Bill Francis – Iftekhar Hasan – Michael Koetter – Qiang Wu

Corporate boards and bank loan contracting

EUROJÄRJESTELMÄ
EUROSYSTEMET

Bank of Finland Research
Discussion Papers
14 • 2012

CORPORATE BOARDS AND BANK LOAN CONTRACTING

Bill Francis

Rensselaer Polytechnic Institute

Iftekhar Hasan

Fordham University and Bank of Finland

Michael Koetter

University of Groningen

Qiang Wu

Rensselaer Polytechnic Institute

Abstract

We investigate the role of corporate boards in bank loan contracting. We find that when corporate boards are more independent, both price and nonprice loan terms (e.g., interest rates, collateral, covenants, and performance-pricing provisions) are more favorable, and syndicated loans comprise more lenders. In addition, board size, audit committee structure, and other board characteristics influence bank loan prices. However, they do not consistently affect all nonprice loan terms except for audit committee independence. Our study provides strong evidence that banks tend to recognize the benefits of board monitoring in mitigating information risk ex ante and controlling agency risk ex post, and they reward higher quality boards with more favorable loan contract terms.

JEL Classification: G21, G34

I. Introduction

Bank loans are a major source of corporate financing, even for large public companies. In fact, the volume of bank loan financing in the United States is larger than the volume of equity and bond financing combined.[1] Given the economic significance of bank loans in allocating capital to corporations, an emerging stream of literature investigates the determinants of bank loan contracting (e.g., Qian and Strahan 2007; Bharath, Sunder, and Sunder 2008; Graham, Li, and Qiu 2008; Chava, Livdan, and Purnanandam 2009). This article adds to this line of research by examining whether banks consider the characteristics of corporate boards when designing bank loan contracts.

Our study is motivated by theoretical work such as Rajan and Winton (1995), which emphasizes the effects of asymmetric information and agency costs on the cost of capital and debt contract terms. A general implication of these theoretical models is that when a firm has severe information problems and moral-hazard problems, lenders are more likely to raise interest rates and tighten nonprice debt terms (such as adding covenant restrictions and collateral requirements) to compensate for higher default risk, facilitate monitoring, and limit potential losses.

Boards of directors are one of the most important internal corporate governance mechanisms to control agency problems and mitigate information asymmetry between the firm and outside stakeholders (e.g., Fama and Jensen 1983). Prior studies find that the more

We wish to express our sincere thanks and gratitude toward the anonymous referee and the editor (Jayant Kale) whose comments and suggestions significantly improved the paper. We would also like to thank Steven Dennis, Philip Strahan, and participants of seminars at Rensselaer Polytechnic Institute, University of Groningen, Bank of Finland, Midwest Financial Management Association Annual Meeting (February 2009) for helpful comments and insights.

[1] For example, according to the Loan Pricing Corporation and the Federal Reserve System, in 2005 the total amount of equity issued was about $115 billion, the total amount of corporate bonds issued was about $700 billion, and the total amount of bank loans issued was about $1,500 billion.

independent a board is, the more likely it is to replace its CEO in response to poor performance (Weisbach 1988), control CEO overcompensation (Core, Holthausen, and Larcker 1999), control overinvestments in firms with positive free cash flow (Richardson 2006), and reduce earnings management and financial fraud by overseeing the financial accounting process (e.g., Beasley 1996; Klein 2002). Daily and Dalton (1994) and Elloumi and Gueyie (2001) find evidence that the more independent a company's board is, the less likely it will become bankrupt or financially distressed. Assuming that boards of directors play an effective role in providing credible information ex ante and reducing agency risk and default risk ex post, we hypothesize that banks evaluate the quality of corporate boards when designing bank loan contracts.

Alternatively, unlike equity holders and bond holders, who lack monitoring incentives because of the wide dispersion of ownership and resulting free rider problems, banks have access to proprietary information and can provide effective monitoring because of their roles as inside lenders and delegated monitors (e.g., Diamond 1984). Therefore, banks may not be as sensitive as dispersed equity and bond holders are to board characteristics. Furthermore, corporate boards are supposed to act in the interests of shareholders, not necessarily in the interests of debt holders. The agency theory of debt implies that shareholders have incentives to transfer wealth from debt holders to shareholders (e.g., Jensen and Meckling 1976; Myers 1977). It is possible that boards of directors encourage managers to engage in wealth-expropriation activities that may hurt debt holders' interests. Therefore, banks may not rely on board monitoring, or even charge higher risk premiums, or use more restrictive nonprice terms in loan contracts.

Using a sample of 6,300 loans issued to S&P 1,500 companies between 1998 and 2006, we test these competing hypotheses by estimating different reduced-form Ordinary Least Squares (OLS) regressions and Logistic regressions to explain 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.

Our empirical evidence supports the hypothesis that banks tend to recognize the benefits of board monitoring and reward higher quality boards with more favorable loan contract terms. First, we find that when corporate boards are more independent, lenders charge lower interest rates and impose more favorable nonprice terms, and more lenders participate in syndicated loans. In our testing sample, a move from the first quartile to the third quartile of board independence generates a decrease in loan spreads of about 11 basis points; a decrease in the likelihood of using collateral, covenants, and performance price provisions of about 9%, 6%, and 7%, respectively; and an increase of about 1.8 lenders in loan syndicates. All these results are economically meaningful. The results also imply that board independence is one of the most important indicators of the quality of boards in strengthening corporate governance, at least from creditors' perspective. As banks realize the benefits of board monitoring in mitigating information risk, agency risk, and default risk, they lower the required risk premiums and reduce their own monitoring incentives and costs, which in turn are reflected in both price and nonprice loan terms.

Second, we find that some other board characteristics also affect bank loan prices. For example, board size, audit committee structure (including audit committee independence, audit committee size, and the presence of financial experts on audit committees), director tenure, and directorships are significantly and negatively related to bank loan price. Except for audit committee independence, however, most of these other board characteristics do not consistently affect the nonprice terms we consider. This result further demonstrates the importance of independence in determining audit committee quality and in turn influencing bank loan contracts.

Third, we find that the effect of corporate boards on bank loan prices is contingent on the borrowers' monitoring needs. Specifically, we find that board independence is less influential on bank loan prices for borrowers with lower analyst-forecast dispersion and lower antitakeover provisions (ATPs) scores, indicating that transparency and a good overall governance environment mitigates the benefits of board monitoring.

Because a board's structure is endogenously determined, empirical work on corporate boards always faces the challenge of endogeneity problems (Hermalin and Weisbach 1998 and 2003). Although the feedback mechanism from bank loan terms on board structure is less likely, it is still possible that any omitted variables correlated with firm-level risk factors and with board structure would bias our estimates in single equations. Fortunately, the new listing rules on the NYSE and the NASDAQ pursuant to the 2002 Sarbanes-Oxley Act (SOX) require the boards of listing firms to have a majority of independent directors. This provides us with a natural experiment to mitigate potential endogeneity concerns.

Our identification strategy is based on the fact that some firms, but not all, are forced to change the composition of their boards from inside-dominant to outside-dominant after the enforcement of the new regulations. We classify firms into changing firms (a treated group) and unaffected firms (a control group), depending on whether they are in compliance with the new board regulations when they are introduced. By applying a differences-in-differences methodology, we find that changing firms have more significant reductions in their bank loan prices after they change their board structures from inside-dominant to outside-dominant. The results also suggest that board independence brings about, and not merely reflects, reduced bank loan prices.

Dennis, Nandy, and Sharpe (2000) find interdependences among different loan contract terms. To address the issue of joint determinations, we employ a simultaneous-equation model, explicitly testing the interrelations among price and nonprice loan terms. Our results show that certain loan contract terms are interrelated and that corporate boards continuously affect bank loan contracts in the simultaneous-equation model.

In two related studies, Bhojraj and Sengupta (2003) find that firms with more independent boards enjoy lower bond yields and higher bond ratings. Anderson, Mansi, and Reeb (2004) document that bond yield spreads are negatively related to board and audit committee independence and size. Our study differs from them in several important ways. First, there are significant institutional differences between arm's-length lenders and private lenders with respect to their access to private information, ability and incentive to monitor borrowers, and flexibility in renegotiating contract terms (e.g., Rajan 1992). These fundamental differences suggest that the results for public debt in Bhojraj and Sengupta (2003) and Anderson, Mansi, and Reeb (2004) need not hold for private debt.

Second, debt contracting is a very important component of corporate finance (Hart 2001). Generally, debt contracts have multiple intertwined terms (Melnik and Plaut 1986). In addition, Stiglitz and Weiss (1981) point out that although interest rates are an effective way to "price" the risk of debt, they have adverse effects on borrowers' moral-hazard problems. Therefore, it is important to focus on both price and nonprice terms when studying debt contracts (Qian and Strahan 2007). After all, nonprice debt terms are also costly to borrowers. For example, borrowers may have to give up profitable investment opportunities to comply with restrictive debt covenants.

In their studies, however, both Bhojraj and Sengupta (2003) and Anderson, Mansi, and Reeb (2004) only focus on the price terms of debt. The multidimensional approach in our study overcomes that drawback, and it allows us to examine more comprehensively how the quality of corporate boards affect various aspects of loan contracts. We can therefore capture more precisely the total costs of debt.

Our article contributes to the literature in several ways. First, it adds to the emerging research on the determinants of bank loan contracting. In three surveys conducted by McKinsey & Co. in 1999 and 2000, the majority of banks explicitly exhibit their concerns about board practices when they evaluate borrowers' credit quality (Coombes and Watson 2000). Our article provides empirical evidence that banks consider board quality when designing bank loan contracts.

Second, our study extends the existing literature regarding boards of directors. Despite a proliferation of studies, there is still much debate on board effectiveness and how different board characteristics, especially board independence, affect board efficacy.[2] In this article, we comprehensively examine the impacts of different board features 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 of board quality, at least from creditors' perspective. The results are consistent with the traditional notion that outside directors are effective monitors (e.g., Fama and Jensen 1983). The results also support the notion that SOX and the new listing requirements concerning board and audit committee independence strengthen corporate governance.

II. Corporate Boards, Bank Loan Contracting, and Related Literature

[2] For a survey of corporate boards, see Hermalin and Weisbach (2003).

There is an emerging stream of literature examining the determinants of bank loan contracting. For example, Strahan (1999) finds that riskier firms such as smaller firms and highly leveraged firms pay higher interest rates on bank loans. In addition, banks use nonprice loan terms, such as collateral requirements, to facilitate monitoring and limit potential losses on riskier borrowers. Bharath, Sunder, and Sunder (2008) find that borrowers with low-quality accounting practices prefer bank loans because banks have access to private information that reduces adverse selection costs. In addition, accounting quality affects the price and nonprice terms of bank loans, but it only affects the price terms of public debt. Hasan, Park, and Wu (2011) find that firms with more predictable earnings have more favorable loan contract terms. On the country level, Qian and Strahan (2007) find that borrowers in countries with strong creditor-protection environments enjoy loans with more concentrated ownership, lower interest rates, and longer maturities.

Traditional banking theory implies that the likelihood of default is one of the primary determinants of bank loan terms, and the higher the default risk, the higher the interest rates and the tighter the nonprice loan terms. Bhojraj and Sengupta (2003) argue that the agency risk and information risk between management and outside stakeholders affect default risk. Theoretical work also suggests that asymmetric information and agency costs affect the price and terms of debt (e.g., Rajan and Winton 1995).

In corporate governance literature, boards of directors are one of the most important internal corporate governance mechanisms to monitor management (e.g., Fama and Jensen 1983). Prior studies find that boards of directors impact the availability and credibility of information that companies disclose to outsiders (e.g., Beasley 1996; Klein 2002), and impact the agency costs of firms (e.g., Core, Holthausen, and Larcker 1999; Richardson 2006). Daily and Dalton (1994) and Elloumi and Gueyie (2001) find that boards also affect a firm's likelihood of

bankruptcy and financial distress. All the evidence supports the notion that board monitoring reduces information risk, agency risk, and default risk. As informed lenders with in-depth knowledge of their borrowers, banks should benefit from board monitoring and consider that when designing loan contracts.

One may argue that banks do not rely on board monitoring, because banks are monitors themselves. In fact, banks' monitoring abilities are different from their monitoring incentives (e.g., Besanko and Kanatas 1993; Carletti 2004). As monitoring is costly and is not contractible, banks tend to choose monitoring intensities that maximize their profits rather than financial returns of the project (Carletti 2004). As both corporate boards and creditors are corporate governance mechanisms, 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 could get a free ride from board monitoring activities and thereby reduce their own monitoring intensities and costs, which in turn influences both the price and the nonprice terms of their loan contracts. Therefore, we expect that firms with high-quality corporate boards enjoy more favorable bank loan contract terms.

However, corporate boards are supposed to act in the interests of shareholders and not necessarily in the interests of debt holders. The agency theory of debt implies that shareholders have incentives to transfer wealth from debt holders to shareholders (e.g., Jensen and Meckling 1976; Myers 1977). Though it is possible that boards encourage managers to expropriate wealth from debt holders, prior studies find that these wealth transfers from debt holders to stockholders do not exist (e.g., Marais, Schipper, and Smith 1989) or are relatively small (e.g., Asquith and Wizman 1990). Therefore, we expect that for banks, the perceived benefits from a reduction in agency and information risk outweigh the potentially negative wealth-transfer effects.

III. Data Description and Variables

Data Sources

The information on corporate boards is from the Investor Responsibility Research Center (IRRC) and covers S&P 500, S&P Midcap 400, and S&P SmallCap 600 firms for the 1996–2006 proxy seasons.[3] The data include detailed information about each director, such as the director's name, title, affiliation, age, tenure, ethnicity, Directorships, and shareholdings. Because of the missing information about committee membership for 1996 and 1997, we exclude those years. Following previous studies, we also exclude financial companies (SIC codes 6000–6999).

The bank loan information is from the Thomson Reuters LPC DealScan database, which contains historical bank loan data compiled from SEC filings, banks, and staff reporters. The database includes detailed loan terms and conditions, such as the interest rate, loan size, maturity, collateral, covenants, and performance-pricing provisions. DealScan also includes information on the types and purposes of loans, as well as the names of each lead bank and participant banks in syndicated loans.

The accounting information is from the Compustat database, the Gompers, Ishii, and Metrick (2003) governance index (G-index) is from IRRC, the analyst forecast data are from the Institutional Brokers' Estimation System (I/B/E/S), and the macroeconomic condition information is from the Federal Reserve Board of Governors. After merging the various data sources, the final sample contains 3,867 firm-level and 6,300 facility-level observations for 1,088 unique firms from 1998 to 2006.

Measures of Corporate Boards

[3] The S&P 1,500 covers about 85% of the U.S. equities market.

Unlike many other corporate governance mechanisms, boards of directors have multiple facets, which make it difficult to quantify their quality. The traditional literature widely cites board independence as the most important indicator of board quality (Fama and Jensen 1983). Board size and duality are also important indicators of board quality (e.g., Coles, Daniel, and Naveen 2008; Linck, Netter, and Yang 2008). More recent studies find certain relations between board efficacy and other board characteristics, such as audit committee structure (Beasley 1996; Anderson, Mansi, and Reeb 2004), the number of academics on the board (Francis, Hasan, and Wu 2010), the number of women on the board (Adams and Ferreira 2009), director shareholdings (Shivdasani 1993), director tenure (Vafeas 2003), director age (Anderson, Mansi, and Reeb 2004), directorships (Ferris, Jagannathan, and Pritchard 2003), and interlocked directors (Hallock 1997). Therefore, we also include those board characteristics in our study.

Descriptive Statistics

Panel A of Table 1 provides summary statistics of board variables. We find that the average board size in our sample is 9.65 with the first quartile of 8 and the third quartile of 11. The average number of outside directors is 6.68. Board composition (the percentage of outsiders on the board) is 68.5% and varies widely across our sample. In our sample, about 66.6% of firms have dual CEOs. These numbers are similar to those in other recent studies. For example, Linck, Netter, and Yang (2008) report that for large firms for the period 1990–2004, the mean board size is 10, the mean composition is 73%, and duality is about 71%. Coles, Daniel, and Naveen (2008) find that for the period 1992–2001, the mean board size is 10.40 with a mean composition of 78%. Using a sample of S&P 500 firms for the period 1993–1998, Anderson, Mansi, and Reeb (2004) report a mean board size of 12.10 directors, with seven outsiders.

[Insert Table 1 here]

In our sample, the average director age is 59 and the average tenure is 9.65 years, which are similar to those of Anderson, Mansi, and Reeb (2004). We find that about 72% of firms have at least one woman on the board, and around 13% of firms have at least one director from a bank. On average, each board holds about 8.3% of the total shares of the firm.

Panel B of Table 1 shows that the average value of assets for our sample borrowers is $9,850 million. The average leverage ratio is 0.28, the average market to book ratio is 1.84, the average tangibility is 0.34, the average profitability is 0.136, and the average Z-score is 1.91. All of these also vary across our sample.

In Panel C of Table 1, we find that the average loan spread is 119.58 basis points over the London Interbank Offered Rate (LIBOR) or LIBOR equivalent. In our sample, the average loan amount is $499 million and has a mean maturity of 40 months. On average, there are around 11 lenders in a loan syndicate. The loan amount, maturity, and number of lenders also vary considerably across our sample. More than 50% of the sample loans have covenants or collateral terms. These results are very similar to Chava, Livdan, and Purnanandam (2009), who also use the IRRC database and the DealScan database.

IV. Results of Multivariate Tests

Corporate Boards and Bank Loan Prices

Main Board Structure and Bank Loan Prices. We first test the effect of the main board structure including board independence, board size, and board duality on bank loan prices. The empirical model follows:

$$Log(Spread) = \alpha_0 + \sum_{i=1}^{I} \alpha_i Board\_characteristics_i + \sum_{l=1}^{L} \beta_l Control_l + \varepsilon \qquad 1$$

In the regression, the basic unit of observation is the loan facility, and the dependent variable is the natural logarithm of loan spreads. Board characteristics are a set of corporate board measures, and controls are a set of firm level and loan level control variables.

Following prior studies, such as those by Qian and Strahan (2007) and Graham, Li, and Qiu (2008), we control for several firm characteristics that 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. We use *Market to book*, which is the market value of equity plus the book value of debt divided by the total assets, to proxy for growth opportunities. We also control for *Leverage*, which is long-term debt plus the current debt divided by the total assets; *Profitability*, measured as earnings before interest, taxes, depreciation and amortization (EBITDA) divided by the total assets; and *Z-score*, which is the modified Altman's Z-score in the regression.[4] We measure all of these firm-level variables one fiscal year prior to the loan initiation year. Further, we employ two-digit SIC dummies and year dummies to control for the potential differences in loan pricing across industries and years.

Kroszner and Strahan (2001) and Guner, Malmendier, and Tate (2008) find that bankers on boards affect firms' funding availability. To mitigate this impact on bank loan prices, we

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

construct a dummy variable *Dummy (Bank)*, which equals 1 if there is at least one commercial banker on the board, and 0 otherwise. We control for this variable throughout our study.

We further control for loan characteristics that may affect loan contracting in the regressions. We include *Log (Facility)*, the natural logarithm of the amount of a loan facility, to measure loan size. We use *Log (Maturity)*, the natural logarithm of loan maturity in months, to control for the higher repayment risk inherent in longer loan contracts. Sharpe (1990) and Rajan (1992) emphasize lock-up problems associated with the established lender–borrower relationship that subsequently increase borrowing costs. To control for previous lending relationships, we construct a variable, *Prior relations*, which is the total number of previous loans to the same borrower and from 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 a loan rating based on Moody's rating unless it is missing, in which case we use the S&P rating. *Rating* is a score that ranges from 1 to 7, with 1 indicating an Aaa rating, 2 indicating an Aa rating, 3 indicating an A rating, 4 indicating a Bbb rating, 5 indicating a Bb rating, 6 indicating a B rating, and 7 indicating a rating worse than B rating or no rating. Further, we control for both the loan-type effect and the loan-purpose effect in our analysis.[5]

Table 2 provides the results from the OLS regressions with clustered standard errors at the firm level. In column 1, we use *Board Composition* to measure board independence. The coefficient is -0.312 and is significant at the 1% level. Economically, the coefficient indicates that a 1 percentage point increase in board independence reduces bank loan spreads by about 0.27%. If a firm moves from the first to the third quintile of board independence, there is about a

[5] 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.

13.5% decrease in loan spreads (about 12 basis points) over the median interest spread in the sample, which is economically meaningful.

[Insert Table 2 here]

Consider next the effect of board size on bank loan price. In column 2 of Table 2, we use *Log (Board size),* the natural logarithm of the total number of directors on a board, to measure board quality. The coefficient of *Log (Board size)* is significantly negative at the 1% level. Our coefficient indicates that a 1 percentage point increase in board size reduces loan spreads by about 0.36%.[6]

In the literature, the impact of board size on board effectiveness is still ambiguous. On one hand, Yermack (1996) finds a negative relation between board size and firm performance. On the other hand, the resource dependency theory views that larger boards should be more effective than smaller boards, as larger boards bring diverse resources, such as information, skills, and legitimacy, to help larger boards make better collective decisions (e.g., Hillman, Cannella, and Paetzold 2000). Our result seems in line with the resource dependency argument, and it is also consistent with Anderson, Mansi, and Reeb (2004), which find a negative relation between board size and the cost of public debt.

In column 3, we test the duality effect on the loan price using a binary variable, Dummy (*Board duality),* which equals 1 if the CEO is also the chairman of a board and 0 otherwise. Unlike the results for board independence and board size, the insignificant coefficient implies that board duality has no effect on bank loan price.

[6] The results hold when we use alternative measures of board independence and board size, such as absolute numbers of outside directors and board size to firm size ratio.

In column 4, we specify three main traits of board structure, *Board Composition*, *Log (Board size)*, and *Dummy (Board duality)*, in one regression simultaneously. We find that *Board Composition* and *Log(Board size)* are still negatively associated with bank loan price, and *Dummy (Board duality)* is insignificantly related to bank loan price. Overall, Table 2 indicates that independent and large boards are more effective, leading to lower interest rates on bank loans.

In terms of control variables, we find a significantly negative relation between *Dummy (Bank)* and bank loan price, indicating that firms with bankers on their boards enjoy lower loan costs. We also find that *Log (Assets)*, *Tangibility*, *Profitability*, and *Z-score* are all significantly negatively related to the loan spread, but *Leverage* is positively related to the loan spread. All these results are consistent with our expectations and prior studies.

With regard to loan characteristics, we find that *Log (Facility)* is negatively related to loan spread, but *Log (Maturity)* and *Rating* are positively related to the loan spread. Those results are consistent with our expectations and with prior findings, such as those of Qian and Strahan (2007) and Graham, Li, and Qiu (2008). In terms of the effect of existing client relationships, we find that *Prior relations* is significantly positively associated with bank loan price. This supports the lock-up conjecture of banking relationships (Sharpe 1990; Rajan 1992) that predicts the extraction of rents over the course of the bank–firm relationship.

Audit Committee Structure, Other Board Characteristics, and Bank Loan Price. Because of the importance of the audit committee in monitoring the financial-reporting process and providing credible financial information to banks, we examine next the relation between audit committee structure and bank loan price. In column 1 of Table 3, we use the following proxies to measure the audit committee structure: *Audit composition* is the percentage of outside directors

on an audit committee; *Log (Audit size)* is the natural logarithm of the total number of directors on the audit committee; and *Dummy (Financial expertise)* is a binary variable that equals 1 if there is at least one financial expert on the audit committee and 0 otherwise. Following Anderson, Mansi, and Reeb (2004), we denote financial consultants, investment bankers, investment managers, bankers, auditors, and CEOs of financial companies as financial experts.

[Insert Table 3 here]

We find that *Audit composition* and *Log (Audit size)* are significantly negatively associated with the bank loan spread at the 1% level. The coefficients indicate that with a percentage-point increase in the audit committee composition or size, we expect to see about a 0.09% or 0.07% decrease in bank loan spreads. We also find that *Dummy (Financial expertise)* is significantly and negatively associated with bank loan price. Overall, the results in column 1 indicate that the audit committee structure, including independence, size, and the presence of financial expertise, also influences bank loan price. The results are also consistent with the prediction that the audit committee's monitoring role is important to banks too.

In column 2 of Table 3, we test whether other board characteristics affect bank loan price. Those board variables include *Dummy* (*Woman),* which equals 1 if at least one of the board members is a female; *Dummy (Academic),* which equals 1 if at least one of the board members is from academia; *Dummy* (*Less attendance),* which equals 1 if the firm's proxy reports that a director did not meet the SEC's 75% attendance threshold in a given year; *Dummy* (*Interlock),* which equals 1 if at least one director is an interlocked director; *Board shareholdings*, which is the board's ownership as a percentage of all shares outstanding; *Director age*, which is the

average age of the directors; *Director tenure*, which is the average tenure of the directors; and *Directorships*, which is the total number of outside directorships held by a board.

For those board characteristics, we find only *Dummy* (*Woman), Director Tenure*, and *Directorships* are negatively and significantly related to bank loan price; the other board variables have no significant impacts on bank loan price. The results indicate that banks value female directors, long-term director engagements, and directors with more outside directorships.

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. The other results remain intact except for *Dummy* (*Woman),* which becomes insignificant at the traditional level.[7]

Robustness Checks. The unit of our analysis is a loan facility. However, loan terms are generally negotiated as part of a package that may include several interrelated loan facilities. In addition, a borrower can obtain several facilities in the same year. Those facilities may not be independent. Thus, treating correlated loans independently may overstate the statistical significance and lead to biased results.

To deal with this issue, we first adjust the standard errors for within-firm clustering throughout the study. Second, we use a reduced sample that includes only the largest facility for each firm year and rerun the OLS regression in column 3 of Table 3. The results are shown in

[7] We test whether multicollinearity problems exist for all the regressions presented in this section. The highest variance inflation factor (VIF) for any regressor is 4.38, which is well below the threshold indicator of 10. We also perform a principal component analysis to mitigate the multicollinearity concern among different board characteristics. The result also shows a negative relation between board quality and cost of bank loans.

column 1 of Table 4. We find that our main testing variables are still significantly related to bank loan prices.

[Insert Table 4 here]

It is also possible that unobservable firm characteristics that are stable over time could affect bank loan prices. To deal with this issue, we conduct a firm and year fixed-effect regression. Column 2 of Table 4 reports the result. We find our main results still hold after using a firm-year fixed-effect regression.

Loans underwritten by the same lead lenders might not be independent. Treating those correlated loans separately may overstate the statistical significance and lead to biased results. To deal with this issue, we employ a firm and lead bank two-way clustering to adjust standard errors. The results are in column 3 of Table 4. We find our results are robust to this test.

We further investigate whether a few loans with extreme loan spreads drive our result. To do this, we perform a median regression that estimates the effect of explanatory variables on the median loan spread, conditional on the values of the explanatory variables. The results shown in column 4 of Table 4 are similar to those from the average response regression (OLS) in column 3 of Table 3. Overall, we conclude that outliers do not drive our results.

A potential issue in the previous regressions is that one of the independent variables, loan maturity, may be endogenous because a loan contract could simultaneously determine loan spread and maturity (Strahan 1999; Dennis, Nandy, and Sharpe 2000; Bharath, Sunder, and Sunder 2008). In such a case, our single-equation results may be biased. To deal with this potential endogeneity problem, following Graham, Li, and Qiu (2008), we employ two-stage

least-square regressions using asset maturity as the instrument for loan maturity. The results from the two-stage regressions are reported in column 5 of Table 4. We find that our main results still hold after controlling for the 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.[8]

Addressing the Endogeneity of Boards of Directors. As the board structure is supposed to be endogenously determined, empirical work on corporate boards always faces the endogeneity problem, which makes the 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 that we do not consider in our single equations, or that there is no causal relation between corporate boards and bank loan terms.

One way to solve the endogeneity problem is to use instrument variable (IV) methods. However, it is difficult to find suitable instruments to identify the 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 new listing rules on the NYSE and the NASDAQ pursuant to SOX provide a good setting for this test. In 2003, the NYSE and the NASDAQ adopted the new rules that require boards to have a majority of independent directors.

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 the

[8] We also test the possible nonlinearity regarding the effect of the board size on loan rates. We include the square of the board size and the square of the audit committee size in the regressions. Both squared terms are not significantly different from 0. In addition, piecewise regressions also confirm that large boards are associated with lower loan rates.

NASDAQ do. These new requirements imply an exogenous increase in board independence. Indeed, Linck, Netter, and Yang (2008) find that corporate boards have become more independent after SOX.

Our identification strategy is to use the exogenous changes in board composition brought about by the new regulations to estimate the impacts of corporate boards on bank loan prices that are largely free from endogeneity concerns. Specifically, because some firms were forced to change their boards from insider-dominated to outside-dominated, we can classify our sample firms into treatment and control groups depending on whether they are compliant with the new board regulations when they are introduced. *Changing firms* refers to those that changed from insider-dominated boards to outsider-dominated boards after the new regulations. *Unaffected firms* refers to those that already had outsider-dominated boards when the new regulations were enacted.

We focus on the *Changing firms* sample. We separate the sample into a preregulation period and a postregulation period. *Post* is a dummy variable that equals 1 if a loan is activated after the firm changes its board structure from inside-dominant to outside-dominant. To compare bank loan prices fairly before and after the board structure changes, we remove firms that only have preregulation loans or that only have postregulation loans. Table 5 reports how the bank loan spread changes after board independence changes. In column 1, we find that the coefficient of *Post* is -0.206 and is significant at the 1% level, which indicates that the average bank loan spread is about 28.7% lower in the postregulation period than in the preregulation period for *Changing firms.*

[Insert Table 5 here]

Unobservable time-series changes contemporaneous with board independence changes could also affect the estimated influence of board structure changes. To remove the effect of other shocks contemporaneous with board independence changes, we further apply a control sample differences-in-differences approach. Specifically, we compare the changes in bank loan prices for the *Changing firms* (treated group) with the changes in bank loan prices for *Unaffected firms* (control group).

Column 2 of Table 5 reports the results relying on the differences-in-differences methodology. We find that the coefficient of *Post* is insignificant, indicating that there is no change in bank loan prices for the control group after the enforcement of the new regulations. We also find that the coefficient of *Changing firms* is 0.173 and is significant. On average, firms that have inside-dominant boards have a weaker overall governance system than firms that already have outside-dominant boards. Thus, it is not surprising that control firms enjoy lower bank loan prices than treated firms. The coefficient of the interaction term, *Post*Changing firms*, which captures the changes in bank loan price specifically for firms that changed their board structure from inside-dominant to outside-dominant, is -0.226 and is significant at the 1% level. The result indicates that the decline in bank loan prices is much more pronounced for firms that increase their board independence after the new regulations than for unaffected firms. The result also suggests that board independence brings about, and not merely reflects, lower loan prices.[9]

[9] We also examine the possibility of sample selection bias by using the method of Heckman two-stage self-selection model. Specifically, in the first stage, we separate IRRC entire sample into two groups: selected sample (firms with bank loans) and non-selected sample (firms without bank loans). We construct a dummy variable that equals 1 if a firm belongs to selected sample. We run a probit regression using the dummy variable as dependent variable. We use main board variables (including board duality, board size and board composition) and major firm variables such as size, leverage and industry as independent variables. From the probit regression, we obtain inverse Mills ratio of the possibility of having bank loans. In the second stage, we include the inverse Mills ratio in the regressions to control for the self-selection bias. We find that our main results hold after controlling for self-selection bias.

Subsample Tests. In this paper, we argue that because of the monitoring role of independent directors, banks give borrowers with more independent boards lower loan rates. If this is the case, we expect that the board–bank loan relationship is contingent on the monitoring needs of borrowing firms. Specifically, if a firm is transparent or has a good overall governance environment, the relation between board independence and bank loan price should be mitigated.

Table 6 tests this conjecture. To capture the overall governance environment of a firm, we first construct a *Dummy (Good governance)*, which equals 1 if a firm has a less than the median value of *G-index* and 0 otherwise. *G-index* is the Gompers, Ishii, and Metrick (2003) corporate-governance index. Higher *G-index* means worse corporate governance. We then interact *Dummy (Good governance)* with *Board composition.* In column 1 of Table 6, we find that the coefficient of *Board composition*, which captures the effect of board independence on bank loan prices for firms with bad governance, is -0.391 and is significant at the 1% level. The interaction term between *Dummy (Good governance)* and *Board composition*, which captures the incremental effect of board independence on bank loan price for firms with good governance, is 0.190 and is significant at the traditional level. Hence, the impact of board independence on bank loan price is less pronounced for firms with good governance than for those with bad governance.

[Insert Table 6 here]

To capture information asymmetry of a firm, we construct a dummy variable, *Dummy (Low information asymmetry)*, which equals 1 if a firm has a less than the median value of *Analyst forecast dispersion. Analyst forecast dispersion* is the standard deviation of individual analyst forecasts deflated by actual earnings. Consistent with our expectation, we find that the

interaction term between *Dummy (Low information asymmetry)* and *Board composition* is positive and significant, indicating the impact of board independence on bank loan price is less pronounced for transparent firms than for opaque firms.

Corporate Boards, Nonprice Loan Terms and Loan Ownership

Bank loan contracts have multiple terms. Banks are more likely to customize price and nonprice loan terms to account for risk, facilitate monitoring, and limit potential losses. Empirically, Graham, Li, and Qiu (2008) find that when the information risk is higher, a lender is more likely to offer higher interest rates and tighter nonprice loan terms, such as more collateral requirements and more covenant restrictions in loan contracts.

Thus, we also test how corporate boards affect three important nonprice loan terms: collateral, covenants, and performance pricing. Among them, collateral and covenants are loan terms that banks commonly use to control for information risk and agency costs, and the literature widely discusses them (e.g., Jensen and Meckling 1976; Berger and Udell 1990; Rajan and Winton 1995). Performance pricing is a relatively new provision in loan contracts. The feature varies the loan price according to the borrowers' credit rating or financial performance. Asquith, Beatty, and Weber (2005) discuss the increasing use of performance-pricing provisions in syndicated loans to control for firms' higher moral-hazard costs and uncertainty.

Syndicate loan literature also indicates that lenders have fewer incentives to participate in syndicated loans when firms are opaque and their probability of financial distress is high (e.g., Bolton and Scharfstein 1996). Thus, we also test whether board characteristics affect loan ownership as measured by the number of lenders in syndicated loans.

Corporate Boards and Loan Collateral. Collateral is a common requirement in loan contracts because it mitigates adverse selection and moral-hazard problems (e.g., Berger and Udell 1990). We first study how different board characteristics affect the likelihood of demanding collateral using a logit model.

The results are shown in column 1 of Table 7. We find that *Board composition* negatively and significantly affects the likelihood of demanding collateral. The marginal effect of *Board composition* implies that the probability of demanding collateral decreases by 0.18% if we increase board independence by one percentage point. 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, banks are less likely to require the former to provide collateral ex ante. In addition, we find that the coefficients of *Audit composition*, *Board shareholdings*, and *Directorships* are negative and significant, and the coefficient estimate of *Dummy (Interlock)* is positive and significant. Unlike the significant effects of board size and audit committee size on bank loan price, we find that coefficients of both *Log (Board 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 demanding collateral. Overall, the results imply that certain board characteristics, especially board and audit committee independence, significantly affect the likelihood of demanding collateral.

[Insert Table 7 here]

Corporate Boards and Performance-Pricing Provisions. As Asquith, Beatty, and Weber (2005) point out, performance pricing is an effective tool to control for the uncertainty of

borrowers' financial risk and reduce renegotiation costs. We next estimate a logit model to test the impact of board characteristics on the likelihood that loans will include performance-pricing terms. The results are shown in column 2 of Table 7. The significantly negative coefficient estimate of *Board composition* indicates that if board independence increases by one percentage point, the likelihood of a loan using performance-pricing provisions will decrease by 0.14%. We also find *Audit composition* significantly negatively related to the likelihood of a loan using performance pricing. We do not find significant relations between *Dummy (Performance pricing)* and other board variables.

Corporate Boards and Loan Covenants. Covenants are the traditional way debt holders restrict managerial actions that may reduce the value of debt, reduce moral-hazard costs, and incent banks to monitor borrowers (e.g., Jensen and Meckling 1976; Rajan and Winton 1995) Thus, we next estimate a logit model to test the impacts of different board characteristics on the likelihood of a loan having covenants. The results are shown in column 3 of Table 7.

We find that the coefficient of *Board composition* is negative and significant. Economically, therefore, if we increase board independence by one percentage point, the probability of imposing covenants on a loan decreases by 0.12%. This is consistent with the expectation that if the board of directors is more independent, banks will reduce their own monitoring intensities and rely on the board. We also find that *Audit composition* and *Directorships* affect the likelihood of using covenants in loan contracts significantly and negatively. Overall, our results indicate that corporate boards affect the likelihood of banks requiring covenants in loan contracts.

Overall, our results on nonprice loan terms have at least two important implications. First, banks consider a board's role in governance when designing the price and nonprice terms of their loans. Second, it seems that banks pay most attention to board and audit committee independence.

Corporate Boards and Number of Lenders. Sufi (2007) finds that when information asymmetries are severe and the borrower's credit risk is high, the structure of syndicated loans is more concentrated with fewer lenders. We expect effective monitoring from corporate boards to reduce information asymmetries and agency risk between management and outside stakeholders, hence reducing firms' opaqueness and default risk. Consequently, lenders' incentives to participate in these syndicated loans increase. Therefore, we hypothesize that more lenders are willing to participate in syndicated loans if borrowers have higher quality corporate boards.

We therefore analyze the effects of board characteristics on syndicate structure as measured by the total number of lenders in a loan. The result is provided in column 4 of Table 7. The dependent variable is the natural logarithm of the total number of lenders in a loan.

We find that *Board composition* is significantly positively related to the number of lenders, which indicates that more lenders participate in syndicated loans if the borrower has a more independent board. Economically, a 1 percentage point increase in board independence will result in approximately 0.42% more lenders in a loan. If a firm moves from a 25th percentile independent board to a 75th percentile independent board, 1.8 more members participate in the loan.

In the regression, we also find that *Audit composition* and *Log (Audit size)* are positively related to the number of lenders in syndicated loans. Overall, consistent with our expectations, we find that corporate boards affect not only loan terms, but also the loan structure as measured by the number of lenders in loans.

Exploring Simultaneities among Price and Nonprice Loan Terms

Melnik and Plaut (1986) point out that bank loans are often a series of contracts that cannot be split and traded separately. In turn, certain loan terms are jointly determined (Dennis, Nandy, and Sharpe 2000). Although our previous estimations using reduced-form regressions are valid (Dennis, Nandy, and Sharpe 2000), a richer alternative is to use simultaneous equation models considering interrelations among contract terms. Based on Nelson and Olson (1978), we employ a two-stage estimation procedure for simultaneous equation models with limited dependent variables. Our endogenous loan terms include *Log (Spread)*, *Dummy(Secured)*, *Dummy (Performance pricing)*, and *Dummy(Covenant)*. Following Dennis, Nandy, and Sharpe (2000) and Asquith, Beatty, and Weber (2005), we assume a unidirectional relationship from *Dummy(Secured)*, *Dummy (Performance pricing)*, and *Dummy(Covenant)* to *Log (Spread)*, and we allow bidirectional relationships between *Dummy(Secured)* and *Dummy(Covenant)*, and between *Dummy (Performance pricing)* and *Log (Spread)*.

Following Graham, Li, and Qiu (2008), we use *Credit spread*, which is the difference between the yields on BAA and AAA corporate bonds, and *Term spread*, which is the difference between the yields of 10-year Treasury bonds and two-year Treasury bonds, as instruments for loan spreads. Credit spreads tend to widen in recessions and shrink in expansions (Collin-Dufresne 2001), and high term spreads often indicate good economic prospects (Graham, Li, and Qiu 2008). Thus, we expect *Credit spread* to be positively related to bank loan spread and *Term spread* to be negatively related to bank loan spread.

Highly regulated companies should have less severe agency problems, which in turn result in limited use of collateral. Following Dennis, Nandy, and Sharpe (2000) and others, we

use *Regulated*, which is a dummy variable that equals 1 for firms in the utility industry (SIC code 4900-4999) and 0 otherwise, as the instrument for *Dummy (Secured)*. The second instrument for *Dummy (Secured)* is *Loan concentration*, which is the loan amount divided by total debt. The idea is that if a loan is a significant proportion of the firm's total debt, it is more likely to be secured.

Nash, Netter, and Poulsen (2001) find that when a firm has higher investment opportunities, it is less likely to have loan covenants. Therefore, we use *R&D* as the instrument for *Dummy (Covenant)*. *R&D* is research and development expenditures divided by the total assets.

Following Asquith, Beatty, and Weber (2005), we add two instrument variables for *Dummy (Performance pricing)*. The first one is *Analyst forecast dispersion* as we defined before. A higher dispersion of analyst forecasts corresponds to more performance-pricing provisions in loan contracts. The second one is *Syndication*, which equals 1 if a loan is syndicated and 0 otherwise. To reduce the renegotiation costs among syndication members, syndicated loans are more likely to use performance-pricing provisions in loan contracts compared with single-lender loans.

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 on the right-hand side of the 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 approach (asset maturity as an instrument for loan maturity) 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.

The results in Table 8 show that certain loan contract terms are indeed interrelated. Specifically, we find that *Dummy (Covenant)* and *Dummy (Performance pricing)* are significantly positively related to *Log (Spread)*. However, we do not detect a significant effect of *Dummy (Secured)* on *Log (Spread)*. The results suggest that loans with higher interest rates are more likely to have covenants and performance-pricing provisions. Moreover, we find significant and bidirectional relationships between *Dummy (Covenant)* and *Dummy (Secured)*, which indicate a complement relation between the use of collateral and the use of covenants in loan contracts. Finally, we find that *Log (Spread)* is positively related to *Dummy* (*Performance pricing)*, suggesting that loans with higher initial interest rates are more likely to have performance-pricing provisions.

[Insert Table 8 here]

We also find that after considering the simultaneities among different loan terms, the effect of corporate boards on both price and nonprice loan terms is still statistically and economically significant. Compared with reduced-form regressions, we find a relatively smaller effect of *Board composition* on loan terms. The effects of other board characteristics on bank loan contracts are similar to those in reduced-form regressions. Overall, we conclude that the effect of corporate boards on bank loan contracts holds after considering the interdependences among different loan contract terms.

V. Conclusion

In this article, we study the role of corporate boards in bank loan contracting. We find, first, that lenders extend favorable price and nonprice 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 a larger board size, a more independent and larger audit committee, more directorships, and longer director tenure also reduce bank loan prices. Third, the effect of corporate boards on bank loans is contingent on the borrowers' monitoring needs.

Using new NYSE and the NASDAQ rules pursuant to SOX as a natural experiment and employing a differences-in-differences methodology, we find that firms that comply with the independence requirement enjoy lower loan rates compared with unaffected firms. This analysis mitigates our endogeneity issue. In addition, we use simultaneous equations to address the interdependence among different loan contract terms, which prior studies widely ignore.

The results also indicate that board and committee independence are important indicators of board quality, at least from a bank perspective. Furthermore, this study provides direct evidence that banks actively consider corporate governance mechanisms when designing loan contracts. In an extension to previous studies that focus only on a single dimension of debt costs (such as interest rates), our study captures the total costs of debt more precisely and comprehensively and shows that firms' board characteristics affect various aspects of debt contracts.

References

Adams, R., and D. Ferreira, 2009, Women in the boardroom and their impact on governance and performance, *Journal of Financial Economics* 94, 291–309.

Agrawal, A., and C. R. Knoeber, 1996, Firm performance and mechanisms to control agency problems between managers and shareholders, *Journal of Financial and Quantitative Analysis* 31, 377-397.

Anderson, R. C., S. A. Mansi, and D. M. Reeb, 2004, Board characteristics, accounting report integrity, and the cost of debt, *Journal of Accounting and Economics* 37, 315-342.

Asquith, P., A. Beatty, and J. Weber, 2005, Performance pricing in bank debt contracts, *Journal of Accounting and Economics* 40, 101-128.

Asquith, P., and T. A. Wizman, 1990, Event risk, covenants, and bondholder returns in leveraged buyouts, *Journal of Financial Economics* 27, 195-214.

Beasley, M. S., 1996, An empirical analysis of the relation between board of director composition and financial statement fraud, *Accounting Review* 71, 443-465.

Berger, A. N., and G. F. Udell, 1990, Collateral, loan quality, and bank risk, *Journal of Monetary Economics* 25, 21-42.

Besanko, D., and G. Kanatas, 1993, Credit market equilibrium with bank monitoring and moral hazard, *Review of Financial Studies* 6, 213-232.

Bharath, S. T., J. Sunder, and S. V. Sunder, 2008, Accounting quality and debt contracting, *Accounting Review* 23, 1-28.

Bhojraj, S., and P. Sengupta, 2003, Effect of corporate governance on bond ratings and yields: the role of institutional investors and outside directors, *Journal of Business* 76, 455-476.

Bolton, P., and D. S. Scharfstein, 1996, Optimal debt structure and the number of creditors, *Journal of Political Economy* 104, 1-25.

Carletti, E., 2004, The structure of relationship lending, endogenous monitoring and loan rates, *Journal of Financial Intermediation* 13, 58-86.

Chava, S., D. Livdan, and A. K. Purnanandam, 2009, Do shareholder rights affect the cost of bank loans?

Review of Financial Studies 22, 2973-3004.

Coles, J. L., N. D. Daniel, and L. Naveen, 2008, Boards: does one size fit all? *Journal of Financial Economics* 87, 329-356.

Collin-Dufresne, P., 2001, The determinants of credit spread changes, *Journal of Finance* 56, 2177-2207.

Coombes, P., and M. Watson, 2000, Three surveys on corporate governance, *McKinsey Quarterly* 4, 75-77.

Core, J. E., R. W. Holthausen, and D. F. Larcker, 1999, Corporate governance, chief executive officer compensation, and firm performance, *Journal of Financial Economics* 51, 371-406.

Daily, C. M., and D. R. Dalton, 1994, Corporate governance and the bankrupt firm: An empirical assessment, *Strategic Management Journal* 15, 643-654.

Dennis, S., D. Nandy, and I. G. Sharpe, 2000, The determinants of contract terms in bank revolving credit agreements, *Journal of Financial and Quantitative Analysis* 35, 87-110.

Diamond, D. W., 1984, Financial intermediation and delegated monitoring, *The Review of Economic Studies* 51, 393-414.

Elloumi, F., and J.-P. Gueyie, 2001, Financial distress and corporate governance: An empirical analysis, *Corporate Governance* 1, 15-23.

Fama, E. F., and M. C. Jensen, 1983, Separation of ownership and control, *Journal of Law and Economics* 26, 301-325.

Ferris, S. P., M. Jagannathan, and A. C. Pritchard, 2003, Too busy to mind the business? Monitoring by directors with multiple board appointments, *Journal of Finance* 58, 1087 - 1112.

Francis, B., I. Hasan, and Q. Wu, 2010, Professors in the boardroom: Is there an added value for academic directors? Working Paper, Rensselaer Polytechnic Institute.

Gompers, P., J. Ishii, and A. Metrick, 2003, Corporate governance and equity prices, *The Quarterly Journal of Economics* 118, 107-155.

Graham, J. R., S. Li, and J. Qiu, 2008, Corporate misreporting and bank loan contracting, *Journal of Financial Economics* 88, 44-61.

Guner, A. B., U. Malmendier, and G. Tate, 2008, Financial expertise of directors, *Journal of Financial Economics* 88, 323–354.

Hallock, K. F., 1997, Reciprocally interlocking boards of directors and executive compensation, *Journal of Financial and Quantitative Analysis* 32, 331-344.

Hart, O., 2001, Financial contracting, *Journal of Economic Literature* 39, 1079-1100.

Hasan, I., J. C. Park, and Q. Wu, 2011, The impact of earnings predictability on bank loan contracting, Working Paper, Rensselaer Polytechnic Institute.

Hermalin, B. E., and M. S. Weisbach, 1998, Endogenously chosen boards of directors and their monitoring of the CEO, *The American Economic Review* 88, 96-118.

———, 2003, Boards of directors as an endogenously determined institution: A survey of the economic literature, *Economic Policy Review* 9, 7-26.

Hillman, A. J., A. A. Cannella, and R. L. Paetzold, 2000, The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change, *Journal of Management Studies* 37, 235-256.

Jensen, M. C., and W. H. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305-360.

Klein, A., 2002, Audit committee, board of director characteristics, and earnings management, *Journal of Accounting and Economics* 33, 375-400.

Kroszner, R. S., and P. E. Strahan, 2001, Bankers on boards: Monitoring, conflicts of interest, and lender liability, *Journal of Financial Economics* 62, 415–452.

Linck, J. S., J. M. Netter, and T. Yang, 2008, The determinants of board structure, *Journal of Financial Economics* 87, 308-328.

Lipton, M., and J. W. Lorsch, 1992, A modest proposal for improved corporate governance, *Business Lawyer* 48, 59-77.

Marais, L., K. Schipper, and A. Smith, 1989, Wealth effects of going private for senior securities, *Journal*

of Financial Economics 23, 155-191.

Melnik, A., and S. Plaut, 1986, Loan commitment contracts, terms of lending, and credit allocation, *Journal of Finance* 41, 425-435.

Myers, S. C., 1977, Determinants of corporate borrowing, *Journal of Financial Economics* 5, 147-175.

Nash, R. C., J. M. Netter, and A. B. Poulsen, 2001, Determinants of contractual relations between shareholders and bondholders: Investment opportunities and restrictive covenants, *Journal of Corporate Finance* 9, 201-232.

Nelson, F., and L. Olson, 1978, Specification and estimation of a simultaneous-equation model with limited dependent variables, *International Economic Review* 19, 695-709.

Qian, J., and P. E. Strahan, 2007, How law and institutions shape financial contracts: The case of bank loans, *Journal of Finance* 62, 2803 - 2834.

Rajan, R. G., 1992, Insiders and outsiders: The choice between informed and arm's-length debt, *Journal of Finance* 47, 1367-1400.

Rajan, R. G., and A. Winton, 1995, Covenants and collateral as incentives to monitor, *Journal of Finance* 50, 1113-1146.

Richardson, S., 2006, Over-investment of free cash flow, *Review of Accounting Studies* 11, 159-189.

Sharpe, S. A., 1990, Asymmetric information, bank lending and implicit contracts: A stylized model of customer relationship, *Journal of Finance* 45, 1069–1087.

Shivdasani, A., 1993, Board composition, ownership structure, and hostile takeovers, *Journal of Accounting and Economics* 16, 167-198.

Stiglitz, J. E., and A. Weiss, 1981, Credit rationing in markets with imperfect information, *The American Economic Review* 71, 393-410.

Strahan, P. E., 1999, Borrower risk and the price and non-price terms of bank loans, Working Paper, Boston College.

Sufi, A., 2007, Information asymmetry and financing arrangements: Evidence from syndicated loans, *Journal of Finance* 62, 629 - 668.

Vafeas, N., 2003, Length of board tenure and outside director independence, *Journal of Business Finance and Accounting* 30, 1043-1064.

Weisbach, M. S., 1988, Outside directors and CEO turnover, *Journal of Financial Economics* 20, 431-460.

Yermack, D. L., 1996, Higher market valuation of companies with a small board of directors, *Journal of Financial Economics* 40, 185-211.

TABLE 1. Summary Statistics.

Panel A. Board Characteristics

	N	Mean	SD	Median	P25	P75
Board size	3867	9.649	2.525	10	8	11
Outside members	3867	6.683	2.509	7	5	8
Board composition	3867	0.685	0.176	0.714	0.571	0.818
Dummy (Board duality)	3867	0.666	0.472	1	0	1
Audit size	3867	3.603	1.273	3	3	4
Audit outside members	3867	3.254	1.350	3	2	4
Audit composition	3867	0.881	0.201	1	0.75	1
Dummy (Financial expertise)	3867	0.652	0.500	0	0	1
Dummy (Bank)	3867	0.126	0.332	0	0	0
Dummy (Academic)	3867	0.436	0.496	0	0	1
Dummy (Woman)	3867	0.720	0.449	1	0	1
Dummy (Less attendance)	3867	0.139	0.346	0	0	0
Dummy (Interlock)	3867	0.067	0.250	0	0	0
Board shareholdings	3867	0.083	0.111	0.085	0.015	0.086
Director age	3867	59.506	3.778	59.785	57.444	62
Director tenure	3867	9.649	3.591	9.25	7.166	11.7
Directorships	3867	9.552	7.434	8	4	14

Panel B. Firm Characteristics

	N	Mean	SD	Median	P25	P75
Assets (Million)	3867	9850.619	36994.097	2712.070	1054.870	8732.310
Leverage	3867	0.283	0.164	0.280	0.175	0.377
Tangibility	3867	0.341	0.231	0.278	0.155	0.512
Profitability	3867	0.136	0.233	0.131	0.094	0.1792
Market to book	3867	1.839	1.352	1.485	1.187	2.037
Z-score	3867	1.909	1.316	1.842	1.120	2.585

Panel C. Loan Characteristics

	N	Mean	SD	Median	P25	P75
Spread	6300	119.577	93.282	87.5	50	175
Dummy (Secured)	3634	0.678	0.467	1	0	1
Dummy (Performance pricing)	6300	0.447	0.497	0	0	1
Dummy (Covenant)	6300	0.546	0.500	1	0	1
Rating	6300	5.142	1.599	5	4	7
Facility (Million)	6300	499	870	250	125	550
Maturity	6300	40.203	24.305	37	12	60
Lenders	6300	10.801	8.962	9	4	15
Prior relations	6300	2.461	2.808	2	0	4

Note: This table provides summary statistics for the data in our analysis. The data set is composed of 6,300 loan-level and 3,867 firm-level observations for the period 1998–2006. *Board size* is the total number of directors on the board. *Outside members* is the total number of outside directors on the board. *Board composition* is the ratio of outside directors, as a fraction of board size. *Dummy (Board duality)* is a dummy variable that equals 1 if the CEO is also the chairman of the board, and 0 otherwise. *Audit size* is the total number of directors on the audit committee. *Audit outside members* is the total number of outside directors on the audit committee. *Audit composition* is the proportion of outside directors on the audit committee. *Dummy (Financial exper*tise) is a dummy variable that equals 1 if at least one of the audit committee member is a financial expert, and 0 otherwise. *Dummy (Bank)* is a dummy variable that equals 1 if at least one of the board members is a banker, and 0 otherwise. *Dummy (Academic)* is a dummy variable that equals 1 if at least one of the board members is from academia, and 0 otherwise. *Dummy* (*Woman)* is a dummy variable that equals 1 if at least one of the board members is a female, and 0 otherwise. *Dummy* (*Less attendance)* is a dummy variable that equals 1 if the firm's proxy reports that the director did not meet the SEC's 75% attendance threshold in a given year and 0 otherwise. *Dummy* (*Interlock)* is a dummy variable that equals 1 if at

least one director is an interlocked director. *Board shareholdings* is the ownership ratio of all directors as a fraction of shares outstanding. *Director age* is the average age of the directors. Director *tenure* is the average tenure of the directors. *Directorships* is the total number of Directorships held by total directors. *Assets* is the total assets of the firm. *Leverage* is the long-term debt plus debt in current liabilities divided by total assets. *Tangibility* is the net property, plant, and equipment divided by total assets. *Profitability* is EBITDA divided by total assets. *Market to book* is the market value of equity plus book value of debt divided by total assets. *Z-score* is the modified Altman's (1968) Z-score, which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Spread* is the all-in spread drawn, which is the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Dummy* (*Secured)* is a dummy variable that equals 1 if a loan is secured by collateral, and 0 otherwise. *Dummy* (*Performance pricing)* is a dummy variable that equals 1 if the loan contract contains a performance-pricing provision, and 0 otherwise. *Dummy* (*Covenant)* is a dummy variable that equals 1 if there is a covenant provision in the loan contract, and 0 otherwise. *Rating* is a debt rating from 1 to 7, with 1 indicating an Aaa rating, 2 indicating an Aa rating, 3 indicating an A rating, 4 indicating a Bbb rating, 5 indicating a Bb rating, 6 indicating a B rating, and 7 indicating a rating worse than B or no rating. *Facility* is the total amount of the loan facility. *Maturity* is the loan maturity in months. *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. Bank loan variables are measured in the fiscal year in which loans are initiated, and firm and board characteristics variables are estimated one year prior to the loan's initiated year. Number of observations (N), mean, standard deviation (SD), median, first quartile (P25), and third quartile (P75) are reported in the table.

TABLE 2. Board Structure and Bank Loan Price.

	(1)	(2)	(3)	(4)
	Log (Spread)	Log (Spread)	Log (Spread)	Log (Spread)
Board composition	-0.312			-0.294
	(3.38)***			(3.23)***
Log (Board size)		-0.358		-0.358
		(6.38)***		(6.52)***
Dummy (Board duality)			-0.049	-0.046
			(1.57)	(1.49)
Dummy(Banks)	-0.115	-0.094	-0.110	-0.095
	(2.74)***	(2.30)**	(2.64)***	(2.31)**
Log(Assets)	-0.086	-0.062	-0.089	-0.054
	(5.83)***	(3.91)***	(6.03)***	(3.45)***
Leverage	1.032	1.056	1.073	1.007
	(9.32)***	(9.71)***	(9.66)***	(9.31)***
Tangibility	-0.332	-0.303	-0.340	-0.291
	(4.26)***	(3.94)***	(4.32)***	(3.80)***
Profitability	0.143	0.098	0.144	0.100
	(1.69)*	(1.21)	(1.70)*	(1.24)
Market to book	-0.068	-0.068	-0.066	-0.072
	(2.50)**	(2.49)**	(2.51)**	(2.54)**
Z-score	-0.126	-0.115	-0.125	-0.116
	(7.18)***	(6.76)***	(7.16)***	(6.91)***
Log(Facility)	-0.153	-0.143	-0.151	-0.146
	(10.44)***	(9.84)***	(10.28)***	(10.09)***
Log(Maturity)	0.201	0.200	0.207	0.194
	(12.57)***	(12.60)***	(12.74)***	(12.52)***
Prior relations	0.013	0.013	0.013	0.014
	(2.21)**	(2.33)**	(2.22)**	(2.41)**
Rating	0.104	0.101	0.105	0.098
	(10.13)***	(9.87)***	(10.28)***	(9.78)***
R2	0.45	0.46	0.45	0.47
N	6,300	6,300	6,300	6,300

Note: This table presents OLS regression results on the effect of board structure on the price of bank loans. The dependent variable is the natural log of *spread*. *Spread* is the all-in spread drawn, which is the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Board composition* is the ratio of outside directors, as a fraction of board size. *Board size* is the total number of directors on the board. *Dummy (Board duality)* is a dummy variable that equals 1 if the CEO is also the chairman of the board, and 0 otherwise. *Dummy (Bank)* is a dummy variable that equals 1 if at least one of the board members is a banker, and 0 otherwise. *Assets* is the total assets of the firm. *Leverage* is the long-term debt plus debt in current liabilities divided by total assets. *Tangibility* is the net property, plant, and equipment divided by total assets. *Profitability* is EBITDA divided by total assets. *Market to book* is the market value of equity plus book value of debt divided by total assets. *Z-score* is the modified Altman's (1968) Z-score, which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Facility* is the total amount of the loan facility. *Maturity* is the loan maturity in months. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in DealScan. *Rating* is a debt rating from 1 to 7, with 1 indicating an Aaa rating, 2 indicating an Aa rating, 3 indicating an A rating, 4 indicating a Bbb rating, 5 indicating a Bb rating, 6 indicating a B rating, and 7 indicating a rating worse than B or no rating. We also control for year effect, two-digit SIC code industry effect, loan-type effect, and loan-purpose effect in the regressions. Standard errors are adjusted for heteroskedasticity and within firm clustering. Absolute values of the heteroskedasticity-robust t-statistics are in parentheses.

***Significance at the 1% level.

**Significance at the 5% level.

*Significance at the 10% level.

TABLE 3. Audit Committee Structure, Other Board Characteristics, and Bank Loan Price.

	(1)	(2)	(3)
	Log (Spread)	Log (Spread)	Log (Spread)
Audit composition	-0.104		-0.095
	(2.66)***		(2.44)**
Log (Audit size)	-0.073		-0.025
	(5.99)***		(1.91)*
Dummy (Financial expertise)	-0.081		-0.062
	(2.76)***		(2.14)**
Dummy (Woman)		-0.104	-0.049
		(2.84)***	(1.27)
Dummy (Academic)		0.006	0.021
		(0.18)	(0.68)
Dummy (Less attendance)		0.027	0.036
		(0.79)	(1.06)
Dummy (Interlock)		-0.019	-0.035
		(0.34)	(0.63)
Board shareholdings		0.196	0.135
		(1.39)	(0.94)
Director age		0.197	0.364
		(0.79)	(1.45)
Director tenure		-0.192	-0.210
		(4.43)***	(4.80)***
Directorships		-0.016	-0.011
		(6.14)***	(4.15)***
Board composition			-0.214
			(2.23)**
Log (Board size)			-0.214
			(3.34)***
Dummy (Board duality)			-0.029
			(0.98)
Dummy(Banks)	-0.095	-0.102	-0.087
	(2.33)**	(2.52)**	(2.16)**
Log(Assets)	-0.075	-0.049	-0.040
	(5.13)***	(3.19)***	(2.50)**
Leverage	1.061	0.974	0.955
	(9.87)***	(8.87)***	(8.85)***
Tangibility	-0.312	-0.334	-0.293
	(4.07)***	(4.48)***	(4.01)***
Profitability	0.107	0.080	0.060
	(1.29)	(1.02)	(0.77)
Market to book	-0.068	-0.061	-0.067
	(2.63)***	(2.38)**	(2.53)**
Z-score	-0.118	-0.105	-0.101
	(6.86)***	(6.60)***	(6.46)***
Log(Facility)	-0.149	-0.141	-0.139
	(10.40)***	(9.77)***	(9.73)***
Log(Maturity)	0.199	0.192	0.186
	(12.56)***	(12.31)***	(12.24)***
Prior relations	0.013	0.012	0.013
	(2.21)**	(2.12)**	(2.34)**
Rating	0.099	0.096	0.092
	(9.81)***	(9.66)***	(9.43)***
R2	0.46	0.48	0.48
N	6,300	6,300	6,300

Note: 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*. *Spread* is the all-in spread drawn, which is the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Audit composition* is the proportion of outside directors on the audit committee. *Audit size* is the total number of directors on the audit committee. *Dummy (Financial expert*ise) is a dummy variable that equals 1 if at least one of the audit committee member is a financial expert, and 0 otherwise. *Dummy* (*Woman)* is a dummy variable that equals 1 if at least one of the board members is a female, and 0 otherwise. *Dummy (Academic)* is a dummy variable that equals 1 if at least one of the board members is from academia, and 0 otherwise. *Dummy* (*Less attendance)* is a dummy variable that equals 1 if the firm's proxy reports that the director did not meet the SEC's 75% attendance threshold in a given year and 0 otherwise. *Dummy* (*Interlock)* is a dummy variable that equals 1 if at least one director is an interlocked director. *Board shareholdings* is the ownership ratio of all directors as a fraction of shares outstanding. *Director age* is the average age of the directors. Director *tenure* is the average tenure of the directors. *Directorships* is the total number of Directorships held by total directors. *Board composition* is the ratio of outside directors, as a fraction of board size. *Board size* is the total number of directors on the board. *Dummy (Board duality)* is a dummy variable that equals 1 if the CEO is also the chairman of the board, and 0 otherwise. *Dummy (Bank)* is a dummy variable that equals 1 if at least one of the board members is a banker, and 0 otherwise. *Assets* is the total assets of the firm. *Leverage* is the long-term debt plus debt in current liabilities divided by total assets. *Tangibility* is the net property, plant, and equipment divided by total assets. *Profitability* is EBITDA divided by total assets. *Market to book* is the market value of equity plus book value of debt divided by total assets. *Z-score* is the modified Altman's (1968) Z-score, which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Facility* is the total amount of the loan facility. *Maturity* is the loan maturity in months. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in DealScan. *Rating* is a debt rating from 1 to 7, with 1 indicating an Aaa rating, 2 indicating an Aa rating, 3 indicating an A rating, 4 indicating a Bbb rating, 5 indicating a Bb rating, 6 indicating a B rating, and 7 indicating a rating worse than B or no rating. We also control for year effect, two-digit SIC code industry effect, loan-type effect, and loan-purpose effect in the regressions. Standard errors are adjusted for heteroskedasticity and within firm clustering. Absolute values of the heteroskedasticity-robust t-statistics are in parentheses.

***Significance at the 1% level.
**Significance at the 5% level.
*Significance at the 10% level.

TABLE 4. Robustness Checks.

	Firm-year level analysis	Firm-year fixed effect	Firm and lead bank two-way clustering	Median regression	Two-stage least-square regression (instrument for loan maturity)
	(1)	(2)	(3)	(4)	(5)
	Log (Spread)	Log (Spread)	Log (Spread)	Log (Spread)	Log (Spread)
Board composition	-0.216	-0.214	-0.214	-0.270	-0.235
	(2.45)**	(1.88)*	(2.11)**	(4.71)***	(2.37)**
Log (Board size)	-0.178	-0.117	-0.214	-0.225	-0.221
	(2.99)***	(1.85)*	(2.89)***	(5.85)***	(3.37)***
Dummy (Board duality)	-0.040	-0.006	-0.029	-0.012	-0.026
	(1.51)	(0.15)	(1.18)	(0.69)	(0.86)
Audit composition	-0.144	-0.114*	-0.095	-0.103	-0.092
	(3.51)***	(1.86)	(3.19)***	(2.51)**	(2.31)**
Log (Audit size)	-0.024	-0.044	-0.025	-0.037	-0.023
	(2.03)**	(2.21)**	(2.43)**	(4.31)***	(1.76)*
Dummy (financial expertise)	-0.072	-0.110	-0.062	-0.087	-0.060
	(2.97)***	(2.53)**	(2.03)**	(4.81)***	(1.99)**
Dummy (Woman)	-0.043	-0.042	-0.049	-0.071	-0.065
	(1.33)	(1.01)	(1.22)	(3.24)***	(1.68)*
Dummy (Academic)	0.018	-0.003	0.021	0.019	0.018
	(0.69)	(0.08)	(0.80)	(1.08)	(0.55)
Dummy (Less attendance)	0.062	0.132	0.036	0.070	0.035
	(2.07)**	(2.16)**	(1.25)	(2.87)***	(0.97)
Dummy (Interlock)	-0.001	0.053	-0.035	-0.071	-0.051
	(0.01)	(0.72)	(0.73)	(2.05)**	(0.91)
Board shareholdings	0.037	-0.108	0.135	0.150	0.096
	(0.29)	(0.76)	(1.17)	(1.92)*	(0.65)
Director age	0.129	0.155	0.364	0.284	0.439
	(0.56)	(0.60)	(1.51)	(1.87)*	(1.71)*
Director tenure	-0.193	-0.245	-0.210	-0.222	-0.214
	(5.03)***	(5.53)***	(4.68)***	(9.49)***	(4.80)***
Directorships	-0.010	-0.010	-0.011	-0.009	-0.012
	(4.13)***	(2.96)***	(4.09)***	(6.15)***	(4.40)***
Dummy(Banks)	-0.088	-0.056	-0.087	-0.089	-0.090
	(2.57)**	(1.00)	(2.05)**	(3.49)***	(2.13)**
Log(Assets)	-0.093	-0.070	-0.040	-0.055	-0.029
	(5.86)***	(3.88)***	(2.10)**	(6.42)***	(1.59)
Leverage	0.845	0.719	0.955	0.992	1.042
	(8.87)***	(7.11)***	(8.61)***	(17.08)***	(9.56)***
Tangibility	-0.246	-0.166	-0.293	-0.304	-0.321
	(3.79)***	(2.34)**	(4.24)***	(7.64)***	(4.17)***
Profitability	0.097	0.067	0.060	-0.123	0.010
	(0.74)	(1.39)	(0.87)	(3.62)***	(0.13)
Market to book	-0.077	-0.068	-0.067	-0.112	-0.068
	(4.23)***	(6.80)***	(2.34)**	(17.62)***	(2.46)**
Z-score	-0.090	-0.078	-0.101	-0.095	-0.081
	(6.21)***	(6.30)***	(5.78)***	(11.58)***	(5.30)***
Log(Facility)	-0.089	-0.145	-0.139	-0.145	-0.144
	(5.95)***	(6.18)***	(10.11)***	(15.96)***	(9.63)***
Log(Maturity)	0.156	0.251	0.186	0.184	
	(9.27)***	(8.20)***	(11.76)***	(16.91)***	
Prior relations	0.006	0.027	0.013	0.017	0.013
	(1.25)	(3.35)***	(2.33)**	(5.55)***	(2.32)**
Rating	0.090	0.072	0.092	0.091	0.093
	(9.92)***	(5.04)***	(6.62)***	(15.09)***	(9.32)***
R2	0.51	0.51	0.48	0.33	0.48
N	3,867	6,300	6,300	6,300	6,021

Note: This table presents robustness checks of the effects of corporate boards on bank loan price. Column 1 is the OLS regression using a 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 OLS regression with standard errors adjusted for both firm and lead-bank clustering. Column 4 is the median regression. Column 5 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 the natural log of *spread. Spread* is the all-in spread drawn, which is the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Board composition* is the ratio of outside directors, as a fraction of board size. *Board size* is the total number of directors on the board. *Dummy (Board duality)* is a dummy variable that equals 1 if the CEO is also the chairman of the board, and 0 otherwise. *Audit composition* is the proportion of outside directors on the audit committee. *Audit size* is the total number of directors on the audit committee. *Dummy (Financial expert*ise) is a dummy variable that equals 1 if at least one of the audit committee member is a financial expert, and 0 otherwise. *Dummy* (*Woman)* is a dummy variable that equals 1 if at least one of the board members is a female, and 0 otherwise. *Dummy (Academic)* is a dummy variable that equals 1 if at least one of the board members is from academia, and 0 otherwise. *Dummy* (*Less attendance)* is a dummy variable that equals 1 if the firm's proxy reports that the director did not meet the SEC's 75% attendance threshold in a given year and 0 otherwise. *Dummy* (*Interlock)* is a dummy variable that equals 1 if at least one director is an interlocked director. *Board shareholdings* is the ownership ratio of all directors as a fraction of shares outstanding. *Director age* is the average age of the directors. Director *tenure* is the average tenure of the directors. *Directorships* is the total number of Directorships held by total directors. *Dummy (Bank)* is a dummy variable that equals 1 if at

least one of the board members is a banker, and 0 otherwise. *Assets* is the total assets of the firm. *Leverage* is the long-term debt plus debt in current liabilities divided by total assets. *Tangibility* is the net property, plant, and equipment divided by total assets. *Profitability* is EBITDA divided by total assets. *Market to book* is the market value of equity plus book value of debt divided by total assets. *Z-score* is the modified Altman's (1968) Z-score, which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Facility* is the total amount of the loan facility. *Maturity* is the loan maturity in months. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in DealScan. *Rating* is a debt rating from 1 to 7, with 1 indicating an Aaa rating, 2 indicating an Aa rating, 3 indicating an A rating, 4 indicating a Bbb rating, 5 indicating a Bb rating, 6 indicating a B rating, and 7 indicating a rating worse than B or no rating. *Asset maturity* is defined as [PPE/(CA+PPE)]*[PPE/Depreciation]+[CA/(CA+PPE)]*[CA/COGS]. We also control for year effect, two-digit SIC code industry effect, loan-type effect, and loan-purpose effect in the regressions. Standard errors are adjusted for heteroskedasticity and within firm clustering except for the median regression. Absolute values of the z-statistics and the heteroskedasticity-robust t-statistics are in parentheses.

***Significance at the 1% level.

**Significance at the 5% level.

*Significance at the 10% level.

TABLE 5. Differences-in-Differences Regression.

	(1)	(2)
	Log (Spread)	Log (Spread)
Dummy (Post)	-0.206	0.022
	(2.96)***	(1.27)
Dummy (Changing firms)		0.173
		(2.20)**
Dummy (Post)* Dummy (Changing firms)		-0.226
		(2.64)***
Dummy(Banks)	0.053	-0.082
	(0.51)	(1.81)*
Log(Assets)	-0.049	-0.062
	(1.70)*	(3.70)***
Leverage	0.990	0.945
	(3.73)***	(6.79)***
Tangibility	-0.111	-0.123
	(1.45)	(2.35)**
Profitability	-0.203	-0.751
	(0.30)	(2.28)**
Market to book	-0.014	-0.072
	(0.45)	(3.54)***
Z-score	-0.043	-0.057
	(0.83)	(2.23)**
Log(Facility)	-0.086	-0.107
	(2.47)**	(6.21)***
Log(Maturity)	0.114	0.078
	(2.35)**	(4.23)***
Prior relations	0.029	0.015
	(3.74)***	(3.92)***
Rating	0.272	0.305
	(6.85)***	(18.49)***
R2	0.54	0.50
N	535	3,949

Note: This table presents the effect of SOX and new regulations with regard on board independence and loan prices. The dependent variable is the natural log of *spread*. *Spread* is the all-in spread drawn, which is the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Dummy* (*Post)* is a dummy variable that equals 1 if a loan is activated after the firm changes its board structure from insider-dominant to outside-dominant. *Dummy* (*Changing firms)* is a dummy variable that equals 1 if a firm changes its board structure from an inside-dominant board to an outside-dominant board. *Dummy (Bank)* is a dummy variable that equals 1 if at least one of the board members is a banker, and 0 otherwise. *Assets* is the total assets of the firm. *Leverage* is the long-term debt plus debt in current liabilities divided by total assets. *Tangibility* is the net property, plant, and equipment divided by total assets. *Profitability* is EBITDA divided by total assets. *Market to book* is the market value of equity plus book value of debt divided by total assets. *Z-score* is the modified Altman's (1968) Z-score, which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Facility* is the total amount of the loan facility. *Maturity* is the loan maturity in months. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in DealScan. *Rating* is a debt rating from 1 to 7, with 1 indicating an Aaa rating, 2 indicating an Aa rating, 3 indicating an A rating, 4 indicating a Bbb rating, 5 indicating a Bb rating, 6 indicating a B rating, and 7 indicating a rating worse than B or no rating. We also control for year effect, two-digit SIC code industry effect, loan-type effect, and loan-purpose effect in the regressions. Standard errors are adjusted for heteroskedasticity and within firm clustering. Absolute values of the heteroskedasticity-robust t-statistics are in parentheses.

***Significance at the 1% level.

**Significance at the 5% level.

*Significance at the 10% level.

TABLE 6. Corporate Boards and Bank Loan Price: Subsample Tests.

	(1)	(2)
	Log (Spread)	Log (Spread)
Board composition	-0.391	-0.358
	(3.85)***	(3.17)***
Dummy (Good governance)	-0.027	
	(0.40)	
Board composition*Dummy (Good governance)	0.190	
	(1.95)*	
Dummy (Low information asymmetry)		-0.106
		(1.67)*
Board composition*Dummy (Low information asymmetry)		0.153
		(1.68)*
Dummy(Banks)	-0.114	-0.105
	(2.72)***	(2.49)**
Log(Assets)	-0.086	-0.083
	(5.87)***	(5.39)***
Leverage	1.031	1.139
	(9.40)***	(9.99)***
Tangibility	-0.328	-0.349
	(4.22)***	(3.93)***
Profitability	0.143	0.165
	(1.70)*	(1.83)*
Market to book	-0.068	-0.071
	(2.55)**	(2.43)**
Z-score	-0.125	-0.142
	(7.27)***	(6.50)***
Log(Facility)	-0.152	-0.160
	(10.48)***	(10.59)***
Log(Maturity)	0.201	0.203
	(12.65)***	(12.66)***
Prior relations	0.013	0.011
	(2.21)**	(1.96)**
Rating	0.103	0.106
	(10.12)***	(10.35)***
R2	0.46	0.45
N	6,300	6,300

Note: This table presents subsample tests on the effects of board characteristics on the price of bank loans. The dependent variable is the natural log of *spread*. *Spread* is the all-in spread drawn, which is the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Dummy (Good governance)* is a dummy variable that equals 1 if a firm has a less than the median value of *G-index*. *G-index* is the Gompers, Ishii, and Metrick (2003) corporate governance index. *Dummy (Low information asymmetry)* is a dummy variable that equals 1 if a firm has a less than median value of the *Analyst forecast dispersion. Analyst forecast dispersion* is the standard deviation of individual analyst forecasts deflated by actual earnings. *Board composition* is the ratio of outside directors, as a fraction of board size. *Dummy (Bank)* is a dummy variable that equals 1 if at least one of the board members is a banker, and 0 otherwise. *Assets* is the total assets of the firm. *Leverage* is the long-term debt plus debt in current liabilities divided by total assets. *Tangibility* is the net property, plant, and equipment divided by total assets. *Profitability* is EBITDA divided by total assets. *Market to book* is the market value of equity plus book value of debt divided by total assets. *Z-score* is the modified Altman's (1968) Z-score, which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Facility* is the total amount of the loan facility. *Maturity* is the loan maturity in months. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in DealScan. *Rating* is a debt rating from 1 to 7, with 1 indicating an Aaa rating, 2 indicating an Aa rating, 3 indicating an A rating, 4 indicating a Bbb rating, 5 indicating a Bb rating, 6 indicating a B rating, and 7 indicating a rating worse than B or no rating. We also control for year effect, two-digit SIC code industry effect, loan-type effect, and loan-purpose effect in the regressions. Standard errors are adjusted for heteroskedasticity and within firm clustering. Absolute values of the heteroskedasticity-robust t-statistics are in parentheses.

***Significance at the 1% level.

**Significance at the 5% level.

*Significance at the 10% level.

TABLE 7. Board Characteristics, Nonprice Loan Terms, and Loan Ownership.

	(1)	(2)	(3)	(4)
	Dummy (Secured)	Dummy (Performance pricing)	Dummy (Covenant)	Log (Lenders)
Board composition	-0.875	-0.532	-0.443	0.347
	(2.49)**	(2.66)***	(2.23)**	(3.60)***
Log (Board size)	0.040	0.019	0.035	-0.004
	(0.18)	(0.15)	(0.28)	(0.06)
Dummy (Board duality)	-0.005	0.073	-0.028	0.003
	(0.05)	(1.22)	(0.48)	(0.11)
Audit composition	-0.980	-0.667	-0.520	0.132
	(4.53)***	(4.62)***	(3.83)***	(2.42)**
Log (Audit size)	-0.072	-0.007	0.028	0.022
	(1.42)	(0.25)	(0.94)	(1.72)*
Dummy (financial expertise)	0.012	0.078	0.011	-0.005
	(0.12)	(1.27)	(0.18)	(0.17)
Dummy (Woman)	-0.055	-0.056	-0.060	0.053
	(0.45)	(0.79)	(0.83)	(1.43)
Dummy (Academic)	-0.011	0.004	-0.017	0.024
	(0.12)	(0.07)	(0.30)	(0.90)
Dummy (Less attendance)	0.069	-0.018	-0.071	0.036
	(0.56)	(0.23)	(0.85)	(1.07)
Dummy (Interlock)	0.407	0.040	-0.071	0.037
	(1.89)*	(0.33)	(0.66)	(0.72)
Board shareholdings	-0.793	0.307	0.217	-0.087
	(1.93)*	(1.19)	(0.81)	(0.53)
Director age	-0.033	0.062	0.824	0.070
	(0.04)	(0.13)	(1.63)	(0.28)
Director tenure	-0.096	0.032	-0.094	-0.030
	(0.72)	(0.42)	(1.17)	(0.75)
Directorships	-0.020	-0.006	-0.011	-0.001
	(2.33)**	(1.23)	(2.18)**	(0.42)
Dummy(Banks)	-0.010	-0.079	-0.118	0.009
	(0.07)	(0.91)	(1.32)	(0.23)
Log(Assets)	0.153	-0.022	-0.037	0.025
	(2.69)***	(0.70)	(1.25)	(1.69)*
Leverage	0.239	0.473	0.507	0.313
	(0.76)	(2.43)**	(2.54)**	(3.54)***
Tangibility	0.226	-0.097	0.032	0.013
	(1.03)	(0.67)	(0.22)	(0.22)
Profitability	-0.770	-0.483	-0.730	0.012
	(0.97)	(1.32)	(1.70)*	(0.33)
Market to book	0.055	-0.016	0.038	-0.003
	(1.19)	(0.82)	(2.00)**	(0.37)
Z-score	0.046	-0.050	-0.013	0.017
	(1.01)	(1.83)*	(0.45)	(1.40)
Log(Facility)	0.094	0.060	0.050	0.391
	(1.64)	(1.93)*	(1.56)	(24.24)***
Log(Maturity)	-0.025	-0.061	-0.035	0.152
	(0.43)	(1.67)*	(0.98)	(8.71)***
Prior relations	0.021	0.006	0.000	0.022
	(1.23)	(0.63)	(0.02)	(4.20)***
Rating	0.869	0.014	0.184	-0.003
	(20.66)***	(0.67)	(8.74)***	(0.32)
N	3,624	6,300	6,300	6,300
R2	0.22	0.03	0.04	0.36

Note: This table presents logit and OLS regression results of the effects of corporate boards on nonprice loan terms and loan ownership. The dependent variables are *Dummy (Secured)*, *Dummy (Performance pricing)*, *Dummy (Covenant)*, and the natural log of *Lenders*. *Dummy* (*Secured)* is a dummy variable that equals 1 if a loan is secured by collateral, and 0 otherwise. *Dummy* (*Performance pricing)* is a dummy variable that equals 1 if the loan contract contains a performance-pricing provision, and 0 otherwise. *Dummy* (*Covenant)* is a dummy variable that equals 1 if there is a covenant provision in the loan contract, and 0 otherwise. *Lenders* is the total number of lenders in a loan. *Board composition* is the ratio of outside directors, as a fraction of board size. *Board size* is the total number of directors on the board. *Dummy (Board duality)* is a dummy variable that equals 1 if the CEO is also the chairman of the board, and 0 otherwise. *Audit composition* is the proportion of outside directors on the audit committee. *Audit size* is the total number of directors on the audit committee. *Dummy (Financial exper*tise) is a dummy variable that equals 1 if at least one of the audit committee member is a financial expert, and 0 otherwise. *Dummy* (*Woman)* is a dummy variable that equals 1 if at least one of the board members is a female, and 0 otherwise. *Dummy (Academic)* is a dummy variable that equals 1 if at least one of the board members is from academia, and 0 otherwise. *Dummy* (*Less attendance)* is a dummy variable that equals 1 if the firm's proxy reports that the director did not meet the SEC's 75% attendance threshold in a given year and 0 otherwise. *Dummy* (*Interlock)* is a dummy variable that equals 1 if at least one director is an interlocked director. *Board shareholdings* is the ownership ratio of all directors as a fraction of shares outstanding. *Director age* is the average age of the directors. Director *tenure* is the average tenure of the directors. *Directorships* is the total number of Directorships held by total directors. *Dummy (Bank)* is a dummy variable that equals 1 if at least one of the board members is a banker, and 0 otherwise. *Assets* is the total assets of the firm. *Leverage* is the long-term debt plus debt in current liabilities divided by total assets. *Tangibility* is the net property, plant, and equipment divided by total assets. *Profitability* is EBITDA divided by total assets. *Market to book* is the market value of equity plus book value of debt divided by total assets. *Z-score* is the modified Altman's (1968) Z-score, which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Facility* is the total amount of the loan facility. *Maturity* is the loan maturity in months. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in DealScan. *Rating* is a debt rating from 1 to 7, with 1 indicating an Aaa rating, 2 indicating an Aa rating, 3 indicating an A rating, 4 indicating a Bbb

rating, 5 indicating a Bb rating, 6 indicating a B rating, and 7 indicating a rating worse than B or no rating. We also control for year effect, two-digit SIC code industry effect, loan-type effect, and loan-purpose effect in the regressions. Standard errors are adjusted for heteroskedasticity and within firm clustering. Absolute values of the z-statistics and the heteroskedasticity-robust t-statistics are in parentheses.
***Significance at the 1% level.
**Significance at the 5% level.
*Significance at the 10% level.

TABLE 8. Two-Stage Estimation of the Structural Model.

	(1) Log (Spread)	(2) Dummy (Secured)	(3) Dummy (Covenant)	(4) Dummy (Performance pricing)
Fitted (Spread)				0.062
				(4.93)***
Fitted (Secured)	-0.011		0.264	
	(0.46)		(16.14)***	
Fitted (Covenant)	0.049	0.240		
	(2.10)**	(16.10)***		
Fitted (Performance pricing)	0.105			
	(4.89)***			
Board composition	-0.145	-0.091	-0.159	-0.224
	(2.18)**	(1.94)*	(3.12)***	(4.02)***
Log (Board size)	-0.188	0.008	-0.007	-0.014
	(4.29)***	(0.24)	(0.22)	(0.38)
Dummy (Board duality)	0.011	-0.002	0.020	0.032
	(0.54)	(0.16)	(1.26)	(1.82)*
Audit composition	-0.065	-0.128	-0.043	-0.168
	(1.71)*	(3.95)***	(1.20)	(4.36)***
Log (Audit size)	-0.034	-0.016	0.004	-0.010
	(3.38)***	(2.28)**	(0.57)	(1.15)
Dummy (financial expertise)	-0.054	0.001	-0.008	0.003
	(2.62)***	(0.08)	(0.48)	(0.18)
Dummy (Woman)	-0.033	-0.013	0.000	0.000
	(1.31)	(0.74)	(0.00)	(0.01)
Dummy (Academic)	-0.003	-0.004	0.000	0.017
	(0.15)	(0.30)	(0.01)	(0.99)
Dummy (Less attendance)	0.027	0.015	-0.029	-0.025
	(0.95)	(0.73)	(1.31)	(1.04)
Dummy (Interlock)	0.008	0.047	-0.009	0.011
	(0.19)	(1.58)	(0.27)	(0.31)
Board shareholdings	0.150	-0.144	0.055	0.083
	(1.68)*	(2.30)**	(0.81)	(1.11)
Director age	0.742	-0.129	0.236	-0.023
	(4.22)***	(1.04)	(1.74)*	(0.15)
Director tenure	-0.205	-0.011	0.013	0.031
	(7.66)***	(0.59)	(0.62)	(1.37)
Directorships	-0.009	-0.002	-0.001	-0.000
	(5.13)***	(1.84)*	(0.81)	(0.00)
Dummy(Banks)	-0.082	-0.008	-0.002	-0.004
	(2.70)***	(0.38)	(0.08)	(0.15)
Log(Assets)	-0.044	0.028	-0.014	-0.000
	(4.12)***	(3.69)***	(1.73)*	(0.02)
Leverage	1.007	0.024	0.043	-0.013
	(15.08)***	(0.51)	(0.83)	(0.22)
Tangibility	-0.235	0.024	-0.038	-0.047
	(4.41)***	(0.64)	(0.92)	(1.05)
Profitability	0.095	-0.051	0.011	-0.012
	(2.86)***	(2.14)**	(0.42)	(0.42)
Market to book	-0.058	0.004	0.007	-0.007
	(8.23)***	(0.70)	(1.23)	(1.21)
Z-score	-0.099	0.010	-0.013	-0.012
	(10.20)***	(1.44)	(1.80)*	(1.39)
Log(Facility)	-0.146	0.012	0.010	0.017
	(13.77)***	(1.60)	(1.26)	(1.78)*
Log(Maturity)	0.184	-0.003	-0.006	-0.027
	(14.60)***	(0.34)	(0.66)	(2.48)**
Prior relations	0.018	0.003	-0.002	-0.000
	(5.20)***	(1.29)	(0.64)	(0.10)
Rating	0.072	0.163	-0.037	-0.054
	(8.21)***	(29.25)***	(5.54)***	(8.08)***
Credit spread	0.068			
	(4.44)***			
Term spread	-0.680			
	(8.93)***			
Regulated		-0.442		
		(1.90)*		
Loan concentration		0.055		
		(2.36)**		
R&D			-2.049	
			(5.25)***	
Analyst forecast dispersion				0.337
				(4.54)***

Dummy (Syndication)				0.053
				(1.80)*
N	3,634	3,634	3,634	3,634
R2	0.45	0.24	0.04	0.06

Note: This table presents the simultaneous equation estimation of loan price, collateral, covenant, and performance pricing. The dependent variables are the natural log of *spread*, *Dummy (Secured)*, *Dummy (Performance pricing)*, *Dummy (Covenant)*. *Spread* is the all-in spread drawn, which is the amount the borrower pays in basis points over LIBOR or LIBOR equivalent for each dollar drawn down. *Dummy* (*Secured)* is a dummy variable that equals 1 if a loan is secured by collateral, and 0 otherwise. *Dummy* (*Performance pricing)* is a dummy variable that equals 1 if the loan contract contains a performance-pricing provision, and 0 otherwise. *Dummy* (*Covenant)* is a dummy variable that equals 1 if there is a covenant provision in the loan contract, and 0 otherwise. *Board composition* is the ratio of outside directors, as a fraction of board size. *Board size* is the total number of directors on the board. *Dummy (Board duality)* is a dummy variable that equals 1 if the CEO is also the chairman of the board, and 0 otherwise. *Audit composition* is the proportion of outside directors on the audit committee. *Audit size* is the total number of directors on the audit committee. *Dummy (Financial expert*ise) is a dummy variable that equals 1 if at least one of the audit committee member is a financial expert, and 0 otherwise. *Dummy* (*Woman)* is a dummy variable that equals 1 if at least one of the board members is a female, and 0 otherwise. *Dummy (Academic)* is a dummy variable that equals 1 if at least one of the board members is from academia, and 0 otherwise. *Dummy* (*Less attendance)* is a dummy variable that equals 1 if the firm's proxy reports that the director did not meet the SEC's 75% attendance threshold in a given year and 0 otherwise. *Dummy* (*Interlock)* is a dummy variable that equals 1 if at least one director is an interlocked director. *Board shareholdings* is the ownership ratio of all directors as a fraction of shares outstanding. *Director age* is the average age of the directors. Director *tenure* is the average tenure of the directors. *Directorships* is the total number of Directorships held by total directors. *Dummy (Bank)* is a dummy variable that equals 1 if at least one of the board members is a banker, and 0 otherwise. *Assets* is the total assets of the firm. *Leverage* is the long-term debt plus debt in current liabilities divided by total assets. *Tangibility* is the net property, plant, and equipment divided by total assets. *Profitability* is EBITDA divided by total assets. *Market to book* is the market value of equity plus book value of debt divided by total assets. *Z-score* is the modified Altman's (1968) Z-score, which equals (1.2Working capital+1.4Retained earnings + 3.3EBIT + 0.999Sales) /Total assets. *Facility* is the total amount of the loan facility. *Maturity* is the loan maturity in months. *Prior relations* is the total number of previous loans initiated by the same firms and the same lead lenders in DealScan. *Rating* is a debt rating from 1 to 7, with 1 indicating an Aaa rating, 2 indicating an Aa rating, 3 indicating an A rating, 4 indicating a Bbb rating, 5 indicating a Bb rating, 6 indicating a B rating, and 7 indicating a rating worse than B or no rating. *Credit spread* is the difference between the AAA corporate bond yield and the BAA corporate bond yield. *Term spread* is the difference between the 10-year Treasury yield and the two-year Treasury yield. *R&D* is total R&D expenditures divided by total assets. *Loan concentration* is the loan amount divided by total debt. *Syndication* is a dummy variable that equals 1 if more than one lender is involved in a loan. We also control for year effect, two-digit SIC code industry effect, loan-type effect, and loan-purpose effect in the regressions. Standard errors are adjusted for heteroskedasticity and within firm clustering. Absolute values of the z-statistics and the heteroskedasticity-robust t-statistics are in parentheses.

***Significance at the 1% level.

**Significance at the 5% level.

*Significance at the 10% level.

BANK OF FINLAND RESEARCH
DISCUSSION PAPERS

ISSN 1456-6184, online

1/2012 Maria Teresa Punzi **Housing market and current account imbalances in the international economy.** 2012. 27 p. ISBN 978-952-462-784-9, online.

2/2012 Luisa Lambertini – Caterina Mendicino – Maria Teresa Punzi **Expectations-driven cycles in the housing market.** 2012. 61 p. ISBN 978-952-462-785-6, online.

3/2012 George A. Waters **Quantity rationing of credit.** 2012. 26 p. ISBN 978-952-462-786-3, online.

4/2012 Karlo Kauko **Why is equity capital expensive for opaque banks?** 2012. 26 p. ISBN 978-952-462-787-0, online.

5/2012 Kaushik Mitra – George W. Evans – Seppo Honkapohja **Fiscal policy and learning.** 2012. 32 p. ISBN 978-952-462-788-7, online.

6/2012 Ian W. Marsh – Wolf Wagner **Why is price discovery in credit default swap markets news-specific?** 2012. 41 p. ISBN 978-952-462-789-4, online.

7/2012 Katja Taipalus **Signaling asset price bubbles with time-series methods.** 2012. 47 p. ISBN 978-952-462-790-0, online.

8/2012 Paavo Miettinen **Information acquisition during a Dutch auction.** 2012. 22 p. ISBN 978-952-462-791-7, online.

9/2012 Diego Moreno – Tuomas Takalo **Optimal bank transparency.** 2012. 33 p. ISBN 978-952-462-792-4, online.

10/2012 Alina Barnett – Martin Ellison **Learning by disinflating.** 2012. 20 p. ISBN 978-952-462-795-5, online.

11/2012 Bill Francis – Iftekhar Hasan – Qiang Wu **Do corporate boards affect firm performance? New evidence from the financial crisis?** 2012. 55 p. ISBN 978-952-462-796-2, online.

12/2012 Bill Francis – Iftekhar Hasan – Liang Song **Are firm- and country-specific governance substitutes? Evidence from financial contracts in emerging markets.** 2012. 55 p. ISBN 978-952-462-797-9, online.

13/2012 Chung-Hua Shen – Yu-Li Huang – Iftekhar Hasan **Asymmetric benchmarking in bank credit rating.** 2012. 40 p. ISBN 978-952-462-798-6, online.

14/2012 Bill Francis – Iftekhar Hasan – Michael Koetter – Qiang Wu **Corporate boards and bank loan contracting.** 2012. 49 p. ISBN 978-952-462-799-3, online.

http://www.suomenpankki.fi/en • email: Research@bof.fi
ISBN 978-952-462-799-3, ISSN 1456-6184, online