect of corporate boards on bank loans varies with different borrower and loan characteristics. Specifically, we find the influence of board independence on bank loan price is more pronounced for borrowers with higher leverage levels, lower tangibility levels or higher antitakeover provisions (ATPs) scores than for borrowers with lower leverage levels, higher tangibility levels or lower ATPs scores. Likewise, the board independence effect is more pronounced for line of credits or syndicated loans compared to term loans or sole loans. Taken together, the impact of corporate boards on bank loan price is more critical when dealing with higher risk borrowers and higher risk loans.

As board structure is endogenously determined, empirical work on corporate boards always faces the endogeneity problem (Hermalin and Weisbach (2003)). In our study, although the feedback mechanism from bank loan terms on board structure is less likely, it is still possible that any omitted variable correlated both with firm-level risk factors and with the board structure would bias our estimates in the single equations. Fortunately, the passage of SOX and the NYSE and NASDAQ new listing rules pursuant to SOX, which is an exogenous shock to board structure, provides us an excellent natural experiment to mitigate the potential endogeneity concern.

We find that bank loan spread is about 28 basis points lower for the post-SOX period than for the pre-SOX period in our sample, and the deduction of bank loan price in SOX era is mainly effective for small firms but not for large firms. Using a difference-in-difference approach, we also find that firms who comply with the board structure requirement from insider-dominated boards before SOX to outsider-dominated boards after SOX have significant deductions in bank loan price compared to other unaffected firms. Our results indicate that banks do appreciate the overall effect of SOX in strengthening corporate governance and grant borrowers with lower bank loan price in the post-SOX era. Small firms, which exhibit more substantial improvements in their governance system after SOX (Linck et al. (2008)), obtain more benefits in the loan market. Further, the result of difference-in-difference analysis alleviates endogeneity concern of

our study, and suggests that board independence brings about, and not merely reflects, a reduced bank loan price.

Melnik and Plaut (1986) point out that debt contracts consist of multiple terms which cannot be treated separately. Dennis et al. (2000) find the interdependences among different loan contract terms empirically. To address the issue of joint determinations of different loan terms, we employ a simultaneous equation model, explicitly testing the interrelations among price and non-price loan terms. Our results show that certain loan contract terms are interrelated, and corporate boards continuously affect bank loan contracts in the simultaneous equation model.

Our paper contributes to both bank loan contracting and board of director literatures in several important ways. First, our study adds to the emerging research on the determinants of bank loan contracting (e.g., Strahan (1999), Benmelech et al. (2005), Qian and Strahan (2007) and Bharath et al. (2008)). In three surveys conducted by McKinsey & Co. in 1999 and 2000, the majority of banks explicitly exhibit their concerns about the board practice when they evaluate credit quality of borrowers for investments (Coombes and Watson (2000)). Our paper is the first one that provides empirical evidence to show that banks take into consideration the quality of corporate boards when designing bank loan contracts.

Second, prior studies by Bhoraj and Sengupta (2003) and Anderson et al. (2004) on boards of directors and cost of debt only focus on the price term of debt. As we know, debt contracts have multiple terms and they cannot be treated separately (Melnik and Plaut (1986)). In addition, Stiglitz and Weiss (1981) point out that while interest rates are an effective way to "price" the risk of debt, they have adverse effects on the moral hazard problem of borrowers. Therefore it is important to focus on both price and non-price terms in studying debt contracts (Qian and Strahan (2007)). Further, beyond debt price, the non-price debt terms are also costly to borrowers. For instance, borrowers may have to give up profitable investment opportunities to comply with restrictive debt covenants. The multidimensional approach employed in our study allows us to more comprehensively examine how various aspects of loan contracts are affected by the quality

of corporate boards and allows us to more precisely capture the total costs of debt borne by borrowers.

Third, our study also extends the existing board of director literature. Despite the proliferation of studies, there is still much debate on the effectiveness of boards of directors and on how different board aspects, especially board independence, impact board efficacy.[4] In this paper, we comprehensively examine the impacts of different features of corporate boards on bank loan contracting. Our results suggest that corporate boards play a significant role in corporate governance, and several board characteristics, especially board and audit committee independence, are important indicators for the quality of corporate boards, at least from creditors' perspective. The results are consistent with traditional notion (e.g., Fama (1980) and Fama and Jensen (1983)) that outside directors are effective monitors. The results also provide evidence to support SOX and new listing requirements concerning board and audit committee independence in strengthening corporate governance of firms.

Fourth, in our research design, we alleviate the endogeneity concern which is faced by most empirical work on boards of directors by testing how an exogenous shock to board structure leads to a shift of bank loan price. We also use simultaneous equations to address the interdependence among different loan contract terms, which is widely ignored by prior studies in bank loan contracting literature.

The remainder of the paper is structured as follows: In Section 2, we review related literature and discuss why corporate boards affect bank loan contracting. Section 3 describes our sample selection, explain our key board variables, and presents descriptive statistics. The results of univariate tests are reported in Section 4. In Section 5, we report the results of multivariate tests. The final section provides conclusions.

[4] For surveys of corporate boards, see Hermalin and Weisbach (2003) and Adams et al. (2008).

2. Related literature and hypothesis development

There is an emerging literature examining the determinants of bank loan contracting in a multivariate setting. For example, Strahan (1999) investigates how borrower characteristics affect bank loan contracting. He finds that riskier firms such as smaller firms and higher leveraged firms pay higher interest rates when they borrow from bankers. In addition, banks also use non-price loan terms, such as more intensive collateral to facilitate monitoring and limit potential losses when lending to riskier borrowers. Benmelech et al. (2005) examine the effect of asset liquidation value on bank loan contracting. Using a property's zoning designation as the measure of its liquidation value, they find that properties with greater zoning flexibility are financed with lower interest rates and longer maturity loans. Bharath et al. (2008) study the effect of accounting quality on both public debt and bank loan contracting. They find poorer accounting quality borrowers prefer bank loans, because banks have access to private information which reduces adverse selection costs of borrowers. In addition, accounting quality affects price and non-price terms of bank loans, while it only affects price term of public debt. On the country level, Qian and Strahan (2007) test how credit rights influence bank loan contracting. They find loans have more concentrated ownership, lower interest rates and longer maturities under strong creditor protection environment.

Traditional banking theory implies that the likelihood of default is one of the primary determinants of bank loan terms. Higher default risk leads to higher loan price and tighter non-price loan terms. Bhoraj and Sengupta (2003) argue that the agency risk and information risk between management and outside stakeholders affect the default risk of debt. Theoretical work also suggests the effects of asymmetric information and agency costs on the price of debt and on the choice of debt contract terms (e.g., Stiglitz and Weiss (1981), Boot et al. (1991) and Rajan and Winton (1995)). Assuming boards of directors play an effective role in monitoring

management, they could reduce agency risk and information risk both ex-ante and ex-post. [5] As informed lenders with in-depth knowledge of their borrowers, banks should take into account the role of boards of directors and lower their required risk premium in bank loan contracts if a firm has a higher quality board.

Furthermore, although banks are delegated monitors and have monitoring ability, the latter is different from monitoring incentive (e.g., Besanko and Kanatas (1993) and Carletti (2004)). As monitoring is not contractible and is costly, banks choose the monitoring intensities that maximize their profits, rather than the financial return of the project (Carletti (2004)). As both corporate boards and creditors are corporate governance mechanisms to control agency problems, and prior studies find a substitution effect among certain governance mechanisms (e.g., Agrawal and Knoeber (1996)), if corporate boards fully or partially substitute banks' monitoring responsibilities, banks' monitoring incentives, which are reflected in both price and non-price loan terms, should be affected by the quality of corporate boards. Collectively, if boards of directors play an effective role in corporate governance, this would reduce agency risk, information risk and thereby banks' monitoring incentives and costs. Then, we expect that firms with higher quality of corporate boards should enjoy more favorable bank loan contract terms.

As we know, corporate boards are supposed to act in the interests of shareholders, and not necessarily in the interests of debt holders. Agency theory of debt implies that shareholders have incentives to take actions to transfer wealth from debt holders to shareholders (e.g., Jensen and Meckling (1976) and Myers (1977)). Therefore, it is possible that boards of directors encourage managers in wealth expropriation activities ex-post. However, prior studies find that wealth transfers from debt holders to stockholders do not exist (e.g., Marais et al. (1989)), or are relatively small (e.g., Asquith and Wizman (1990) and Warga and Welch (1993)). Therefore, we expect, for banks, the perceived benefits from reduction in agency and information risk outweigh

[5] Anderson et al. (2004) argue that corporate boards affect the reliability and validity of financial accounting process, which in turns impact cost of debt.

the potentially negative wealth transfer effects. Furthermore, more recent theoretical work by Stecher and Gronnevet (2009) argue that when a corporate board is more independent, the decisions of the board are more in line with the interests of creditors than those of shareholders, because the information disadvantages of outside board members makes them put more weight on the probability of default, but not just the expected payoff of a project.

Bank loan contracts have multiple terms. Although higher interest rates are an effective way to compensate for risk under symmetric information, they have side effects by worsening the moral hazard problem of borrowers choosing riskier projects (Stiglitz and Weiss (1981)). Therefore, banks are more likely to set up customized contracts not only on price, but also on non-price loan terms to price risk, facilitate monitoring and limit potential losses. Empirically, Graham et al. (2008) find that when information risk is higher in a firm, a lender is more likely to use both higher interest rates and tighter non-price loan terms, such as more collateral requirements, and more covenant restrictions.

In this paper, beyond interest rates, we focus on three important non-price loan terms: collateral, covenants and performance pricing. Among them, collateral and covenants are loan terms which banks commonly use to control for information risk and agency costs, and they are widely discussed and examined in the literature. For example, Berger and Udell (1990) and Jimenez et al. (2006) document that lenders are more likely to use collateral when borrowers are riskier. Jensen and Meckling (1976) discuss how restrictive covenants reduce moral hazard costs. Rajan and Winton (1995) discuss how the use of collateral and covenants affect banks' incentives to monitor borrowers. Performance pricing is a relatively new provision in loan contracts. It links loan price with the borrowers' credit rating or financial performance. Asquith et al. (2005) point out that performance pricing is an effective tool to control for the uncertainty of borrowers' financial risk and reduce renegotiation costs. Taken together, we expect a bank gives lower interest rates, less likely to use collateral, covenants and performance pricing when lending to a firm with a higher quality of corporate board.

Syndicate loan literature also indicates that lenders have less incentives to participate in syndicated loans when firms are opaque and the probability of financial distress is high (e.g., Bolton and Scharfstein (1996) and Dennis and Mullineaux (2000)). Sufi (2007) finds that the structure of syndicated loans is more concentrated with fewer lenders when information asymmetries are severe, and the credit risk of the borrower is higher. We expect that the effective monitoring of corporate boards reduces information asymmetries and agency risk between management and outside stakeholders, hence reduces firms' opaqueness and default risk. Consequently, lenders' incentives to participate in syndicated loans increase. Therefore, we hypothesize more lenders are willing to participate in syndicate loans if borrowers have higher quality of corporate boards.

3. Data description and variables

3.1. Data sources

Information on corporate boards is obtained from the Investor Responsibility Research Center (IRRC). The IRRC board data covers S&P 500, S&P Midcap 400, and S&P SmallCap 600 for the 1996-2006 proxy seasons.[6] It provides detail information of each director, such as the director's name, title, affiliation, age, tenure, ethnicity, directorship and shareholdings. Following previous studies, we exclude financial companies based on the SIC codes (6000-6999).

Bank loan information is obtained from the LPC Dealscan database, which contains historical bank loan data that are compiled from the SEC filings, self-reporting by banks and its staff reporters. The database includes detailed deal terms and conditions on loans, such interest rates, loan size, maturities, covenants, performance pricing, and collateral. Beyond these loan contract terms, Dealscan also includes information on the types of loans and the purposes of loans, as well

[6] S&P 1,500 covers about 85% of the US equities market.

as the structure of syndicated loans, such as the name of each lead bank and participant banks in a syndicated loan. [7]

We also draw firm accounting information from the Compustat database to control for firm specific characteristics, the Gompers et al. (2003) governance index (G-index) from IRRC to control for ATPs level, and macroeconomic condition information from the Federal Reserve Board of Governors to control for macroeconomic condition. We merge all data by ticker symbols. Because ticker symbols are recycled in practice, we manually checked all of the company names after merging. The final sample comprises 9,621 facility level observations. [8]

3.2. Measuring the quality of corporate boards

Unlike many other corporate governance mechanisms, boards of directors have multiple facets. It is difficult to quantify the quality of corporate boards. In the traditional board literature, board independence is widely used as the most important indicator for board quality. Many other studies also investigate how board monitoring ability and incentive are affected by other board characteristics, such as board size, board duality, audit committee, board diversity, director shareholdings, directorships and interlocked directors. In this paper, we comprehensively test how different board characteristics impact bank loan contracting.

Board independence: It has long been recognized that board independence is one of the most important determinants of board quality.[9] Fama (1980) and Fama and Jensen (1983) argue that outside directors have the incentive to act as monitors of management because they want to protect their reputations as effective, independent decision makers. Although most empirical

[7] In a syndicated loan, a group of lenders make a loan jointly to a single borrower. Typically, one or several lead arranger(s) establishes a lending relationship with the borrower, negotiates terms of the contract, and guarantees an amount for a price range. The lead arranger(s) then find participant lenders to fund part of the loan. In our sample, 88% of loans are syndicated.

[8] Facility is the fundamental security, which designates a loan in the syndicated loan market. Usually, a number of facilities with different interest rates and non-price terms are structured and syndicated as one deal with a borrower.

[9] In our paper, we define an independent director as a board member who has not been an employee of the firm and who is not affiliated with the firm through business ties or family ties, which is consistent with the IRRC definition.

studies do not find a significant relation between board independence and firm performance (see, e.g., Baysinger and Butler (1985) and Hermalin and Weisbach (1991)), outside dominated boards do affect several firms' discrete tasks. For instance, outside dominated boards are more likely to replace CEOs in response to poor performance (Weisbach (1988)) and nominate outside CEOs (Huson et al. (2002)), control CEO over-compensation (Core et al. (1999)) and overinvestment in firms with positive free cash flows (Richardson (2006)), and oversee financial accounting process and reduce earning management and financial frauds (e.g., Beasley (1996) and Klein (2002a)). Bhoraj and Sengupta (2003) and Anderson et al. (2004) both find that board independence is negatively related to the cost of public debt.

Board size: The role of size on board effectiveness is ambiguous. Lipton and Lorsch (1992) argue that it is difficult to express all ideas and opinions in the limited time available to boards with many members. Jensen (1993) argues that small boards are more effective because of the high coordination costs and free rider problems associated with large boards. Several studies, such as Yermack (1996) and Eisenberg et al. (1998), detect a negative relation between board size and firm performance. However, Singh and Harianto (1989) suggest that large boards might enhance corporate governance by reducing CEO domination and by providing broader services. Klein (2002b) finds that board committee assignments are influenced by board size since large boards have more directors to spread around. She suggests that board monitoring is increasing in board size due to the ability to distribute the work load over a greater number of observers. Recent work by Linck et al. (2008), Boone et al. (2007) and Coles et al. (2008) argue that the optimal board size should depend on firm specific traits, such as firm size, age and complexity of business. Anderson et al. (2004) find a negative relation between board size and the cost of public debt.

Board duality: Duality refers to a board leadership structure in which the CEO fulfills both the function as CEO and chairman of the board of directors. Dayton (1984) argues that duality reduces the possibility that the board of directors can properly execute its monitoring role due to

excessive concentration of power in one person's hands. The board is too influenced by managers, which prevents it from effectively monitoring important decisions. This allows the CEO to control information available to other board members (Jensen (1993)). Shivdasani and Yermack (1999) find that duality leads to managers being more entrenched and are more likely to manipulate earnings. In contrast, stewardship theory suggests that unified and responsible leadership builds trust and stimulates the CEO's motivation to perform well (Muth and Donaldson, (1998)).

Audit committee: Although the board of directors has the responsibility to monitor management, the specific task of overseeing financial accounting processes is usually delegated to the audit committee. Beasley (1996) and Anderson et al. (2004) argue that the audit committee plays an important role in providing credible financial information to firms' stakeholders. Previous studies find that audit committees can effectively carry out their oversight of the financial reporting process if audit committees are dominated by outside directors and the size of audit committees is large (e.g., Beasley (1996), Klein (2002b) and Anderson, et al. (2004)). Klein (1998) finds that when the CEO participates on the audit committee, it is difficult for the latter to fulfill its monitoring function well. The SOX also requires that audit committees include at least one financial expert. DeFond et al. (2005) find positive market reactions around the announcement of newly appointed audit committee members with a financial background. Anderson et al. (2004) find that audit committee independence and size are significantly negatively related, while financial expertise in audit committee is irrelevant to the cost of bonds.

Board shareholdings: One element that reflects the incentives of directors to actively monitor management is board shareholdings. Jensen and Meckling (1976) argue that director equity-ownership creates powerful incentives for directors to monitor management. Empirical studies support that a positive relation between financial stake of board members and board effectiveness (e.g., Shivdasani (1993)). However, higher shares of board members may not be beneficial to

debt holders because of the agency cost of debt (e.g., Jensen and Meckling (1976) and Smith and Warner (1979)).

Block holders on boards: Shleifer and Vishny (1997) argue that block holders are important to a well-functioning governance system because they have the interest and independence to monitor management actions. A block holder may nominate a person to represent him or her on the board of directors so at to ensure that management is acting in the interests of the block holder. Thus, block holders can provide effective monitoring of management, which benefits other stakeholders, too. Alternatively, the private benefit hypothesis by Barclay and Holderness (1989) argue that block holders can exercise undue influence over the management to secure benefits that are to the detriment of other providers of capital. Skaife et al. (2005) suggest that the presence of block holders results in greater agency risk between block holders and other stakeholders.

Board diversity: Board diversity refers to the presence of women and minorities, such as African Americans, Asians and Hispanics, on boards of directors. Adams and Ferreira (2009) argue that board diversity affects directors' incentives to work cooperatively, and female directors have fewer attendance problems at board meetings, which suggest that diverse boards can be more effective than homogeneous boards. Carter et al. (2003) document a positive relation between gender and ethnic diversity of the board and corporate performance. They argue that diverse boards are more active because the nontraditional characteristics of females and minorities can be viewed as ultimate outsiders.

Number of directorships: Fama and Jensen (1983) and Perry and Peyer (2005) argue that firms that seek highly qualified directors might regard multiple appointments on other boards as a quality signal. Kaplan and Reishus (1990) and Ferris et al. (2003) find that successful directors are also more likely to receive more offers to serve on other boards. In contrast, the "busy" hypothesis argues that too many board assignments can disperse board members' time and attention, thereby reducing their ability to monitor management. Core et al. (1999) find that CEO

pay is excessive in firms where board members are "busy", suggesting poor monitoring effectiveness with "busy" directors.

Interlocked directors: Hallock (1997) find that interlocked boards result in higher levels of CEO compensation, suggesting that the presence of interlocked directors may compromise the effectiveness of board monitoring. Devos et al. (2008) argue that the presence of interlocked directors is indicative of weak governance and entrenched managers.

Director tenure: The expertise hypothesis suggests that the longer the tenure is, the more effective a director is, as long-term engagement provides a director with deep knowledge and familiarity about the firm and its business environment. On the other hand, the management friendliness hypothesis suggests that seasoned directors are more likely to befriend managers, thus leading to a more relaxed monitoring attitude (Vafeas (2003)). Lipton and Lorsch (1992) recognize that lead directors may attempt to usurp some of the CEO's functions through time, and therefore advocate term limits for directors.

3.3. Descriptive statistics

Table 1 provides summary statistics for the major board, firm and loan variables. With regard to board characteristics, we find that the average board size in our sample is 9.76 with a minimum of 3 directors and a maximum of 21 directors. The average number of outside directors is 6.60. The outside fraction (composition) is 67% and it varies widely across our sample from 9% to 100%. In our sample, about 82% firms have dual CEOs. These numbers are similar to those in other recent studies. For example, Linck et al. (2008) report for large firms for the period 1990-2004, the mean board size is 10, the mean outsider fraction is 73% and duality is about 71%. Coles et al. (2008) find that, for the period 1992-2001, the mean board size is 10.40 with mean outsider fraction of 78%. Anderson et al. (2004) report a mean board of 12.10 with 7 outsiders using a sample of S&P 500 firms for the period 1993-1998. In our sample, the average board age is 59.14 and the average tenure is 9.16, which are very similar to the findings of Anderson et al.

(2004). We also find about 64% firms have at least one woman on the board, and around 54% of directors are minorities. On average, each board holds about 9% of total shares of the firm. With respect to the audit committee, the average size is 3.24, with outside directors hold 90.79% of audit committee seats.

[Insert Table 1 here]

With regard to borrower characteristics, the average value of assets for our sample borrowers is 9,516 million, ranging from a minimum of 1.84 million to a maximum of 1,157,248 million. The average leverage ratio is 0.29, the average market to book ratio is 1.83, the average tangibility is 0.65, the average profitability is 1.83 and the average Z-score is 1.78. All of them also vary across our sample.

With regard to loan characteristics, we find that the average loan spread is 120.98 basis points, ranging from 5.50 basis points to 1000 basis points. In our sample, the average loan amount is 493 million with the mean maturity of 43 months. On average, there are around 10 lenders in a loan. The loan amount, maturity and number of lenders also vary considerably across our sample. We also find that more than 50% of loans use covenants, collateral or performance pricing terms in our sample. The results of loan variables are very similar to the findings by Chava et al. (2009), which also use the IRRC database and Dealscan database.

4. Results of univariate tests

To assess the effect of different board characteristics on bank loan terms and structure, we partition the full sample into two sub-samples based on three major factors of board structure: composition, size and duality.

[Insert Table 2 here]

We first bisect the full sample based on the composition of a board: (1) the dependent board sample with outside board members less than 50% of a board; and (2) the independent board sample with outside board members more than 50% of a board. Panel A of Table 2 reports

descriptive statistics on our major variables separately for these two samples, along with the t-test results for the mean differences between the two samples. As shown in Panel A, the mean of loan spread is 151.16 basis points for the dependent board sample, while it is 115.40 basis points for the independent board sample. The mean difference of 35.76 basis points is significant at the 1% level, suggesting that banks charge significantly lower loan rates for borrowers with independent boards than for borrowers with dependent boards.

With respect to non-price loan terms, we find that the means of loan collateral, general covenants, financial covenants and performance pricing are all significantly different between the dependent board sample and the independent board sample at the 1% level. On average, loans for borrowers with independent boards are less likely to be secured and have less general and financial covenants and performance pricing terms. In addition, the independent board sample has more lenders in syndicated loans than the dependent board sample. Univariate comparisons seem to support our hypothesis that banks do consider the role of corporate boards and use more favorable loan terms when lending to firms with independent boards.

While the univariate tests provide preliminary evidence that borrowers with independent boards enjoy more favorable loan contract terms, the results do not take into consideration potentially fundamental differences in borrower characteristics between these two groups. Therefore, we also compare the borrower characteristics between sub-samples. We find that the average of firm size, leverage, tangibility, profitability and market to book, are all significantly different between the dependent and independent board samples. On average, borrowers with independent boards are larger, less leveraged, less profitable, have lower market to book ratios and more tangible assets, compared to borrowers with dependent boards.

To assess the effect of board size on bank loan contracting, we further separate the full sample into two sub-samples based on the median size of boards: (1) the large board sample with more than 9 directors on the board; and (2) the small board sample with less than or equal to 9 directors on the board. Panel B of Table 2 reports descriptive statistics separately for the two samples. We

find that the average loan spread is 92.96 basis points for the large board sample, while it is 140.70 basis points for the small board sample. The mean difference of 47.74 basis points is significant at the 1% level, suggesting that banks charge significantly lower loan rates for borrowers with large boards than for borrowers with small boards. We also find that loans for borrowers with large boards are less likely to be secured, have less general and financial covenants and performance pricing terms compared to borrowers with small boards. All the differences between these two samples are significant at the 1% level. The results indicate banks seem in favor of large boards.

In Panel C of Table 2, we segregate the entire sample based on whether the CEO is also the chairman of the board. Surprisingly, we find that borrowers with duality boards enjoy lower loan spread, and loans are less likely to be secured and have less covenants and performance pricing terms than borrowers with non-duality boards. The results seem not consistent with our expectation.

In sum, the results of univariate tests suggest that banks provide more favorable loan terms to borrowers with independent, large and duality boards. The results also show that some key borrower characteristics that may affect bank loans are significantly different across sub-samples. In the next section, we conduct multivariate tests. We find that the effect of board duality on most of loan contract terms disappears after controlling for borrower and loan specific characteristics.

5. Results of multivariate tests

In our multivariate regression models, we begin by testing in reduced-form how different board characteristics affect bank loan price, and conduct a series of robustness checks. To address endogeneity concern, we examine how an exogenous shock to board structure leads to a change of bank loan price. Further, we investigate whether the effect of corporate boards on bank loan price varies with borrower and loan characteristics. Next, we examine the effect of corporate

boards on non-price loan terms and loan structure. Finally, we employ a simultaneous equation model to control for the interdependences among different loan terms.

5.1. Corporate boards and bank loan price

5.1.1. Board structure and bank loan price

We first test the effect of board structure including board independence, board size and board duality on bank loan price. The empirical model follows:

Log (Loan spread) =f (Board characteristics, Firm characteristics, Loan characteristics, Macroeconomic factors, Industry effects, Year effects) *(1)*

In the regression, the basic unit of observations is loan facility, and the dependent variable is the natural logarithm of the loan spread. The coefficient estimates on board characteristics are our primary interests.

Following prior studies, such as Graham et al. (2008) and Qian and Strahan (2007), we control for several firm characteristics which may affect loan price in the regressions. We first use the natural logarithm of a firm's total assets, *Log (assets)*, to measure firm size. Prior research finds that the information asymmetry problem is more severe in small firms. Small firms have more difficulties to access external funding compared to large firms. Also the reputations of large firms are higher than small firms. Thus, we expect that firm size is negatively associated with bank loan price. We use *Market to book*, which is the market value of equity plus book value of debt divided by total assets, to proxy for the growth opportunities of firms. All else equal, a firm with better growth opportunities has higher expected cash flow, and thus enjoys lower loan price.

We also control for *Leverage*, which is the long term debt plus debt in current liabilities divided by total assets, *Profitability*, measured as EBITDA divided by total assets, and *Z-score*, which is modified Altman's (1968) Z-score in the regression. [10] All of above variables measure a

[10] Following Graham et al. (2008), we use a modified Z-score, which does not include the ratio of market value of equity to book value of total debt, because a similar term, market-to-book, is included in the regressions.

firm's default risk. All else equal, higher leverage, lower profitability and lower Z-score are related to higher default risk. Therefore, we expect that leverage is positively related to bank loan price, and profitability and Z-score are negatively related to bank loan price. We also control for *Tangibility*, which is the net property, plant and equipment divided by total assets. Since lenders recover exposures particularly through tangible assets in case of default, we expect *Tangibility* is negatively related to loan price. All of the above firm level variables are measured one fiscal year prior to the loan initiation year. Further, we employ one digit SIC dummies and year dummies to control for the potential differences in loan pricing across industries and years. Klock et al. (2004) and Chava et al. (2009) report that ATPs levels affect the cost of debt, thus, we use the *G-index* to proxy for the level of ATPs levels in our regression.

We further control for loan characteristics which may affect loan contracting in the regression. We include *Log (facility)*, the natural logarithm of the amount of a loan facility, to measure loan size. Graham et al. (2008)) argue that loan size is inversely related to loan spread, as banks give riskier borrowers with smaller loans with higher spread, or because of the economies of scale effect in banking relationship. We use *Log (maturity)*, the natural logarithm of loan maturity in months, to control for higher repayment risk inherent in longer loan contracts. Sharpe (1990) and Rajan (1992) emphasize lock up problems associated with established lender-borrower relationship that increase subsequently borrowing costs. To control for previous lending relationship, we construct a variable *Prior relations*, which is the total number of previous loans established by the same borrower and the same lead lender in the Dealscan database. Dealscan also contains information on Moody's and S&P senior debt ratings at the close of the loan. Following Qian and Strahan (2007), we construct loan rating score based on Moody's rating unless it is missing, in which case we use S&P rating. *Rating* is a score that ranges from one to six, with one indicating an Aaa rating, two indicating an Aa rating, three indicating an A rating, four indicating a Bbb rating, five indicating a Bb rating, and six indicating a B or worse rating.

Bank loan terms may be different for different loan types and purposes. Therefore, we also control for both loan type effect and loan purpose effect in our analysis. We separate loan types into five categories: 364-day facility, Revolver, Term loan, Term loan B-D (Institutional term loan), and others. For loan purposes, we separate loans into seven groups: Acquisition lines, LBO/MBO, Takeover, Debt Repay/Recapitalization, Corporate Purpose, Working Capital, and others.

Following Graham et al. (2008), we use *Credit Spread*, which is the difference between the yields of BAA and AAA corporate bonds, and *Term Spread*, which is the difference between the yields of 10 year treasury bonds and 2 year treasury bonds, to control for the effects of macroeconomic conditions on the price of bank loans in the regression. Credit spreads tend to widen in recessions and to shrink in expansions (Collin-Dufresne et al. (2001)), and high term spreads are often used as an indicator of good economic prospects (Graham et al. (2008)). Thus, we expect *Credit Spread* is positively and *Term Spread* is negatively related to bank loan spread.

[Insert Table 3 here]

Table 3 provides results from OLS regressions. Across three different measures to proxy for board independence, our results indicate consistently that greater board independence is associated with lower bank loan price. In Column 1, we use a binary variable *Independent board*, which equals one if the majority of board members are outsiders and zero otherwise, to measure board independence. The estimated coefficient is negative and is significant at the 1% level. The coefficient estimate indicates that bank loan spread is about 11% lower for borrowers with outsider-dominated boards than for borrowers with insider-dominated boards. In Column 2, we use *Composition*, the fraction of outside directors in a board, to measure board independence. The coefficient estimate of *Composition* is -0.30 and is significant at the 1% level. Economically, the coefficient indicates that 1% increase of board independence reduces bank loan spread about 0.30%. If a firm moves from a 25^{th} percentile independent board to a 75^{th} percentile independent board, its bank loan price will reduce about 15.25%. Finally, we use *Log* (*outsider)*, the natural

logarithm of the number of outside directors on the board in Column 3 and find similar results. The coefficient estimate indicates that bank loan spread will decrease about 0.20% if we increase the absolute size of outside directors by 1%. Taken together, we conclude that board independence not only statistically but also economically significantly affects bank loan price.

Consider next the effect of board size on bank loan price. In Columns 4, 5 and 6, we use three different proxies to measure board size. The first is a binary variable, *Large board*, which equals one if a board has more than 9 directors and zero otherwise. The second is *Log* (*size)*, the natural logarithm of total number of directors on a board. And the third is *Board to firm size*, the total number of directors on a board relative to total assets of the firm, to control for firm size effect. The coefficient estimates of the three proxies are all significantly negative at the 1% level. Our coefficient estimates indicate that bank loan spread is about 11% lower for borrowers with large boards than for borrowers with small boards, and 1% increase of board size reduces loan spread about 0.25%.

In Column 7, we test the duality effect on loan price using a binary variable, *Duality*, which equals one if the CEO is also the chairman of a board, and zero otherwise. Unlike the result we find in the univariate test, the insignificant coefficient implies that duality has no effect on bank loan price once we control for firm, loan, and macroeconomic conditions. In Column 8, we specify three main traits of board structure, *Composition*, *Log (size)* and *Duality*, in one regression simultaneously. We find that *Composition* and *Log (size)* are still negatively associated with bank loan price, while *Duality* is insignificantly related to loan price. Overall, Table 3 indicates that firms with large or independent boards face lower bank loan price. The results indicate that independent and large board provides superior monitoring of the management, leading to lower interest rates of bank loans.[11]

[11] We also test whether corporate boards affect different transaction fees including commitment fees, upfront fees and annual fees. The results show that our main testing variables, board independence and board size, are significantly negatively correlated with those fees, indicating banks charge lower fees to borrowers with more independent and large boards.

In terms of control variables, the coefficient estimate of *G-index* is significantly negative at least at the 5% level for different model specifications, although the economic magnitude is relatively small. [12] The result is consistent with the findings of Klock et al. (2004) and Chava et al. (2009). They explain that lower ATPs score increases the takeover vulnerability, which in turns increases debt holders' potential financial risk after the takeover. Consistent with our expectations and previous findings, We also find *Log (assets)*, *Tangibility*, *Profitability*, *Market to book*, and *Z-score* are all significantly negatively related to loan spread, while *Leverage* is positively related to loan spread. Hence, firms with higher default risk face higher loan price.

With regard to loan characteristics, we find *Log (facility)* is negatively, while *Log (maturity)* and *Rating* are positively related to loan spread. Those results are consistent with our expectations and prior findings, such as Graham et al. (2008) and Qian and Strahan (2007). In terms of the effect of existing client relationship, we find *Prior relations* is significantly positively associated with loan spread. This supports Sharp (1990) and Rajan (1992) lock up conjecture of banking relationship that predicts the extraction of rents over the course of the bank-firm relationship.

For macroeconomic conditions, we find *Credit spread* is significantly positively related to bank loan spread at 1% level, indicating that market based default risk is reflected in individual loan spread. For *Term spread,* we find it is not significantly related to bank loan spread in most model specifications.

5.1.2. Audit committee structure, other director characteristics and bank loan price

Because of the importance of audit committee in monitoring financial reporting process and providing creditable financial information to banks, we examine next the relation between audit committee structure and bank loan price. In Column 1 of Table 4, we use following proxies to

[12] In the G-index, some provisions are directly related to board of directors. To mitigate the correlation between G-index and board characteristics, we first regress G-index on board characteristics. Then we use the residuals obtained from the regression as the proxy for other corporate governance. The results are quantitatively unchanged.

measure audit committee structure: *Audit composition* is the fraction of outside directors in an audit committee; *Log* (*audit size)* is the natural logarithm of the total number of directors in an audit committee; *Audit duality* is a binary variable which equals one if the CEO is also a member of the audit committee and zero otherwise; and *Audit financial expert* is a binary variable which equals one if there is at least one financial expert sitting on the audit committee and zero otherwise. Following Anderson et al. (2004), we denote financial consultants, investment bankers, investment managers, bankers, auditors and CEOs of financial companies as financial experts.

[Insert Table 4 here]

We find that *Audit composition* and *Log* (*audit size)* are significantly negatively associated with bank loan spread at the 1% level. The coefficient estimates indicate that 1% increase of audit committee composition or size will reduce bank loan spread about 0.20% or 0.16%, respectively. Similar to the insignificant effect of *Duality*, we find that *Audit duality* has no significant impact on bank loan price. We also find that *Audit financial expert* is significantly and negatively associated with bank loan spread. Overall, the results in Column 1 indicate that audit committee structure, including independence, size and financial experts, also influences bank loan price. The results are also consistent with the prediction that the monitoring role of audit committee is important to banks too.

In Column 2 of Table 4, we test whether other board characteristics affect bank loan price. The indicator variable *Woman*, that equals one if there is at least one female director on the board and zero otherwise, and *Diversity*, the fraction of African Americans, Asians and Hispanics on the board of directors, are both significantly negatively related to bank loan price. Hence, more diversified boards, including both gender and ethnic diversities, seem more effective in monitoring management than homogeneous boards, and resulting in lower bank loan price.

We also find that *Log (tenure)*, the natural logarithm of the average tenure of total directors in a board, is negatively associated with bank loan price in our sample, which supports the expertise hypothesis of extended tenure, that long term directors' engagement reflects greater experience,

commitment and more effectiveness in monitoring management. However, we find *Log (age)*, the natural logarithm of the average age of total directors in a board, is positively related to bank loan spread, which indicates that the efficacy of monitoring declines with average board member age, leading to higher bank loan price. We find that *Directorship*, the average number of directorships held by total directors in a board, is positively related to bank loan price, although the economic magnitude is very small. The result suggests that "busy" boards monitor management less effectively, leading to higher bank loan price.

We find that *Blockholder*, captured by a dummy variable which equals one if at least one director holds more than 5% of total shares, is positively related to bank loan price. However, the economic magnitude is relatively small. The result is in line with Skaife et al. (2005), who argue that the presence of blockholders results in greater agency risk between blockholders and debtholders. Banks majorly consider agency risk of debt when there are blockholders on the board and charge higher bank loan price to compensate their risk. We also find that *Shareholding*, the ownership percentage of all directors on the board, as a fraction of total shares outstanding, is also positively related to bank loan price. Potentially, banks require a higher compensation for higher (perceived) agency risk of debt when board members hold more equity of the firms.

In contrast to our expectations, we find that *Interlock*, a dummy variable which equals one if at least one director on the board is an interlocked director, is negatively related to bank loan spread. This result is not consistent with Hallock (1997), who argue that the presence of interlocked directors compromises the effectiveness of board monitoring. It is possible that the presence of interlocked directors leads to more entrenched management, which reduces the takeover vulnerability of the firm. So we interpret that an interlocked board has the same effect as *G-index* on bank loan price (Chava (2009)). We find the coefficient estimate of *Less attendance*, a dummy variable which equals one if at least one director on the board who attend less than 75% board meetings in a year, and zero otherwise, is insignificant on loan price in our sample, suggesting the frequencies of attendances of board meetings have little discernible impact on bank loan price.

In Column 3, we combine all of the variables in a single regression to test the incremental explanatory powers of different board characteristics on bank loan price. Again, we find that board structure including composition and size, and audit committee structure including composition, size and financial experts, are still negatively related to bank loan price. Other results remain intact except for *Directorship*, which turns insignificant.[13]

5.1.3. Robustness checks

The unit of our analysis is a loan facility. However, loan contract terms are generally negotiated on the deal level which may include several interrelated loan facilities. In addition, a borrower can obtain several facilities in the same year. Those facilities may not be independent. Treating these correlated loans independently may lead to biased results and overstate statistical significance. To deal with this issue, we use a reduced-sample which includes only the largest facility for each firm year and rerun the OLS regression in Column 3 of Table 4. The results are reported in Column 1 of Table 5. We find that our main testing variables are continuously significantly related with bank loan price, expect for *Woman (dummy)*, which turns into insignificant at traditional 10% level.

[Insert Table 5 here]

It is possible that unobservable firm characteristics that are stable over could affect bank loan price. To deal with this issue, we conduct a firm and year fixed effect regression. Column 2 of Table 5 reports the result. We find that the coefficients of our main variables of interest, such as *Composition* and *Board Size*, are similar to the results in Column 3 of Table 4.

We also investigate whether our result is driven by a few loans with extreme loan spreads. We perform a median regression that estimates the effect of explanatory variables on the median loan spread, conditional on the values of explanatory variables. According results in Column 3 of

[13] We test whether multicollinearity problems exist for all regressions presented in this section. The highest variance inflation factor (VIF) for any regressors is 4.38, which is well below the threshold indicator of 10.

Table 5 are similar to those from the average response regression (OLS) in Column 3 of Table 4, except for *Shareholding*, which becomes insignificant in the median regression. Overall, we conclude that our results are not driven by outliers.

A potential issue in the previous regressions is that one of the independent variables, loan maturity, may be endogenous because loan spread and maturity could be simultaneously determined in a bank loan contract (Strahan (1999), Dennis et al. (2000) and Bharath et al. (2008)). In such a case, our single equation results may be biased. To deal with this potential endogenous problem, we employ two stage least square regressions using asset maturity as the instrument for loan maturity. [14] The results from the two stage regressions are reported in Column 4 of Table 5. We find our main results still hold after controlling for potential endogeneity of loan maturity.

In sum, the impact of corporate boards on bank loan price is robust to a series of checks and remains economically and statistically significant.[15]

5.1.4. Addressing endogeneity of boards of directors: The impact of SOX on bank loan price

As board structure is supposed to endogenously determined, empirical work on corporate boards always faces the endogeneity problem which makes results hard to interpret (Hermalin and Weisbach (1998)). In our study, although the feedback mechanism from bank loan terms on board structure is less likely, one can still argue that board structure is correlated with some risk factors which we do not consider in our single equations, or there is no causal relation between corporate boards and bank loan terms.

[14] Graham et al. (2008) explain why asset maturity is an appropriate instrument for loan maturity in the loan spread regression.

[15] We also test the possible non-linearity regarding the effect of board size on bank loan price. We include the square of board size and square of audit committee size in the regressions. Both squared terms are not significantly different from zero. In addition, piecewise regressions also confirm that large boards are associated with a lower bank loan price.

One way to solve the endogeneity problem is to use instrument variable (IV) methods. However, it is difficult to find suitable instruments to identify board variables that we are concerned with. An alternative to the IV regression is a natural experiment that uses an exogenous shock to identify the board effect. Fortunately, the passage of the Sarbanes- Oxley Act of 2002 (SOX) and the NYSE and NASDAQ new listing rules pursuant to SOX provide a good setting for this test.

One objective of SOX and the new listing requirements is to enhance corporate governance by increasing the independence of corporate boards. Although SOX does not specifically require boards to have majority independent boards, both the NYSE and NASDAQ new listing rules require firms to have majority independent boards. These new listing requirements pursuant to SOX imply an increase in the level of board independence brought about by factors exogenous to the firm. In fact, Linck et al. (2008) find that corporate boards have become more independent after SOX. Furthermore, as SOX and new listing rules mandate a set of changes not only for the independence of boards of directors, but also for the effectiveness of internal controls, auditor independence, the responsibility of CEOs and CFOs to certify the "material accuracy and completeness of financial statements." and others. Testing the effect of SOX and the new listing rules on bank loan price also helps us to examine how the exogenous shock to the overall firm's governance structure leads to a change of the cost of bank loans. [16]

We separate our sample into a four-year pre-SOX period (1998-2001) and a four-year post-SOX period (2003-2006). The year 2002 is dropped as it is the year reforms were enacted. To fairly compare bank loan price before and after SOX, we remove firms that only have pre-SOX

[16] For example, Section 202 requires that all auditing services and all permitted non-auditing services to be pre-approved by the client firm's independent audit committee. Section 302 requires each public company's CEO and CFO to certify that they have reviewed the quarterly and annual reports their companies file with the SEC. Section 404 mandates the company to disclose the assessment of internal control weakness in the annual report and requires the external auditor of the company to attest to the internal control assessment in the audit report.

loans or only have post-SOX loans. [17] *SOX* is a dummy variable which equals one if a facility is initiated after 2002 and zero if a facility is initiated before 2002. Table 6 reports how bank loan spread changes after SOX. In Column 1, we find the estimated coefficient of *SOX* is -0.043 and is significant at the 10% level, which indicates that the average bank loan spread is about 4.30% lower in the post-SOX period compared to the pre-SOX period. This result suggests that banks evaluate the effect of SOX as strengthening corporate governance, resulting in lower bank loan price.

[Insert Table 6 here]

Linck et al. (2008) report more board structure changes for small firms than for large firms. Therefore, we separate the sample based on the median value of total assets to test whether the effect of SOX on bank loan price is different for large and small firms. The results are in Column 2 and Column 3 of Table 6. We find that SOX has no significant impact on loan price of large firms. But it significantly impacts loan spread of small firms. The estimate coefficient is -0.131 and significant at the 1% level. The result shows for small firms, bank loan price is about 13% lower in post-SOX era than pre-SOX era. Therefore, the impact of SOX on bank loan price of small firms is economically meaningful. In general, the governance systems of small firms are weaker than large firms before SOX. For instance, small firms' boards are less independent, smaller and less likely to have audit committees than large firms' boards before SOX. SOX and new listing requirements mandate small firms to strengthen their corporate governance systems dramatically, which results in significant deductions of bank loan price. Linck et al. (2008) find SOX imposed a disproportionate burden on small firms to fulfill the requirements of SOX. Here, we detect some benefits in the form of lower bank funding cost that accrue to small firms due to SOX.

[17] Including firms that only have pre-SOX or post-SOX loans in the analysis yields essentially the same results.

In Column 4 of Table 6, relying on a difference-in-difference approach, we further investigate whether the compliance with board independence requirement leads to a lower bank loan price.[18] *Changing firms* is a dummy variable which equals one if a firm changes from an insider-dominated board to an outsider-dominated board after SOX.[19]. We compare the change of bank loan price of the *Changing firms* (treated group) to the change of bank loan price of firms unaffected by the new listing rules regarding board independence (control group).We find the coefficient estimate of the interaction term, *SOX*Changing firms*, is -0.264 and significant at the 1% level. The result indicates that the decline of bank loan price is more pronounced for firms who comply with board independence requirement by regulations after SOX compared to unaffected firms. The result also suggests that board independence brings about, and not merely reflect, a reduced bank loan price.

5.1.5. Interaction of board independence and borrower/loan characteristics

Previous research find that a number of factors, such as accounting quality, property and shareholder rights, etc., affect bank loan price differently for different firm and loan characteristics (e.g., Bharath, et al. (2008), Qian and Strahan (2007) and Chava et al. (2009)). In this section, we try to investigate whether the effect of corporate boards on bank loans is also heterogeneous. As we identify board independence as one of the most important determinants of bank loan price, we focus on *Composition* and interact it with different borrower and loan characteristics to find how the impact of board independence on bank loans varies under different firm and loan environments.

[18] The Securities and Exchange Commission (SEC) allowed extended deadlines to July 15, 2007 for Sarbanes-Oxley compliance for small public companies (market capitalization of $700 million or less).
[19] SOX and following the NYSE and the Nasdaq new listing requirements have no mandated requirements about board size and duality.

In Table 7, we first create sub-samples based on the median value of *Leverage, Tangibility* and *G-index* (ATPs) level, and test how the effect of *Composition* on bank loan price differently for different borrower characteristics.

[Insert Table 7 here]

A higher leverage level indicates higher default risk of the firm. In Column 1 of Table 7, we find that the coefficient estimate of *Composition*, which captures the effect of board independence on bank loan spread for below median leverage level firms, is -0.237 with a t-statistic of -3.40. The interaction term between *High-leverage* and *Composition*, which captures the incremental effect of board independence on bank loan spread for above median leverage level firms, is -0.196 with a t-statistic of -2.29.[20] Hence, the impact of board independence on bank loan price is more pronounced for higher leveraged firms than for less leveraged firms. The results suggest that banks pay more attention to the quality of boards when price bank loans if borrowers have higher default risk.

High *Tangibility* indicates less opaque assets of firms (Strahan (1999)). In Column 2 of Table 7, we find a negative and significant coefficient for *Composition*, while the coefficient estimate of the interaction term between *High-tangibility* and *Composition* is positive and significant. Thus, the impact of board independence on bank loan price is mitigated for firms with more tangible assets. The results show a substitution relation between the quality of the board and the tangible assets. Since lenders can recover exposures through tangible assets in case of default, they pay less attention to the quality of boards when borrowers have higher tangible assets.

A higher anti-takeover provision level indicates a lower takeover vulnerability and thus lower default risk of debt (Klock et al. (2004) and Chava (2009)). In Column 3, we test how ATPs level affects the impact of board independence on bank loan price. While *Composition* is significantly negatively related to bank loan price, the interaction term between *High-G-index* and

[20] The F-test of the effect of board independence on bank loan spread for high leverage firms (-0.237-0.196=-0.433) is significantly negative at the 1% level.

Composition is significantly positively related to bank loan price. In line with earlier results, the role of board independence on loan price is reduced when firms have higher levels of ATPs.

In sum, Table 7 shows that the role of board independence on loan price is more pronounced for firms with higher default risk and with more opaque assets.

Risk levels of different loan types and structures are also significantly different. Next, we bisect our full sample based on different loan characteristics. First, we distinguish whether loans are *Term loans* or *Lines of credits*. Second, we separate our sample based on whether loans are *Syndicated loans* or *Sole loans*. Thereby, we investigate how the effect of board independence on bank loan price differs across loan characteristics.[21]

[Insert Table 8 here]

In Column 1 of Table 8, we find that the coefficient estimate of *Composition*, which captures the effect of board independence on bank loan spread for line of credit loans, is -0.295, with a t-statistic of -6.14. The interaction term between *Term loan* and *Composition*, which capture the incremental effect of board independence on bank loan spread for term loans, is 0.174 with a t-statistic of 1.72. The results indicate a weaker effect of board independence on bank loan price for *Term loans* than for *Lines of credits*. Strahan (1999) and Bae and Goyal (2009) argue that credit lines are riskier than term loans due to additional liquidity risk inherent to the former. Our result indicates that the effect of board independence on bank loan price is more critical for loans with higher risk than for loans with lower risk.

In Column 2 of Table 8, the significant and positive coefficient estimate of the interaction term between *Sole Loans* and *Composition* indicates that the impact of board independence on loan price is more pronounced for *Syndicated Loans* than for *Sole Loans*. Syndicated loans are usually more risky than sole loans and resemble public debt more closely given their dispersed ownership. The result further implies the effect of board independence is more important for more risk loans.

[21] We also test the interaction between loan rating (investment grade loans or non-investment grade loans) and board composition. However, we do not find significantly different effects of board composition on loan price for different loan ratings.

Usually, in syndicated loans, lead banks do not hold 100% of the loans, and they also can sell part of the loans in the secondary loan market after loan initiations, these reduce their monitoring incentive. In this case, they are more likely to free ride on other corporate governance mechanisms, such as board of directors, to monitor the borrowers.

5.2. Corporate boards, non-price loan terms and loan ownership

In this section, we investigate whether board characteristics affect non-price loan terms and loan ownership. Because collateral, covenants and performance pricing are important features of bank loan contracts, we focus on how board characteristics impact these three non-price loan terms. In addition, we also test whether board characteristics affect number of lenders in syndicated loans.

5.2.1. Corporate boards and loan securitization

Collateral requirement is a common term in loan contracts which is used to mitigate adverse selection and moral hazard problems (Jimenez et al. (2006)). We first study the impact of different board characteristics on the likelihood of a loan being secured using a logit model. Our control variables are similar to those used in loan price regression except that we exclude macroeconomic factors. Following Dennis et al. (2000) and others, we add *Regulated*, which is a dummy variable that equals one for firms in the utility industry (SIC code 4900-4999), and *Loan concentration*, which is the loan amount divided by total debt in the regression. Highly regulated companies should have less serve agency problems, which in turn result in less use of collateral. In addition, if a loan is a significant proportion of the firm's total debt, it is more likely to be secured.

[Insert Table 9 here]

According results are shown in Column 1 of Table 9. We find *Composition* negatively affects the likelihood of a loan being secured significantly. The marginal effect of *Composition* implies

that the probability of a loan being secured decrease by 0.20% if we increase board independence by 1%.[22] The result indicates that banks expect the ex-post default risk of firms with more independent boards to be lower than firms with less independent boards. Therefore, the former are less likely required to provide collateral in their bank loan contracts ex-ante. In addition, we find that the coefficient estimates of *Audit composition*, *Audit financial expert*, *Diversity*, *Log (tenure)* are also negative and significant, indicating audit committee structure, board diversity and director tenure also affect the likelihood of a loan being secured. Although the coefficient estimate of *Directorship* is significant at 10% level, the economic magnitude is very small. Unlike significant effects of board size and audit committee size on loan price, we find that coefficient estimates of both *Log (size)* and *Log (audit size)* are insignificant at conventional confidence levels. This indicates that board size and audit committee size do not affect the likelihood of a loan being secured. Overall, the results imply that certain board characteristics, especially board and audit committee independence, affect the likelihood of loans being secured significantly.

With regard to the additional control variables, in line with our expectations, we find that *Regulated* and *Loan concentration* are significantly negative and positive related to the likelihood of collateral being used in loan contracts, respectively.

5.2.2. Corporate boards and loan covenants

Covenants are the traditional way used by debt holders in debt contracts to restrict managers' actions that may reduce the value of debt (e.g., Smith and Warner (1979)). General covenants place restrictions on prepayment, dividends and voting rights, etc. Financial covenants impose limits on accounting ratios and variables. Next, we estimate two logit models to test the impacts of different board characteristics on the likelihood of a loan being subject to general or financial

[22] The composition coefficient of -0.805 translates into an -0.195 marginal effect in the logit regression.

covenants.[23] Nash et al. (2001) find when a firm has higher investment opportunities, it is less likely to use covenants in debt contracts. Therefore, we add an additional variable *R&D*, which is the research and development expenditure divided by total assets in the regression. The according results are shown in Column 2 and 3 of Table 9.

We find that the coefficient estimates of *Composition* in Columns 2 and 3 are both negative and significant. Economically, if we increase board independence by 1%, the probability of imposing general or financial covenants on a loan decrease by 0.29% or 0.20%, respectively. This is consistent with the expectation that if the board of directors of a firm is more independent, banks will rely more on board monitoring and reduce their own monitoring intensities. Thus banks are less likely to use covenants in loan contracts. We also find that *Audit composition* and *Interlock* affect the likelihood of using covenants in loan contracts significantly and negatively. Overall, our results indicate that corporate boards also affect the likelihood of banks requiring both general and financial covenants in loan contracts.

For the additional control variable *R&D*, we find it is significantly negatively related to the likelihood of using both general and financial covenants in bank loan contracts. The results are consistent with Nash et al. (2001) who argue that it is less likely to use covenants in debt contracts if a borrower has higher growth opportunities.

5.2.3. Corporate boards and performance pricing provision

Performance pricing is a relatively new provision in bank loan contracts, which varies loan price with the borrowers' credit rating or financial performance. Asquith et al. (2005) discuss the increasing use of performance pricing provision in syndicated loans to control for higher moral hazard costs and uncertainty of the firm. We next estimate a logit model to test the impact of board characteristics on the likelihood of a loan using performance pricing term. Following

[23] Pearson correlation statistics show that the presence of the general covenants is significantly positively correlated with the presence of financial covenants. This finding is consistent with banks viewing different types of covenants as complements rather than substitutes.

Asquith et al. (2005), we add two addition control variables in the regression. *Analyst forecast dispersion* is the standard deviation of actual earnings-deflated individual analysts' earnings forecasts. Higher dispersion of analyst forecast lead to more likely use of performance pricing provision in loan contracts. *Syndication* is a dummy variable which equals one if a loan is syndicated and zero otherwise. To reduce the renegotiation costs among syndication members, syndicated loans are more likely to use performance pricing provisions in loan contracts compared to single lender loans.

According results are shown in Column 4 of Table 9. The significantly negative coefficient estimate of *Composition* indicates if we increase board independence by 1%, the likelihood of a loan using performance pricing provisions will decrease by 0.44%. We also find *Log (size)* is significantly negatively related to the likelihood of a loan using performance pricing, but the marginal effect is relatively small (0.08%) compared to *Composition.* In addition, we find that both coefficient estimates of *Audit composition* and *Interlock (dummy)* are significantly negative, and the coefficient estimate of *blockholder (dummy)* is significantly positive. In sum, the above results indicate that several board characteristics, including both board and audit committee independence, affect the likelihood of using performance pricing provision in loan contracts.

For the additional control variables, we find both coefficient estimates of *Analyst forecast dispersion* and *Syndication* are positive and significant at the 1% level, which is consistent with our expectation.

Overall, our results on non-price loan terms have at least two important implications. First, banks consider the role of corporate boards in governance when designing bank loan contracts not only on price term, but also on non-price terms. Second, it seems that banks pay most attention to board and audit committee independence, as they are the two testing variables which significantly affect the likelihood of using all of the four non-price terms considered here.

5.2.4. Corporate boards and bank loan structure

Sufi (2007) finds when information asymmetries are severe, and the credit risk of the borrower is high, the structure of syndicated loans is more concentrated with fewer lenders. We further analyze the effects of board characteristics on loan syndicate structure as measured by the total number of lenders in a loan. The result is provided in Column 5 of Table 9. The dependent variable is the natural logarithm of the total number of lenders in a loan.

We find that *Composition* is significant positively related to the number of lenders, which indicates more lenders participate in syndicated loans if the borrower has a more independent board. Economically, 1% increase of board independence will result in approximately 0.20% more lenders in a loan. In the regression, we also find *Audit financial expert, Woman, Interlock (dummy)* and *Diversity* are positively, and *Log (tenure)* is negatively related to the number of lenders in syndicated loans. Overall, consistent with our expectation, we find that corporate boards impact not only bank loan contract terms, but also bank loan structure as measured by the number of lenders in loans.

5.3 Exploring simultaneities among price and non-price loan terms

Melnik and Planut (1986) point out that bank loans is a package of multiple contract terms, which cannot be split and traded separately. Empirically, Dennis et al. (2000) find certain loan contract terms are jointly determined. Although our previous estimations using reduced-form regressions are perfectly valid (Dennis et al. (2000)), a richer alternative is to use simultaneous equation models considering interrelations among contract terms. Based on Nelson and Olson's (1978), we employ a two-stage estimation procedure for simultaneous equation models with limited dependent variables. Our endogenous loan terms include *Log (spread), Secured (dummy), Performance pricing (dummy)* and *Covenant (dummy)*, which equals one if there is at least one covenant restriction in a loan contract and zero otherwise. Following Dennis et al. (2000) and Asquith et al. (2005), we assume a uni-directional relationship from *Secured (dummy), Performance pricing (dummy)* and *Covenant (dummy)* to *Log (spread)*, while we allow bi-

directional relationships between *Secured (dummy)* and *Covenant (dummy)*, and between *Performance pricing (dummy)* and *Log (spread)*.

In the first stage, we estimate reduced-form OLS or logit regressions for each of the endogenous variables. From these estimates, we obtain fitted values for each of the endogenous variables. In the second stage, we use the fitted values for the endogenous variables on the right-hand side of equations and then estimate the respective equations using OLS and logit regressions. As before, we are concerned about a potential endogeneity of loan maturity, therefore, we use an instrumental variable (asset maturity as an instrument for loan maturity) approach to estimate reduced-form equations for loan maturity. Fitted values from the reduced-form are then substituted for loan maturity in the second stage estimates of the four structural equations in the model.

[Insert Table 10 here]

The results in Table 10 show that certain loan contract terms are interrelated. Specifically, we find that *Covenant (dummy)* is significantly positively related to *Log (spread)*. But, we do not detect significant effects of *Secured (dummy)* and *Performance pricing (dummy)* on *Log (spread).* The results suggest that loans with higher interest rates are also more likely to use covenants in loan contracts. Moreover, we find significant and negative bi-directional relationships between *Covenant (dummy)* and *Secured (dummy)*, which indicate a substitution relation between the use of collateral and the use of covenants in loan contracts. Finally, we find *Log (spread)* is negatively related to *Performance pricing (dummy)*, suggesting that loans with lower initial interest rates are more likely to have performance pricing provision in loan contracts.

In terms of board effect, we find that, after considering the simultaneities among different loan contract terms, the effect of corporate boards on both price and non-price loan terms is still statistically and economically significant. Compared to reduced-form regressions, we find a smaller effect of *Composition* on bank loan price but an increased effect on all non-price loan terms. Also, both *Audit composition* and *Audit financial expert (dummy)* negatively impact all

price and non-price loan terms in the two stage structure model. The effects of other board characteristics on bank loan contracts are also similar to those in reduced-form regressions. Overall, we conclude that the effect of corporate boards on bank loan contracts remain significant after considering the interdependences among loan contract terms.

6. Conclusion

In this paper, we study the role of corporate boards in bank loan contracting. We find, first, lenders extend favorable price and non-price loan terms when corporate boards are more independent. In addition, more lenders participate in syndicated loans if borrowers have more independent boards. Second, several other board characteristics, such as larger board size, more independent and larger audit committee, more diversified boards and longer director tenure, also reduce bank loan price. However, those board characteristics do not consistently affect non-price loan terms and loan ownership. Third, the role of corporate boards in bank loan contracting is more critical when dealing with high-default risk borrowers, more opaque borrowers and high-default risk loans. Overall, our main findings support that banks do take into account the benefits of board monitoring in reducing agency risk and information risk when designing loan contracts.

Using SOX and the NYSE and NASDAQ new listing rules pursuant to SOX as natural experiment, we find bank loan price is significantly lower for post-SOX period than for pre-SOX period, and the impact of the new regulations on bank loan price is only effective for small firms but not for large firms. The difference-in-difference analysis confirms that firms who comply with independence requirement after SOX enjoy more discounts of bank loan price compared to unaffected firms, and it mitigates the endogeneity concern of our study.

In sum, this paper comprehensively investigates the effects of different board characteristics on bank loan contracting. Our results suggest that several board aspects, especially board and audit committee independence, provide measureable benefits to firms through favorable bank loan contract terms. The results also indicate that board and committee independence are important

indicators of good quality of board, at least from banks' perspective. Furthermore, our study fills a gap in the literature on the determinants of bank loan contract terms. This study provides direct evidence that banks appear to actively consider corporate governance mechanisms, such as corporate boards, when designing loan contracts. In extension to most previous studies on corporate boards and cost of debt, which focus only on a single dimension of costs of debt such as interest rates, we show that various aspects of loan contracts are affected by firm's board characteristics, and our study captures the total costs of debt borne by borrowers more precisely and comprehensively.

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Table 1 Summary statistics

This table provides summary statistics for the data employed in our analysis. The data set is comprised of 9,621 loan facility level and 4,160 firm level observations for the period 1996–2006. *Size* is the total number of directors on the board. *Outsider* is the total number of independent directors on the board. *Composition* is the percentage of independent directors, as a fraction of total directors on the board. *Duality* is a dummy variable which equals one if the CEO is also the chairman of the board, and zero otherwise. *Audit size* is the total number of directors on the audit committee. *Audit outsider* is the total number of independent directors on the audit committee. *Audit composition* is the percentage of independent directors, as a fraction of total directors on the audit committee. *Audit duality* a dummy variable which equals one if the CEO is also a member of the audit committee, and zero otherwise. *Audit financial expert* is a dummy variable which equals one if at least one of the audit committee member is a financial expert, and zero otherwise. *Woman* is a dummy variable which equals one if at least one of the board member is a female, and zero otherwise. *Diversity* is the percentage of minority directors, including African Americans, Asians and Hispanics, as a fraction of total directors on the board. *Age* is the average age of total directors on the board. *Tenure* is the average tenure of total directors on the board. *Directorship* is the average number of directorship held by total directors in a board. *Less attendance* is a dummy variable which equals one if at least one director in a board who attend less than 75% board meetings in a year, and zero otherwise. *Interlock* is a dummy variable which equals one if at least one director in a board is an interlocked director. *Board shareholding* is the ownership percentage of all directors on the board, as a fraction of shares outstanding. *Blockholder* is a dummy variable which equals one if at least one director on the board holds more than 5% shares of the firm, and zero otherwise. *Total assets* is the total assets of the firm. *Leverage* is defined as the long term debt plus debt in current liabilities divided by total assets. *Tangibility* is defined as the net property, plant and equipment divided by total assets *Profitability* is defined as the EBITDA divided by total assets *Market to book* is defined as the market value of equity plus book value of debt divided by total assets. *Z-score* is modified Altman's (1968) Z-score which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *G-index* is Gompers, Ishii, and Metrick (2003) corporate governance index. *Spread* is the all-in spread drawn which is defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Secured* is a dummy variable which equals one if a loan is secured by collateral, and zero otherwise. *Performance pricing* is a dummy variable which equals one if there is a performance pricing provision in the loan contract, and zero otherwise. *General covenant* is a dummy variable which equals one if there is a general covenant provision in the loan contract, and zero otherwise. *Financial covenant* is a dummy variable which equals one if there is a financial covenant provision in the loan contract, and zero otherwise. *Rating* is defined as rating score from 1 to 6 with one indicating an Aaa rating, two indicating an Aa rating, three indicating an A rating, four indicating a Bbb rating, five indicating a Bb rating, and six indicating a B or worse rating. *Facility* is the total amount of loan facility. *Maturity* is the loan maturity time. *Number of lenders* is the total number of lenders in a loan. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in Dealscan. All variables are measured in the fiscal year when loans are initiated, except for firm characteristics variable which are estimated one year prior to loan initiated year. Number of observations (N), mean, standard deviation (STD), minimum (Min) and maximum (Max) are reported in the table.

	N	Mean	STD	Min	Max
Board characteristics					
Size	4160	9.76	2.55	3.00	21.00
Outsider	4160	6.60	2.49	1.00	17.00
Composition (%)	4160	67.18	17.36	9.09	100.00
Duality (dummy)	4160	0.82	0.38	0.00	1.00
Audit size	4160	3.24	1.75	0.00	11.00
Audit outsider	4160	2.93	1.71	0.00	11.00
Audit composition (%)	4160	90.79	16.77	14.29	100.00
Audit duality (dummy)	4160	0.11	0.31	0.00	1.00
Audit financial expert (dummy)	4160	0.64	0.73	0.00	1.00
Woman (dummy)	4160	0.64	0.48	0.00	1.00

Diversity (%)	4160	53.77	39.13	0.00	100.00
Age	4160	59.14	3.74	40.80	74.43
Tenure	4160	9.16	3.55	1.00	27.40
Directorship	4160	3.03	2.40	0.00	9.00
Less attendance (dummy)	4160	0.15	0.36	0.00	1.00
Interlock (dummy)	4160	0.08	0.26	0.00	1.00
Board shareholding (%)	4160	9.02	17.39	0.00	100.00
Blockholder (dummy)	4160	0.16	0.37	0.00	1.00
Firm characteristics					
Total assets (million)	4160	9516.17	30701.10	1.84	1157248.00
Leverage	4160	0.29	0.16	0.00	0.98
Tangibility	4160	0.65	0.39	0.00	0.97
Profitability	4160	0.14	0.09	-0.95	0.94
Market to book	4160	1.83	1.16	0.34	16.66
Z-score	4160	1.78	1.33	-27.90	16.65
G-index	4160	9.79	2.20	3.00	17.00
Loan characteristics					
Spread (basis points)	9621	120.98	95.90	5.50	1000.00
Secured (dummy)	5223	0.50	0.50	0.00	1.00
Performance pricing (dummy)	9621	0.52	0.50	0.00	1.00
General covenant (dummy)	9621	0.59	0.49	0.00	1.00
Financial covenant (dummy)	9621	0.61	0.49	0.00	1.00
Rating	9621	4.67	1.24	1.00	6.00
Facility (million)	9621	493.00	906.00	1.00	25000.00
Maturity (months)	9621	42.77	27.98	2.00	360.00
Number of lenders	9621	10.22	9.59	1.00	118.00
Prior relations	9621	3.76	4.19	0.00	43.00

Table 2 Comparisons of different board structures

This table presents summary statistics of the loan characteristics and firm characteristics for different board structures including board independence (whether board composition is more than 50%), board size (whether board size is more than 9) and board duality. *Spread* is the all-in spread drawn which is defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Secured* is a dummy variable which equals one if a loan is secured by collateral, and zero otherwise. *Performance pricing* is a dummy variable which equals one if there is a performance pricing provision in the loan contract, and zero otherwise. *General covenant* is a dummy variable which equals one if there is a general covenant provision in the loan contract, and zero otherwise. *Financial covenant* is a dummy variable which equals one if there is a financial covenant provision in the loan contract, and zero otherwise. *Number of lenders* is the total number of lenders in a loan. *Total assets* is the total assets of the firm. *Leverage* is defined as the long term debt plus debt in current liabilities divided by total assets. *Tangibility* is defined as the net property, plant and equipment divided by total assets *Profitability* is defined as the EBITDA divided by total assets *Market to book* is defined as the market value of equity plus book value of debt divided by total assets. Number of observations (N), mean, and standard deviation (STD) are reported for each sub-sample. The means of the differences between the variables for two sub-samples and absolute value of t-statistics are also reported. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

Panel A: Dependent board vs. Independent board

	Dependent Board			Independent Board				
	N	**Mean**	**STD**	**N**	**Mean**	**STD**	**Difference**	**T-statistics**
Loan characteristics								
Spread	1997	151.155	106.315	7722	115.399	97.109	35.755***	[14.38]
Secured (dummy)	1202	0.649	0.478	4064	0.448	0.497	0.201***	[12.44]
Performance pricing (dummy)	1997	0.542	0.498	7722	0.498	0.500	0.044***	[3.48]
General covenant (dummy)	1997	0.632	0.482	7722	0.582	0.493	0.050***	[4.07]
Financial covenant (dummy)	1997	0.661	0.473	7722	0.590	0.492	0.071***	[5.80]
Number of lenders	1997	9.351	9.955	7722	10.401	9.460	-1.050***	[4.37]
Firm characteristics								
Total assets	1237	5570.522	23939.100	6001	12450.870	39317.610	-6880.345***	[5.93]
Leverage	1237	0.330	0.214	6001	0.299	0.149	0.031***	[6.17]
Tangibility	1237	0.577	0.390	6001	0.665	0.386	-0.088***	[7.29]
Profitability	1237	0.146	0.086	6001	0.140	0.089	0.006**	[2.00]
Market to book	1237	1.898	1.255	6001	1.767	1.102	0.131***	[3.71]

Panel B: Small board vs. Large board

	Small Board			Large Board				
	N	**Mean**	**STD**	**N**	**Mean**	**STD**	**Difference**	**T-statistics**
Loan characteristics								
Spread	6064	140.699	104.063	3655	92.961	85.234	47.737***	[23.40]
Secured (dummy)	3509	0.571	0.495	1757	0.340	0.474	0.231***	[16.18]
Performance pricing (dummy)	6064	0.533	0.499	3655	0.463	0.499	0.070***	[6.70]
General covenant (dummy)	6064	0.627	0.484	3655	0.534	0.499	0.093***	[9.11]
Financial covenant (dummy)	6064	0.641	0.480	3655	0.544	0.498	0.098***	[9.57]

Number of lenders	6064	8.898	8.707	3655	12.321	10.516	-3.423***	[17.34]
Firm characteristics								
Total assets	4139	5226.073	12250.300	3099	19353.880	54070.660	-14127.810***	[16.26]
Leverage	4139	0.295	0.168	3099	0.317	0.154	-0.022***	[5.69]
Tangibility	4139	0.614	0.393	3099	0.699	0.375	-0.085***	[9.31]
Profitability	4139	0.143	0.094	3099	0.138	0.079	0.005**	[2.46]
Market to book	4139	1.789	1.122	3099	1.790	1.143	-0.001	[0.05]

Panel C: Non-duality board vs. Duality board

	Non-Duality Board			**Duality Board**				
	N	**Mean**	**STD**	**N**	**Mean**	**STD**	**Difference**	**T-statistics**
Loan characteristics								
Spread	1653	134.445	105.818	8066	120.349	98.739	14.096***	[5.22]
Secured (dummy)	960	0.548	0.498	4306	0.481	0.500	0.066***	[3.73]
Performance pricing (dummy)	1653	0.528	0.499	8066	0.503	0.500	0.025*	[1.87]
General covenant (dummy)	1653	0.632	0.482	8066	0.584	0.493	0.048***	[3.65]
Financial covenant (dummy)	1653	0.623	0.485	8066	0.601	0.490	0.022*	[1.70]
Number of lenders	1653	8.902	9.035	8066	10.448	9.658	-1.546***	[5.99]
Firm characteristics								
Total assets	1130	7380.939	15623.290	6108	11995.400	39928.390	-4614.465***	[3.83]
Leverage	1130	0.300	0.192	6108	0.305	0.157	-0.005	[1.04]
Tangibility	1130	0.635	0.379	6108	0.653	0.390	-0.018	[1.42]
Profitability	1130	0.146	0.098	6108	0.140	0.086	0.005*	[1.84]
Market to book	1130	1.888	1.248	6108	1.771	1.107	0.117***	[3.20]

Table 3 Board structure and bank loan price

This table presents OLS regression results on the effect of board structure on the price of bank loans. The dependent variable is natural log of *spread*, which is the all-in spread drawn defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Independent board* is a dummy variable which equals one if the majority of the board is independent directors, and zero otherwise. *Composition* is the fraction of independent directors to total directors on the board. *Log (outsider)* is the natural log of *Outsider*, which is the total number of independent directors on the board. *Large board* is a dummy variable which equals one if there are over 9 directors on the board and zero otherwise. *Log (size)* is the natural log of *size*, which is the total number of directors on the board. *Board to firm size* is the fraction of total number of director on the board to total assets of the firm. *Duality* is a dummy variable which equals one if the CEO is also the chairman of the board, and zero otherwise. *Log (assets)* is the natural log of total assets of the firm. *Leverage* is defined as the long term debt plus debt in current liabilities divided by total assets. *Tangibility* is defined as the net property, plant and equipment divided by total assets *Profitability* is defined as the EBITDA divided by total assets *Market to book* is defined as the market value of equity plus book value of debt divided by total assets. *Z-score* is modified Altman's (1968) Z-score which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Log (facility)* is the natural log of loan facility amount. *Log (maturity)* is the natural log of loan maturity. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in Dealscan. *Rating* is defined as rating score from 1 to 6 with one indicating an Aaa rating, two indicating an Aa rating, three indicating an A rating, four indicating a Bbb rating, five indicating a Bb rating, and six indicating a B or worse rating. *G-index* is Gompers, Ishii, and Metrick (2003) corporate governance index. *Credit spread* is the difference between AAA corporate bond yield and BAA corporate bond yield. *Term spread* is the difference between the 10 year treasury yield and the 2 year treasury yield. We also control for year effect, one digit SIC code industry effect, loan type effect and loan purpose effect in the regressions, and the results are not reported in the table. Absolute values of the heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Board characteristics								
Independent board (dummy)	-0.113***							
	[5.56]							
Composition		-0.304***						-0.304***
		[6.59]						[6.58]
Log(outsider)			-0.196***					
			[9.64]					
Large board (dummy)				-0.106***				
				[6.50]				
Log(size)					-0.244***			-0.246***
					[6.85]			[6.94]
Board to firm size						-0.506***		
						[5.83]		
Duality (dummy)							-0.033	-0.019
							[1.53]	[0.94]
Firm characteristics								
Log(assets)	-0.054***	-0.053***	-0.039***	-0.047***	-0.043***	-0.070***	-0.058***	-0.037***
	[7.46]	[7.26]	[5.32]	[6.30]	[5.76]	[9.37]	[7.88]	[4.90]
Leverage	0.822***	0.814***	0.796***	0.851***	0.850***	0.840***	0.847***	0.812***
	[15.96]	[15.75]	[15.57]	[16.66]	[16.74]	[16.30]	[16.51]	[15.91]
Tangibility	-0.041*	-0.039*	-0.029	-0.042**	-0.042**	-0.047**	-0.050**	-0.031
	[1.95]	[1.86]	[1.39]	[2.01]	[1.97]	[2.21]	[2.39]	[1.48]

Profitability	-0.589***	-0.588***	-0.616***	-0.642***	-0.660***	-0.760***	-0.597***	-0.648***
	[4.27]	[4.26]	[4.49]	[4.61]	[4.76]	[5.47]	[4.30]	[4.71]
Market to book	-0.056***	-0.057***	-0.055***	-0.052***	-0.051***	-0.046***	-0.055***	-0.054***
	[5.98]	[6.07]	[5.93]	[5.53]	[5.53]	[4.88]	[5.88]	[5.79]
Z-score	-0.026**	-0.028**	-0.028***	-0.025**	-0.023**	-0.035***	-0.026**	-0.026**
	[2.48]	[2.57]	[2.64]	[2.31]	[2.25]	[3.13]	[2.39]	[2.49]
G-index	-0.012***	-0.011***	-0.007**	-0.013***	-0.012***	-0.015***	-0.014***	-0.007**
	[4.05]	[3.53]	[2.42]	[4.20]	[3.85]	[5.16]	[4.68]	[2.26]
Loan characteristics								
Log(facility)	-0.095***	-0.095***	-0.093***	-0.091***	-0.091***	-0.090***	-0.093***	-0.092***
	[11.63]	[11.69]	[11.50]	[11.14]	[11.09]	[11.00]	[11.42]	[11.34]
Log(maturity)	0.119***	0.118***	0.116***	0.120***	0.120***	0.121***	0.122***	0.116***
	[10.86]	[10.74]	[10.58]	[10.95]	[10.96]	[11.03]	[11.05]	[10.57]
Prior relations	0.008***	0.007***	0.007***	0.008***	0.009***	0.008***	0.008***	0.008***
	[4.14]	[3.95]	[3.86]	[4.42]	[4.78]	[4.38]	[4.42]	[4.45]
Rating	0.288***	0.286***	0.280***	0.286***	0.284***	0.287***	0.289***	0.280***
	[35.20]	[35.00]	[34.12]	[35.02]	[34.52]	[35.08]	[35.43]	[34.11]
Macroeconomic factors								
Credit spread	0.149***	0.148***	0.139***	0.144***	0.142***	0.149***	0.140***	0.151***
	[3.40]	[3.36]	[3.18]	[3.31]	[3.27]	[3.43]	[3.22]	[3.46]
Term spread	-0.183	-0.183	-0.191*	-0.185	-0.179	-0.169	-0.175	-0.193*
	[1.59]	[1.58]	[1.66]	[1.60]	[1.56]	[1.47]	[1.52]	[1.67]
Observations	7237	7237	7237	7237	7237	7237	7237	7237
Adjusted R2	0.49	0.49	0.49	0.49	0.49	0.49	0.48	0.50

Table 4 Audit committee structure, other director characteristics and bank loan price

This table presents the OLS regression results on the effects of board and audit committee characteristics on the price of bank loans. The dependent variable is natural log of *spread*, which is the all-in spread drawn defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Audit composition* is the fraction of independent directors to total directors on the audit committee. *Log (audit size)* is the natural log of audit size, which is the total number of directors on the audit committee. *Audit duality* a dummy variable which equals one if the CEO is also a member of the audit committee, and zero otherwise. *Audit financial expert* is a dummy variable which equals one if at least one of the audit committee member is a financial expert, and zero otherwise. *Woman* is a dummy variable which equals one if at least one of the board member is a female, and zero otherwise. *Less attendance* is a dummy variable which equals one if at least one director in a board who attend less than 75% board meetings in a year, and zero otherwise. *Interlock* is a dummy variable which equals one if at least one director in a board is an interlocked director. *Diversity* is the fraction of minority directors, including African Americans, Asians and Hispanics, to the total directors on the board. *Board shareholding* is the ownership percentage of all directors on the board, as a fraction of shares outstanding. *Log* (*Age*) is the natural log of age, which is the average age of total directors on the board. *Log* (*Tenure)* is the natural log of tenure, which is the average tenure of total directors on the board. *Directorship* is the average number of directorship held by total directors in a board. *Blockholder* is a dummy variable which equals one if at least one director on the board holds more than 5% shares of the firm, and zero otherwise. *Composition* is the fraction of independent directors to total directors on the board. *Log (size)* is the natural log of *size*, which is the total number of directors on the board. *Duality* is a dummy variable which equals one if the CEO is also the chairman of the board, and zero otherwise. *Log (assets)* is the natural log of total assets of the firm. *Leverage* is defined as the long term debt plus debt in current liabilities divided by total assets. *Tangibility* is defined as the net property, plant and equipment divided by total assets *Profitability* is defined as the EBITDA divided by total assets *Market to book* is defined as the market value of equity plus book value of debt divided by total assets. *Z-score* is modified Altman's (1968) Z-score which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Log (facility)* is the natural log of loan facility amount. *Log (maturity)* is the natural log of loan maturity. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in Dealscan. *Rating* is defined as rating score from 1 to 6 with one indicating an Aaa rating, two indicating an Aa rating, three indicating an A rating, four indicating a Bbb rating, five indicating a Bb rating, and six indicating a B or worse rating. *G-index* is Gompers, Ishii, and Metrick (2003) corporate governance index. *Credit spread* is the difference between AAA corporate bond yield and BAA corporate bond yield. *Term spread* is the difference between the 10 year treasury yield and the 2 year treasury yield. We also control for year effect, one digit SIC code industry effect, loan type effect and loan purpose effect in the regressions, and the results are not reported in the table. Absolute values of the heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)
Board characteristics			
Audit composition	-0.195***		-0.123**
	[3.82]		[2.05]
Log (audit size)	-0.157***		-0.069*
	[5.86]		[1.82]
Audit duality (dummy)	0.021		0.034
	[0.93]		[1.54]
Audit financial expert (dummy)	-0.098***		-0.089***
	[3.53]		[3.24]
Woman (dummy)		-0.077***	-0.049**
		[4.16]	[2.44]
Less Attendance (dummy)		-0.027	-0.024
		[1.30]	[1.08]

Interlock (dummy)		-0.058**	-0.089***
		[2.02]	[2.74]
Diversity		-0.232***	-0.161***
		[8.28]	[5.52]
Board shareholding		0.161***	0.106*
		[3.13]	[1.85]
Log (age)		0.361***	0.600***
		[2.69]	[4.11]
Log (tenure)		-0.115***	-0.143***
		[5.63]	[6.70]
Directorship		0.007**	0.004
		[2.33]	[1.49]
Blockholder (dummy)		0.081***	0.078***
		[2.88]	[2.78]
Composition			-0.194***
			[2.95]
Log (size)			-0.211***
			[5.04]
Duality (dummy)			-0.012
			[0.53]
Firm characteristics			
Log (assets)	-0.063***	-0.041***	-0.041***
	[7.97]	[5.39]	[4.92]
Leverage	0.809***	0.814***	0.785***
	[14.38]	[15.78]	[13.96]
Tangibility	-0.071***	-0.030	-0.052**
	[3.10]	[1.44]	[2.28]
Profitability	-0.707***	-0.689***	-0.806***
	[4.78]	[5.09]	[5.57]
Market to book	-0.069***	-0.050***	-0.064***
	[6.47]	[5.43]	[6.08]
Z-score	-0.030**	-0.021**	-0.023*
	[2.45]	[2.00]	[1.96]
G-index	-0.011***	-0.006*	-0.001
	[3.44]	[1.89]	[0.03]
Loan characteristics			
Log (facility)	-0.081***	-0.092***	-0.077***
	[9.18]	[11.34]	[8.81]
Log (maturity)	0.117***	0.115***	0.110***
	[9.80]	[10.43]	[9.27]
Prior relations	0.010***	0.008***	0.010***
	[5.27]	[4.21]	[5.16]
Rating	0.297***	0.278***	0.283***
	[32.92]	[33.91]	[31.41]
Macroeconomic factors			

Credit spread	0.135***	0.130***	0.112**
	[3.09]	[2.98]	[2.56]
Term spread	-0.119	-0.177	-0.136
	[1.02]	[1.56]	[1.18]
Observations	6272	7237	6272
Adjusted R2	0.51	0.50	0.53

Table 5 Robustness checks

This table presents robustness checks of the effects of board characteristics on the bank loan price. Column 1 is the OLS regression using reduced sample which includes only one largest facility per firm year. Column 2 is the firm and year fixed effect regression. Column 3 is the median regression. Column 4 is the two stage least square regression, with asset maturity as the instrument variable to control for the potential endogeneity of debt maturity. The dependent variable is natural log of *spread*, which is the all-in spread drawn defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Composition* is the fraction of independent directors to total directors on the board. *Log (size)* is the natural log of *size*, which is the total number of directors on the board. *Duality* is a dummy variable which equals one if the CEO is also the chairman of the board, and zero otherwise. *Audit composition* is the fraction of independent directors to total directors on the audit committee. Log (audit size) is the natural log of audit size, which is the total number of directors on the audit committee. *Audit duality* a dummy variable which equals one if the CEO is also a member of the audit committee, and zero otherwise. *Audit financial expert* is a dummy variable which equals one if at least one of the audit committee member is a financial expert, and zero otherwise. *Woman* a dummy variable which equals one if at least one of the board member is a female, and zero otherwise. *Less attendance* is a dummy variable which equals one if at least one director in a board who attend less than 75% board meetings in a year, and zero otherwise. *Interlock* is a dummy variable which equals one if at least one director in a board is an interlocked director. *Diversity* is the fraction of minority directors, including African Americans, Asians and Hispanics, to the total directors on the board. *Board shareholding* is the ownership percentage of all directors on the board, as a fraction of shares outstanding. *Log* (*Age*) is the natural log of age, which is the average age of total directors on the board. *Log* (*Tenure)* is the natural log of tenure, which is the average tenure of total directors on the board. *Directorship* is the average number of directorship held by total directors in a board. *Blockholder* is a dummy variable which equals one if at least one director on the board holds more than 5% shares of the firm, and zero otherwise. *Log (assets)* is the natural log of total assets of the firm. *Leverage* is defined as the long term debt plus debt in current liabilities divided by total assets. *Tangibility* is defined as the net property, plant and equipment divided by total assets *Profitability* is defined as the EBITDA divided by total assets *Market to book* is defined as the market value of equity plus book value of debt divided by total assets. *Z-score* is modified Altman's (1968) Z-score which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Log (facility)* is the natural log of loan facility amount. *Log (maturity)* is the natural log of loan maturity. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in Dealscan. *Rating* is defined as rating score from 1 to 6 with one indicating an Aaa rating, two indicating an Aa rating, three indicating an A rating, four indicating a Bbb rating, five indicating a Bb rating, and six indicating a B or worse rating. Rating information is obtained from Moody's senior debt ratings at the close of the loan in Dealscan. If it is missing, we rely on the S&P rating. *G-index* is Gompers, Ishii, and Metrick (2003) corporate governance index. *Credit spread* is the difference between AAA corporate bond yield and BAA corporate bond yield. *Term spread* is the difference between the 10 year treasury yield and the 2 year treasury yield. We also control for year effect, one digit SIC code industry effect, loan type effect and loan purpose effect in the regressions, and the results are not reported in the table. Absolute values of the z-statistics and the t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	One facility per firm-year	Firm and year fixed effect regression	Median regression	Two stage least square regression (instrument for loan maturity)
Board characteristics				
Composition	-0.190**	-0.175**	-0.225***	-0.196***
	[2.31]	[2.29]	[2.74]	[2.98]
Log (size)	-0.138**	-0.188***	-0.156***	-0.216***
	[2.40]	[3.74]	[3.07]	[5.28]
Duality (dummy)	-0.009	-0.012	0.016	-0.012
	[0.32]	[0.50]	[0.57]	[0.55]
Audit composition	-0.154*	-0.139**	-0.091*	-0.113**
	[1.94]	[2.03]	[1.84]	[2.03]

Log (audit size)	-0.070*	-0.077**	-0.066*	-0.068*
	[1.71]	[2.34]	[1.78]	[1.80]
Audit duality (dummy)	0.012	0.035	0.023	0.033
	[0.41]	[1.37]	[0.84]	[1.52]
Audit financial expert (dummy)	-0.066*	-0.086***	-0.053*	-0.090***
	[1.79]	[2.98]	[1.66]	[3.52]
Woman (dummy)	-0.036	-0.047**	-0.069***	-0.047**
	[1.38]	[2.09]	[2.71]	[2.25]
Less attendance (dummy)	0.005	-0.026	-0.023	-0.024
	[0.20]	[1.11]	[0.82]	[1.08]
Interlock (dummy)	-0.084**	-0.089**	-0.092**	-0.096***
	[2.15]	[2.33]	[2.37]	[3.08]
Diversity	-0.173***	-0.169***	-0.156***	-0.160***
	[4.62]	[4.93]	[4.30]	[5.46]
Board shareholding	0.107	0.097	0.070	0.109**
	[1.43]	[1.27]	[1.04]	[2.02]
Log (age)	0.500***	0.593***	0.698***	0.607***
	[2.64]	[3.52]	[3.78]	[4.10]
Log (tenure)	-0.157***	-0.144***	-0.128***	-0.140***
	[5.69]	[5.69]	[4.78]	[6.52]
Directorship	0.006*	0.005	0.003	0.004
	[1.70]	[1.34]	[0.71]	[1.54]
Blockholder (dummy)	0.100***	0.079***	0.092***	0.076***
	[2.68]	[2.71]	[2.80]	[2.86]
Firm characteristic				
Log (assets)	-0.029***	-0.041***	-0.045***	-0.042***
	[2.64]	[4.16]	[4.83]	[5.57]
Leverage	0.926***	0.775***	0.807***	0.781***
	[13.02]	[11.32]	[11.93]	[14.25]
Tangibility	-0.067**	-0.041	-0.075***	-0.058**
	[2.25]	[1.52]	[2.60]	[2.45]
Profitability	-0.800***	-0.819***	-0.844***	-0.808***
	[4.43]	[4.78]	[4.89]	[5.73]
Market to book	-0.064***	-0.065***	-0.079***	-0.064***
	[4.80]	[5.26]	[7.37]	[7.30]
Z-score	-0.021	-0.020	-0.029**	-0.027***
	[1.55]	[1.53]	[2.40]	[2.77]
G-index	-0.006	-0.001	-0.001	-0.001
	[1.37]	[0.06]	[0.04]	[0.03]
Loan characteristics				
Log (facility)	-0.118***	-0.075***	-0.076***	-0.078***
	[10.24]	[7.90]	[7.75]	[9.82]
Log (maturity)	0.155***	0.109***	0.101***	0.111***
	[9.59]	[8.42]	[7.84]	[10.69]
Prior relations	0.009***	0.010***	0.009***	0.010***

	[3.23]	[4.87]	[3.67]	[5.07]
Rating	0.258***	0.284***	0.332***	0.281***
	[22.52]	[26.98]	[35.61]	[37.58]
Macroeconomic factors				
Credit spread	0.139**	0.114***	0.095**	0.109**
	[2.25]	[2.65]	[1.97]	[2.58]
Term spread	-0.068	-0.023	-0.058	-0.151
	[0.42]	[0.20]	[0.38]	[1.25]
Observations	3707	6272	6272	6239
Adjusted R2	0.57	0.53	0.51	0.53

Table 6 SOX and bank loan price

This table presents the regression results of the effect of SOX on the price of bank loans. The dependent variable is natural log of *spread*, which is the all-in spread drawn defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *SOX* is a binary variable which equals one if a year is after 2002 and zero if a year is before 2002. *Changing firms* is a dummy variable which equals one if a firm changes its board structure from an insider-dominant board to an outside-dominant board. *Composition* is the fraction of independent directors to total directors on the board. *Log (size)* is the natural log of *size*, which is the total number of directors on the board. *Log (assets)* is the natural log of total assets of the firm. *Leverage* is defined as the long term debt plus debt in current liabilities divided by total assets. *Tangibility* is defined as the net property, plant and equipment divided by total assets *Profitability* is defined as the EBITDA divided by total assets *Market to book* is defined as the market value of equity plus book value of debt divided by total assets. *Z-score* is modified Altman's (1968) Z-score which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Log (facility)* is the natural log of loan facility amount. *Log (maturity)* is the natural log of loan maturity. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in Dealscan. *Rating* is defined as rating score from 1 to 6 with one indicating an Aaa rating, two indicating an Aa rating, three indicating an A rating, four indicating a Bbb rating, five indicating a Bb rating, and six indicating a B or worse rating. *G-index* is Gompers, Ishii, and Metrick (2003) corporate governance index. *Credit spread* is the difference between AAA corporate bond yield and BAA corporate bond yield. *Term spread* is the difference between the 10 year treasury yield and the 2 year treasury yield. We also control for year effect, one digit SIC code industry effect, loan type effect and loan purpose effect in the regressions, and the results are not reported in the table. Absolute values of the heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)	(4)
	(Full Sample)	(Large Firms)	(Small Firms)	(Difference-in-difference)
SOX	-0.043*	0.051	-0.131***	-0.010
	[1.76]	[1.39]	[4.01]	[0.38]
Changing firms				0.182***
				[4.41]
SOX*Changing firms				-0.264***
				[5.17]
Firm characteristics				
Log (assets)	-0.062***	-0.050***	-0.071***	-0.058***
	[6.60]	[2.90]	[3.70]	[6.23]
Leverage	0.927***	0.576***	1.109***	0.900***
	[13.03]	[4.94]	[12.65]	[12.58]
Tangibility	-0.124***	-0.147***	-0.065*	-0.121***
	[4.51]	[3.57]	[1.72]	[4.33]
Profitability	-0.566***	-0.707**	-0.921***	-0.548***
	[2.91]	[2.08]	[3.67]	[2.80]
Market to book	-0.080***	-0.028	-0.081***	-0.082***
	[6.08]	[1.23]	[4.86]	[6.23]
Z-score	-0.032**	-0.104***	0.006	-0.034**
	[2.13]	[4.90]	[0.38]	[2.23]
G-index	-0.016***	-0.010**	-0.023***	-0.015***
	[4.29]	[1.99]	[4.37]	[3.88]
Loan characteristics				

Log (facility)	-0.099***	-0.116***	-0.069***	-0.101***
	[9.23]	[8.05]	[4.22]	[9.41]
Log (maturity)	0.082***	0.027	0.128***	0.081***
	[6.07]	[1.53]	[6.24]	[6.05]
Prior relations	0.011***	0.011***	0.012***	0.011***
	[5.03]	[3.63]	[3.31]	[5.05]
Rating	0.289***	0.330***	0.235***	0.287***
	[27.18]	[19.21]	[16.27]	[27.22]
Macroeconomic factors				
Credit spread	0.117***	0.073***	0.161***	0.116***
	[10.50]	[4.73]	[10.42]	[10.46]
Term spread	-0.023	0.047	-0.059	-0.027
	[0.37]	[0.50]	[0.73]	[0.44]
Observations	4416	2207	2209	4416
Adjusted R2	0.48	0.51	0.36	0.48

Table 7 Interaction between board independence and borrower characteristics and bank loan price

This table presents the OLS regression results of the effects of interaction between board independence and different borrower characteristics on the price of bank loans. The dependent variable is natural log of *spread*, which is the all-in spread drawn defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Composition* is the fraction of independent directors to total directors on the board. *High-leverage* is a dummy variable which equals one if the firm's leverage level is above median values of leverage in the full sample. *High-tangibility* is a dummy variable which equals one if the firm's tangibility level is above median values of tangibility in the full sample. *High-G-index* is a dummy variable which equals one if the firm's G-index score is above median values of G-index in the full sample. *Log (assets)* is the natural log of total assets of the firm. *Leverage* is defined as the long term debt plus debt in current liabilities divided by total assets. *Tangibility* is defined as the net property, plant and equipment divided by total assets *Profitability* is defined as the EBITDA divided by total assets *Market to book* is defined as the market value of equity plus book value of debt divided by total assets. *Z-score* is modified Altman's (1968) Z-score which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Log (facility)* is the natural log of loan facility amount. *Log (maturity)* is the natural log of loan maturity. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in Dealscan. *Rating* is defined as rating score from 1 to 6 with one indicating an Aaa rating, two indicating an Aa rating, three indicating an A rating, four indicating a Bbb rating, five indicating a Bb rating, and six indicating a B or worse rating. *G-index* is Gompers, Ishii, and Metrick (2003) corporate governance index. *Credit spread* is the difference between AAA corporate bond yield and BAA corporate bond yield. *Term spread* is the difference between the 10 year treasury yield and the 2 year treasury yield. We also control for year effect, one digit SIC code industry effect, loan type effect and loan purpose effect in the regressions, and the results are not reported in the table. Absolute values of the heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1)	(2)	(3)
Composition	-0.237***	-0.435***	-0.428***
	[3.40]	[7.29]	[8.13]
High-leverage	0.298***		
	[4.86]		
High-leverage*Composition	-0.196**		
	[2.29]		
High-tangibility		-0.222***	
		[3.73]	
High-tangibility*Composition		0.288***	
		[3.47]	
High-G-index			-0.310***
			[4.64]
High-G-index*Composition			0.368***
			[4.01]
Firm characteristics			
Log (assets)	-0.049***	-0.053***	-0.050***
	[6.55]	[7.30]	[6.94]
Leverage		0.820***	0.807***
		[15.91]	[15.56]
Tangibility	-0.045**		-0.040*
	[2.10]		[1.91]
Profitability	-0.252*	-0.617***	-0.599***
	[1.83]	[4.66]	[4.36]

Market to book	-0.072***	-0.056***	-0.056***
	[7.33]	[6.05]	[5.96]
Z-score	-0.058***	-0.025**	-0.027**
	[5.04]	[2.45]	[2.49]
G-index	-0.011***	-0.011***	
	[3.46]	[3.52]	
Loan characteristics			
Log (facility)	-0.095***	-0.094***	-0.095***
	[11.67]	[11.67]	[11.73]
Log (maturity)	0.123***	0.118***	0.119***
	[11.09]	[10.77]	[10.83]
Prior relations	0.008***	0.008***	0.008***
	[4.12]	[4.22]	[4.51]
Rating	0.288***	0.286***	0.287***
	[34.71]	[35.13]	[35.23]
Macroeconomic factors			
Credit spread	0.164***	0.153***	0.149***
	[3.69]	[3.49]	[3.38]
Term spread	-0.176	-0.177	-0.189
	[1.51]	[1.53]	[1.63]
Observations	7237	7237	7237
Adjusted R2	0.48	0.49	0.49

Table 8 Interaction between board independence and loan characteristics and bank loan spread

This table presents the OLS regression results of the effects of interaction between board independence and different loan characteristics on the price of bank loans. The dependent variable is natural log of *spread*, which is the all-in spread drawn defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Composition* is the fraction of independent directors to total directors on the board. *Term-loan* is a dummy variable which equals one if the type of the loan is the term loan, and zero otherwise. *Sole-loan* is a dummy variable which equals one if there is only one lender in a single loan, and zero otherwise. *Log (assets)* is the natural log of total assets of the firm. *Leverage* is defined as the long term debt plus debt in current liabilities divided by total assets. *Tangibility* is defined as the net property, plant and equipment divided by total assets *Profitability* is defined as the EBITDA divided by total assets *Market to book* is defined as the market value of equity plus book value of debt divided by total assets. *Z-score* is modified Altman's (1968) Z-score which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Log (facility)* is the natural log of loan facility amount. *Log (maturity)* is the natural log of loan maturity. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in Dealscan. *Rating* is defined as rating score from 1 to 6 with one indicating an Aaa rating, two indicating an Aa rating, three indicating an A rating, four indicating a Bbb rating, five indicating a Bb rating, and six indicating a B or worse rating. *G-index* is Gompers, Ishii, and Metrick (2003) corporate governance index. *Credit spread* is the difference between AAA corporate bond yield and BAA corporate bond yield. *Term spread* is the difference between the 10 year treasury yield and the 2 year treasury yield. We also control for year effect, one digit SIC code industry effect, loan type effect and loan purpose effect in the regressions, and the results are not reported in the table. Absolute values of the heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	(1)	(2)
Composition	-0.295***	-0.327***
	[6.14]	[6.84]
Term-loan	0.362***	
	[5.26]	
Term-loan*Composition	0.174*	
	[1.72]	
Sole-loan		-0.133
		[1.39]
Sole-loan*Composition		0.253*
		[1.79]
Firm characteristics		
Log (assets)	-0.059***	-0.053***
	[8.28]	[8.43]
Leverage	0.700***	0.811***
	[13.96]	[15.91]
Tangibility	-0.026	-0.040*
	[1.34]	[1.83]
Profitability	-0.564***	-0.582***
	[4.33]	[4.51]
Market to book	-0.060***	-0.057***
	[6.43]	[7.21]
Z-score	-0.029***	-0.028***
	[3.18]	[3.09]
G-index	-0.009***	-0.011***

	[2.98]	[3.46]
Loan characteristics		
Log (facility)	-0.078***	-0.093***
	[9.95]	[12.23]
Log (maturity)	0.073***	0.119***
	[6.79]	[12.08]
Prior relations	0.006***	0.007***
	[3.46]	[4.34]
Rating	0.274***	0.286***
	[34.65]	[41.28]
Macroeconomic factors		
Credit spread	0.119***	0.148***
	[2.91]	[3.50]
Term spread	-0.197*	-0.181
	[1.74]	[1.49]
Observations	7237	7237
Adjusted R2	0.52	0.49

Table 9 Board characteristics, non-price loan terms and loan ownership

This table presents Logit and OLS regression results of the effects of board characteristics on the non-price loan terms and loan ownership. The dependent variables are *Secured*, which is a dummy variable that equals one if a loan is secured by collateral, and zero otherwise, *general covenant*, which is a dummy variable that equals one if there is a general covenant provision in the loan contract, and zero otherwise, *Financial covenant*, which a dummy variable that equals one if there is a financial covenant provision in the loan contract, and zero otherwise, *Performance pricing*, which is a dummy variable that equals one if there is a performance pricing provision in the loan contract, and zero otherwise, and *number of lenders*, which is the total number of lenders in a single loan. *Composition* is the fraction of independent directors to total directors on the board. *Log (size)* is the natural log of *size*, which is the total number of directors on the board. *Duality* is a dummy variable which equals one if the CEO is also the chairman of the board, and zero otherwise. *Audit composition* is the fraction of independent directors to total directors on the audit committee. Log (audit size) is the natural log of audit size, which is the total number of directors on the audit committee. *Audit duality* a dummy variable which equals one if the CEO is also a member of the audit committee, and zero otherwise. *Audit financial expert* is a dummy variable which equals one if at least one of the audit committee member is a financial expert, and zero otherwise. *Woman* is a dummy variable which equals one if at least one of the board member is a female, and zero otherwise. *Less attendance* is a dummy variable which equals one if at least one director in a board who attend less than 75% board meetings in a year, and zero otherwise. *Interlock* is a dummy variable which equals one if at least one director in a board is an interlocked director. *Diversity* is the fraction of minority directors, including African Americans, Asians and Hispanics, to the total directors on the board. *Board shareholding* is the ownership percentage of all directors on the board, as a fraction of shares outstanding. *Log* (*Age*) is the natural log of age, which is the average age of total directors on the board. *Log* (*Tenure)* is the natural log of tenure, which is the average tenure of total directors on the board. *Directorship* is the average number of directorship held by total directors in a board. *Blockholder* is a dummy variable which equals one if at least one director on the board holds more than 5% shares of the firm, and zero otherwise. *Log (assets)* is the natural log of total assets of the firm. *Leverage* is defined as the long term debt plus debt in current liabilities divided by total assets. *Tangibility* is defined as the net property, plant and equipment divided by total assets *Profitability* is defined as the EBITDA divided by total assets *Market to book* is defined as the market value of equity plus book value of debt divided by total assets. *Z-score* is modified Altman's (1968) Z-score which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Regulated* is a dummy variable which equals one for firms in utility industry (SIC code 4900-4999). *R&D* is the total R&D expenditure divided by total assets. *Analyst forecast dispersion* is the standard deviation of actual earnings-deflated individual analysts' earnings forecasts. *Log (facility)* is the natural log of loan facility amount. *Log (maturity)* is the natural log of loan maturity. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in Dealscan. *Rating* is defined as rating score from 1 to 6 with one indicating an Aaa rating, two indicating an Aa rating, three indicating an A rating, four indicating a Bbb rating, five indicating a Bb rating, and six indicating a B or worse rating. *Loan concentration* is the loan amount divided by total debt. *Syndication* is a dummy variable which equals one if the number of lenders in a loan is more than one. We also control for year effect, one digit SIC code industry effect, loan type effect and loan purpose effect in the regressions, and the results are not reported in the table. Absolute values of the z-statistics and the heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Secured (dummy)	General covenant (dummy)	Financial covenant (dummy)	Performance pricing (dummy)	Log (Lenders)
Board characteristics					
Composition	-0.805**	-1.278***	-0.832***	-1.785***	0.193**
	[2.06]	[4.76]	[3.26]	[6.77]	[2.28]
Log (size)	-0.283	-0.310*	-0.172	-0.341**	0.050
	[1.21]	[1.79]	[1.10]	[2.13]	[0.95]
Duality (dummy)	0.055	-0.111	-0.049	0.082	0.026
	[0.44]	[1.19]	[0.56]	[0.98]	[0.93]
Audit composition	-0.882***	-0.715***	-0.419*	-0.592***	-0.037

	[2.66]	[3.16]	[1.78]	[2.67]	[0.50]
Log (audit size)	-0.164	0.152	-0.016	-0.041	0.020
	[0.94]	[1.26]	[0.14]	[0.36]	[0.52]
Audit duality (dummy)	-0.156	-0.115	-0.131	-0.146	0.003
	[1.39]	[1.12]	[1.55]	[1.58]	[0.10]
Audit financial expert (dummy)	-0.362**	-0.109	-0.141	-0.012	0.071*
	[2.19]	[1.12]	[1.46]	[0.12]	[1.96]
Woman (dummy)	-0.094	0.048	-0.073	-0.027	0.055**
	[0.80]	[0.56]	[0.89]	[0.34]	[2.03]
Less attendance (dummy)	0.090	0.118	0.097	-0.028	0.004
	[0.66]	[1.40]	[1.16]	[0.33]	[0.15]
Interlock (dummy)	-0.066	-0.342***	-0.209*	-0.332***	0.069*
	[0.29]	[2.94]	[1.80]	[2.73]	[1.67]
Diversity	-0.529***	-0.073	-0.12	-0.017	0.072*
	[3.09]	[0.60]	[1.04]	[0.15]	[1.92]
Board shareholding	0.261	0.088	0.022	0.073	0.096
	[0.82]	[0.38]	[0.10]	[0.35]	[1.34]
Log (age)	1.098	0.001	0.082	-0.594	-0.101
	[1.32]	[0.00]	[0.14]	[1.04]	[0.53]
Log (tenure)	-0.353***	-0.024	-0.057	-0.040	-0.056**
	[2.90]	[0.26]	[0.69]	[0.47]	[2.03]
Directorship	-0.029*	0.006	0.016	0.001	0.003
	[1.75]	[0.52]	[1.45]	[0.05]	[0.78]
Blockholder (dummy)	0.288	-0.024	0.041	0.209**	0.052
	[1.64]	[0.23]	[0.41]	[2.07]	[1.47]
Firm characteristics					
Log (assets)	-0.006	-0.363***	-0.287***	-0.257***	-0.027***
	[0.11]	[7.18]	[8.41]	[8.63]	[2.86]
Leverage	2.572***	-0.299	-0.310	0.030	0.039
	[7.35]	[1.19]	[1.35]	[0.15]	[0.54]
Tangibility	-0.052	-0.147	-0.245***	-0.099	-0.080***
	[0.36]	[1.57]	[2.69]	[1.06]	[2.76]
Profitability	-2.567***	-1.021	-0.654	0.718	0.274*
	[2.81]	[1.22]	[1.03]	[1.34]	[1.65]
Market to book	-0.085	-0.290***	-0.195***	-0.024	-0.004
	[1.29]	[4.67]	[4.33]	[0.75]	[0.38]
Z-score	-0.087	-0.333***	-0.267***	-0.020	0.032***
	[1.21]	[3.98]	[4.81]	[0.56]	[2.95]
G-index	-0.034*	0.040***	0.054***	0.033**	0.016***
	[1.65]	[2.87]	[4.05]	[2.45]	[3.59]
Regulated	-0.476**				
	[2.03]				
R&D		-2.720***	-1.181***		
		[6.62]	[7.79]		
Analyst forecast dispersion				0.402***	

				[5.53]	
Loan characteristics					
Log (facility)	-0.193***	0.373***	0.335***	0.263***	0.370***
	[3.39]	[10.85]	[10.28]	[8.03]	[33.20]
Log (maturity)	0.458***	0.096**	0.044	0.128***	0.156***
	[6.41]	[2.36]	[1.12]	[3.24]	[10.97]
Prior relations	0.046***	-0.019***	-0.031***	-0.023***	0.020***
	[4.08]	[2.58]	[4.22]	[2.85]	[6.95]
Rating	1.052***	0.078**	0.122***	0.007	-0.038***
	[18.32]	[2.41]	[4.13]	[0.24]	[3.82]
Loan concentration	0.043*				
	[1.93]				
Syndication (dummy)				0.504***	
				[3.89]	
Observations	3334	6256	6256	6272	6272
Pseudo/Adjusted R2	0.30	0.22	0.11	0.18	0.30

Table 10 Two-stage estimation of the structural model

This table presents simultaneous equation estimation of loan price, collateral, covenant and performance pricing. The dependent variable is natural log of *spread*, which is the all-in spread drawn defined as the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down, *Secured*, which is a dummy variable that equals one if a loan is secured by collateral, and zero otherwise, *general covenant*, which is a dummy variable that equals one if there is a general covenant provision in the loan contract, and zero otherwise, *Financial covenant*, which a dummy variable that equals one if there is a financial covenant provision in the loan contract, and zero otherwise, *Performance pricing*, which is a dummy variable that equals one if there is a performance pricing provision in the loan contract, and zero otherwise, and *number of lenders*, which is the total number of lenders in a single loan. *Composition* is the fraction of independent directors to total directors on the board. *Log (size)* is the natural log of *size*, which is the total number of directors on the board. *Duality* is a dummy variable which equals one if the CEO is also the chairman of the board, and zero otherwise. *Audit composition* is the fraction of independent directors to total directors on the audit committee. Log (audit size) is the natural log of audit size, which is the total number of directors on the audit committee. *Audit duality* a dummy variable which equals one if the CEO is also a member of the audit committee, and zero otherwise. *Audit financial expert* is a dummy variable which equals one if at least one of the audit committee member is a financial expert, and zero otherwise. *Woman* is a dummy variable which equals one if at least one of the board member is a female, and zero otherwise. *Less attendance* is a dummy variable which equals one if at least one director in a board who attend less than 75% board meetings in a year, and zero otherwise. *Interlock* is a dummy variable which equals one if at least one director in a board is an interlocked director. *Diversity* is the fraction of minority directors, including African Americans, Asians and Hispanics, to the total directors on the board. *Board shareholding* is the ownership percentage of all directors on the board, as a fraction of shares outstanding. *Log* (*Age*) is the natural log of age, which is the average age of total directors on the board. *Log* (*Tenure)* is the natural log of tenure, which is the average tenure of total directors on the board. *Directorship* is the average number of directorship held by total directors in a board. *Blockholder* is a dummy variable which equals one if at least one director on the board holds more than 5% shares of the firm, and zero otherwise. *Log (assets)* is the natural log of total assets of the firm. *Leverage* is defined as the long term debt plus debt in current liabilities divided by total assets. *Tangibility* is defined as the net property, plant and equipment divided by total assets *Profitability* is defined as the EBITDA divided by total assets *Market to book* is defined as the market value of equity plus book value of debt divided by total assets. *Z-score* is modified Altman's (1968) Z-score which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Regulated* is a dummy variable which equals one for firms in utility industry (SIC code 4900-4999). *R&D* is the total R&D expenditure divided by total assets. *Analyst forecast dispersion* is the standard deviation of actual earnings-deflated individual analysts' earnings forecasts. *Log (facility)* is the natural log of loan facility amount. *Log (maturity)* is the natural log of loan maturity. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in Dealscan. *Rating* is defined as rating score from 1 to 6 with one indicating an Aaa rating, two indicating an Aa rating, three indicating an A rating, four indicating a Bbb rating, five indicating a Bb rating, and six indicating a B or worse rating. *Loan concentration* is the loan amount divided by total debt. *Syndication* is a dummy variable which equals one if the number of lenders in a loan is more than one. *G-index* is Gompers, Ishii, and Metrick (2003) corporate governance index. *Credit spread* is the difference between AAA corporate bond yield and BAA corporate bond yield. *Term spread* is the difference between the 10 year treasury yield and the 2 year treasury yield. We also control for year effect, one digit SIC code industry effect, loan type effect and loan purpose effect in the regressions, and the results are not reported in the table. Absolute values of the z-statistics and the heteroskedasticity robust t-statistics are in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, **, and ***, respectively.

	Log (spread)	Secured (dummy)	Covenant (dummy)	Performance pricing (dummy)
Fitted spread				-7.959***
				[6.17]
Fitted secured	0.116		-1.546***	
	[1.25]		[4.01]	
Fitted performance pricing	-0.051			
	[0.57]			

Fitted covenant	0.166***	-0.686***		
	[2.75]	[2.66]		
Board characteristics				
Composition	-0.147**	-1.076***	-1.517***	-3.208***
	[1.97]	[2.81]	[5.48]	[9.22]
Log (size)	-0.187***	-0.325	-0.380**	-1.894***
	[4.34]	[1.40]	[2.18]	[6.31]
Duality (dummy)	-0.010	0.035	-0.109	-0.010
	[0.43]	[0.28]	[1.17]	[0.12]
Audit composition	-0.116**	-0.781**	-0.529**	-0.473*
	[1.98]	[2.40]	[2.31]	[1.68]
Log (audit size)	-0.069**	-0.091	0.085	-0.638***
	[2.22]	[0.54]	[0.70]	[4.27]
Audit duality (dummy)	0.039*	-0.210	-0.137	-0.021
	[1.73]	[1.57]	[1.48]	[0.21]
Audit financial expert (dummy)	-0.071**	-0.420***	-0.178*	-0.686***
	[2.53]	[3.08]	[1.80]	[4.65]
Woman (dummy)	-0.043**	-0.104	0.009	-0.418***
	[2.12]	[0.88]	[0.10]	[4.10]
Less attendance (dummy)	-0.032	0.132	0.134	-0.220**
	[1.44]	[1.01]	[1.59]	[2.41]
Interlock (dummy)	-0.079**	-0.121	-0.359***	-1.053***
	[2.38]	[0.52]	[3.08]	[6.19]
Diversity	-0.145***	-0.501***	-0.205	-1.298***
	[4.78]	[3.01]	[1.63]	[5.50]
Board shareholding	0.088	0.273	0.188	0.848***
	[1.51]	[0.86]	[0.81]	[3.45]
Log (age)	0.564***	0.875	0.159	4.293***
	[3.86]	[1.06]	[0.26]	[4.40]
Log (tenure)	-0.132***	-0.322***	-0.101	-1.171***
	[6.10]	[2.67]	[1.09]	[5.84]
Directorship	0.004	-0.025	-0.002	0.035***
	[1.45]	[1.56]	[0.15]	[2.73]
Blockholder (dummy)	0.075***	0.272**	0.026	0.827***
	[2.66]	[2.04]	[0.25]	[5.80]
Firm characteristics				
Log (assets)	-0.033***	-0.059	-0.366***	-0.589***
	[3.36]	[1.05]	[7.20]	[9.57]
Leverage	0.715***	2.743***	0.233	6.274***
	[11.32]	[7.92]	[0.87]	[6.07]
Tangibility	-0.047**	-0.068	-0.147	-0.508***
	[2.08]	[0.47]	[1.57]	[4.37]
Profitability	-0.785***	-2.610***	-1.822**	-5.618***
	[5.08]	[2.82]	[2.02]	[4.86]
Market to book	-0.064***	-0.089	-0.292***	-0.532***

	[6.20]	[1.31]	[4.52]	[6.02]
Z-score	-0.019*	-0.118	-0.346***	-0.201***
	[1.79]	[1.59]	[4.11]	[4.22]
G-index	-0.001	-0.026	0.029**	0.032**
	[0.18]	[1.26]	[2.02]	[2.33]
Regulated		-0.506**		
		[2.18]		
R&D			-2.458***	
			[6.55]	
Analyst forecast dispersion				0.399***
				[5.56]
Loan characteristics				
Log (facility)	-0.082***	-0.164***	0.330***	-0.344***
	[7.46]	[2.77]	[9.37]	[3.33]
Fitted maturity	0.096***	0.416***	0.209***	1.001***
	[6.93]	[6.10]	[4.17]	[6.81]
Prior relations	0.009***	0.040***	-0.008	0.056***
	[4.38]	[3.59]	[1.05]	[3.71]
Rating	0.263***	1.039***	0.334***	2.252***
	[14.45]	[18.72]	[4.76]	[6.18]
Loan concentration		0.044*		
		[1.93]		
Syndication (dummy)				0.490***
				[3.77]
Credit spread	0.097**			
	[2.22]			
Term spread	-0.054			
	[0.46]			
Observations	6230	3340	6230	6272
Adjusted/Pseudo R2	0.52	0.30	0.22	0.18