

Board Quality and the Cost of Debt Capital: The Case of Bank Loans

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Abstract

We analyze the relation between comprehensive measures of board quality and the cost as well as the non-price terms of bank loans. We show that firms with higher quality boards and even a single (non-insider) advisory board member borrow at lower interest rates. This relation exists even after controlling for ownership structure, CEO compensation policy, and shareholder protection as well as the size and financial characteristics of the borrower. We also show that board quality and other governance characteristics influence the likelihood that loans will have covenant requirements, but the relations differ by covenant type. Firms with high quality boards are less likely to have loans with financial ratio restrictions or collateral requirements, though these covenants are more likely when CEO cash compensation is high or when the percentage of incentive-based pay is low. Overall, the quality of the board plays an important role in lowering the cost of debt.

Introduction

What is the role of corporate boards in resolving the potential for conflict between shareholders and debt holders? The answer to this question is of clear importance for understanding the general issue of how governance mechanisms influence agency costs, and in turn, corporate costs of capital. Boards that strengthen the position of shareholders relative to creditors may result in firms accepting high-risk projects (or engaging in mergers) that may benefit shareholders but expropriate wealth from bondholders. Reflecting this conflict, creditors of firms with stronger pro-shareholder governance may insist on higher loan rates and more restrictive covenants. In contrast, some boards may improve firm efficiency in such a way that both creditors and shareholders benefit, thereby reducing the cost of loans and/or their covenant requirements. For example, board diversity may cause banks to have greater faith in internal governance mechanisms and thus reduce borrowing costs. Or, greater board experience may lead to better quality advice to management and lead to better terms for debt. More generally, the quality of the board may have a material impact on the cost of debt capital.

In this paper, we conduct a comprehensive study of how board quality affects the terms at which banks lend to corporations. We focus on bank debt not only because the relation between board quality and bank loans has not previously been explored comprehensively, but also because bank loans in corporate capital structures are quantitatively quite significant. Indeed, Bradley and Roberts (2004) report that private debt, including bank loans, ranges from two to three times the amount of new issuances of public debt.

Our basic hypothesis is that high quality boards, by better governance, may complement the monitoring role of banks (delineated, for example, in Rajan (1992)), and thus reduce the costs and ameliorate the non-price terms of bank debt. We consider a large set of quality measures such as board size, board member independence, experience, busyness, diversity, compensation, share ownership, and board members' capacity to serve in an advisory role. Our empirical analysis shows that seven of these eight measures of board quality impact the cost of bank loans. The results generally support the notion that high quality boards reduce corporate borrowing costs. Thus, we are able to establish a reliable link between board quality and borrowers' cost of capital.

We also examine the impact of board quality on debt covenants.¹ While governance research has added much to our understanding, it has not explicitly focused on covenant characteristics; yet covenants can have very important effects on firm behavior. For example, Chava and Roberts (2008) show that lender banks interfere with management following covenant violations and that this leads to a sharp contraction of capital expenditures for covenant-violating borrowers. We find that board quality and other governance characteristics significantly influence not the number, but the types of covenants. Specifically, borrowers with more independent, busier, and more diverse boards, and with lower CEO ownership are less likely to have financial ratio covenant limitations. Firms with more experienced and more diverse boards and with lower institutional ownership and takeover probability are less likely to have collateral

¹Bank loan covenants are flexible at loan origination and are often renegotiated during the time period of the loan, while public debt is seldom renegotiated. Bank loan terms are also likely to be influenced by the length and strength of the relationship between the borrower and its bank, a characteristic that is absent from bond debt. The bank lender usually maintains a monitoring role during the life of the loan that is more active than for bond debt even if, as is often the case, the bank loan is syndicated. These aspects necessitate the need for monitoring and make it more likely that boards, by complementing bank monitoring, would influence the cost of bank capital.

requirements on their loans. Board quality does not appear to influence whether firms have sweep requirements on their loans, but those with greater shareholder protection (higher probability of takeover) are more likely to have sweep requirements.

Some prior research (e.g., Bhojraj and Sengupta (2003) Anderson, Mansi, and Reeb (2004), Klock, Mansi, and Maxwell (2005) and Chava, Livdan, and Purnanandam (2009) and Cremers, Nair, and Wei (2007)) has made a significant contribution by relating the cost of borrowing - usually the cost of bonds – to borrower characteristics. However, this research typically considers individual or small subsets of governance characteristics. In contrast to these studies, our focus is on the overall impact of a comprehensive set of board quality measures on the cost of bank debt. Like previous papers, we find that both increased board size and independence result in lower cost bank loans. But we also find that other measures of board quality such as greater board experience and the advisory role of board members decrease bank loan costs, and that these quality measures are important determinants of loan costs even after controlling for CEO compensation and ownership, institutional ownership, shareholder protection, and many financial and loan characteristics known to impact loan prices.

Other research on the importance of the board focuses primarily on the influence of the size and independence of the board (for example see, Yermack (1996), Hermalin and Weisbach (2003), and Coles, Daniel, and Naveen (2008)) on firm valuation. Few studies examine other characteristics of the board though Erhardt, Werbel, and Shrader (2003), Carter, Simkins, and Simpson (2003), and Jurkus, Park, and Woodard (2008) report that the number of female board members is positively related to financial indicators of firm performance. Ryan and Wiggins

(2004) show that director equity-based compensation is tied to the power of independent directors versus the CEO. Additionally, Brick, Palmon, and Wald (2006) examine director compensation and share ownership and find evidence that excess compensation of directors (and CEOs) is associated with poor firm performance. While these studies provide important insights, they do not explicitly relate comprehensive measures of board quality to the cost and terms of debt capital.

Our paper proceeds as follows. Section I provides a discussion of our sample and of the process by which the data were obtained. This is followed by an analysis of the financial, loan, board quality, and other governance characteristics of the sample. Section II provides analyses of the effects of board quality on the loan price and, in turn, loan covenants. Section III concludes.

I. Data

A. Data sources and sample selection criteria

Our governance data are taken from The Corporate Library and IRRC databases that provide a large set of governance characteristics for S&P 1500 firms. Variables related to the board of directors, to ownership structure, and to compensation are extracted for the years 2002 through 2004. In order to minimize any potential simultaneity biases, we measure the board of director variables (and other governance mechanisms) that were in place in a given year and then assess the association between these board characteristics and credit terms one year later. Thus, our loan

data are for the years 2003 through 2005. Loan information comes from the Loan Pricing Corporation Deal Scan database that provides information on loans made by a large number of commercial banks to their business borrowers. Data include the interest rate charged, the fee structure of the loan, specific covenant data, the size and maturity of the loan, and loan covenant information, as well as other dimensions of the loan. Our sample is thus constructed from the intersection of the Corporate Directory, IRRC, and the Deal Scan databases. We further require that the borrowers have financial data available from COMPUSTAT for each of the relevant years (one year prior to the loans). We supplement the executive compensation data when needed using EXECUCOMP. We exclude loans for which the cost of borrowing is missing, and we exclude financial firms and regulated utilities. These criteria result in a sample of 1460 loans representing 1054 firm-years of data.

B. Financial Characteristics

Table 1 provides the basic financial characteristics of our sample firms (represented once per year regardless of the number of loans).² Using the criteria listed above naturally results in a sample of relatively large firms.³ In fact our sample firms tend to be larger than those in the Compustat universe (excluding financials, utilities, and firms in our sample), where the mean value of total assets is \$146.88 million. Sales to total assets, long-term debt, market to book ratio, tangible to total assets, quick ratio, and return standard deviation are all comparable to the

²Allowing repeat loans per firm in the analysis biases our results against finding significant relations between the cost of the loan and the governance variables because each set of loan terms is unique to the loan in question even within a given year, but the governance variables do not change per firm within a single year.

³The data reported in the tables and used for the analysis were winsorized (top and bottom 1%) for variables that were subject to potentially extreme values such as market value of equity, total assets, and others.

Compustat universe, but ROA and times interest earned for our sample are higher and total liabilities to total assets is lower than for other Compustat firms. Not surprisingly, comparing our sample to the Compustat universe demonstrates that our firms have greater financial viability and are less risky, which is consistent with our firms being (on average) larger.

C. Loan characteristics

Table 2 provides the characteristics of the loans in our sample all of which are taken or created from data from Loan Data Corporation. In Panel A we provide cost and covenant information. The loan cost, referred to as the all-in-spread drawn (hereafter AISD), usually consists of a floating interest rate (points above the LIBOR rate quoted in basis points) and includes the relevant fees associated with the credit facility. For our sample, the median AISD is 87.5 basis points (mean of 113.63 basis points), which is similar to the spread reported by Anderson, Mansi, and Reeb (2004) for corporate bonds.

In accordance with Bradley and Roberts (2004) and Demiroglu and James (2007), we focus on five covenant types to create two kinds of variables for analysis. First, we create a covenant index which is composed of five covenant characteristics: whether the loan is secured, whether the covenant requirements include more than two restrictions on the value of financial ratios, and whether the loan covenants include asset, debt, and equity sweeps. The index has a maximum value of five (one point for each of the previously listed covenant restriction) and a minimum value of zero. Second, we place the five covenant characteristics into three covenant categories. For each category the loan is given a value of 1 if the covenant requirement exists for

that loan, and a value of zero otherwise. The three covenant categories are as follows: 1) financial ratio covenants (more than two financial ratio restrictions), 2) sweeps (debt, equity, or asset) covenants, and 3) collateral requirement covenants.⁴ From Table 2 Panel A, we infer that roughly 23% of the firms in our sample have financial ratio (>2) covenants, many have sweep covenants (25% asset, 20% debt, and 49% equity), and a little over one-third have collateral requirements. The mean value for the covenant index is 1.74.

In Panel B of Table 2 we show that our median loan maturity is 60 months, and the median loan amount is \$330 million. Almost all (96.3%) of the loans are syndicated with an average (median) of 10 lenders per loan. We use three measures of the relationship between the borrower and the lender based on data for the prior 15 years from the date of the loan. Table 2 shows that the median number of years (first measure) of the relationship between the borrower and the lender is 4, the median number of loans (second measure) extended to the borrower is 4, and that almost 92% have a previously established relationship with their lenders (based on a dummy variable (third measure) which equals 1 if the firm has a prior lending relationship with the current lending bank).

D. Board characteristics

The mean and median values of the board quality measures (from The Corporate Library and

⁴As discussed by Drucker and Puri (2009) data from Loan Pricing Corporation Deal Scan database may show that a loan does not have a particular covenant (i.e., the field for that particular covenant shows “no”) when in fact the data for all covenants for that particular loan are missing. To protect against this possibility (as do Drucker and Puri (2009)) our summary statistics and any analysis involving covenant data require that the loan have at least one non-missing covenant.

IRRC) are presented in Table 3. We consider board quality to include board size, board independence, the presence of an advisory board member (who is not an insider), the percentage of board members with more than 15 years of service, the percentage of board members who also serve on four or more other boards, the percentage of female board members as a proxy for board diversity, director pay, and director ownership. Based on Coles, Daniel, and Naveen (2008), Anderson, Mansi, and Reeb (2004), and Bhojraj and Sengupta (2003), we expect board size, experience, and independence to have an ameliorative effect on loan costs and terms. Further, Erhardt, Werbel, and Shrader (2003) and Carter, Simkins, and Simpson (2003) suggest a link between board diversity and improved firm valuations; an extension would suggest a similar link to bank loans. Similarly, the work of Ferris, Jagannathan, and Pritchard (2003) suggests a positive link between the number of other board appointments and terms of bank debt (though Fich and Shivdasani (2006) suggest otherwise).

Director ownership is measured in two ways: (i) the proportion of directors with no ownership and (ii) a dummy variable which is unity if none of the directors has positive ownership. Our sample boards are smaller (mean of almost 10) than those reported by Anderson, Mansi, and Reeb (2004) (mean of 12), but have a greater proportion of independent directors (75%) than theirs (58.33%).⁵ These differences may reflect our more recent sample period and the trend in recent years toward more independent boards. There are at least two arguments for how director ownership can affect the terms of bank debt. First, the standard incentive-based argument (Cordeiro, Veliyath, and Romal (2007)) would indicate that the

⁵While independent directors dominate the boards we find (but do not report in table form) that there is substantial variation among the different firms (the standard deviation is 15%) with the lowest independent director representation being 16%, and the highest being 94%.

interests of the firm and boards would be better aligned with ownership and would lead to lower borrowing costs and less restrictive covenants. On the other hand, since equity ownership aligns boards with shareholders, agency conflicts (e.g., the penchant for taking high-risk projects that expropriate value from debt holders) may affect the terms at which creditors are willing to lend to the firm. Thus, the effect of ownership on the cost of debt is ambiguous and our tests can potentially shed light on which of these contrasting arguments, if any, are supported by the data.

Adams (2002) analyzes the dual roles of board members as monitors and advisors and develops a model to estimate the optimal degree of monitoring intensity. We distinguish the monitoring and advising roles of the board members by constructing an indicator variable equal to one when at least one non-insider on the board of directors serves an advisory rather than a purely monitoring role. We define a member as having an advisory role if his/her employer is in the same two-digit SIC code as the borrowing firm. We propose that banks will view the presence of an advisory board member favorably, because he or she may complement or even replace the bank's role as advisor to the borrower thereby reducing the burden of the loan to the bank. This advisory director may be of particular importance when loans are syndicated as no one bank may want to carry the full responsibility of fulfilling the dual roles of advisor and monitor.

Many of our sample board members (median of 11.11%) have more than 15 years of service, and 7.69% (median) serve on more than four additional boards of directors. Also, our boards have an average of about 1 female on their (average 9 member) boards of directors.⁶

⁶Two of our measures of board quality are: 1) the percentage of the board with more than 15 years experience and 2) the percentage of the board with more than four other board appointments. Given that “long” tenure and “many”

Roughly 11% of our sample firms have non-insider board members who qualify as advisory directors as per our definition. Further, over 50% of our sample firms have no director with an ownership interest in the firm, and an average of over eleven percent of board members own none of their firms' shares.

E. Other governance characteristics

Because studies of single or small subsets of governance mechanisms have shown that mechanisms in addition to board characteristics (size and independence) are related to borrowing costs, we control for ownership structure, CEO compensation, and shareholder protection in addition to board quality. Ownership structure measures include the percentage ownership of officers and directors, of CEOs, and of institutions. CEO ownership is relatively low (less than 1% mean), though it is higher than that reported by Klock, Mansi, and Maxwell (2005). However, officers and directors as a group own about 14% (mean) of our firms' stocks.⁷ Institutional investors hold 71.67% (mean) of our firms' shares, which is higher than the 55% institutional holdings reported by Klock, Mansi, and Maxwell (2005).

In Table 3 we show the means and medians of CEO compensation. The average CEO earned \$1.5 million (median) per year in salary, bonus, and other compensation. The compensation structure for the CEOs in our sample is heavily weighted toward performance-based compensation, comprising over 58% (median) of CEO total compensation.

other board appointments are arbitrarily defined, our choices of 15 years and more than four other boards are driven entirely by data provided by The Corporate Library.

⁷Anderson, Mansi, and Reeb (2004) and Klock, Mansi, and Maxwell (2005) exclude ownership of officers and directors from their calculations.

Our shareholder protection variables include the Gompers, Ishii, and Metrick (GIM) index, the Bebchuk, Cohen, and Ferrell (2009) (BCF) index, and a staggered board indicator variable. Higher values of the GIM and BCF indexes indicate that shareholder rights are restricted and management is entrenched. In short, higher values of these indexes suggest more rights for management and fewer rights for shareholders. Our value for the GIM index is identical to that reported by Chava, Livdan, and Purnanandam (2009) in their study of the influence of shareholder rights restrictions on the cost of bank loans.

II. Multivariate Analysis and Results

The focus of our analysis is on the association between board quality and the cost and covenant characteristics of bank loans. We adapt models used in prior studies (Berger and Udell (1995), Strahan (1999), Booth and Booth (2004)) designed to explain the influences of borrower financial characteristics on both the price and non-price terms of bank loans. These studies relate the loan terms for bank borrowing to borrower financial characteristics such as borrower size, profitability, liquidity indicators, risk, and capital structure variables. Our analysis employs many of the same financial risk measures used in prior studies but adds to the empirical analysis the board quality and other governance variables that we discuss earlier in the paper. Our purpose in these tests is twofold: First, we document for the first time the relations between board quality and advisory board member presence and the cost of bank debt. Second, we provide new evidence regarding whether board quality (or other governance mechanisms) influence covenant requirements.

We present our results as follows. First, in Table 4 we present our ordinary least squares regression results for the loan cost models that control for industry and year. Table 5 provides the results of the second stage of a two stage least squares model used to help overcome the possibility that board quality (and other governance characteristics) and loan costs are endogenously determined and we also report the results of second stage least squares models that attempt to control for the simultaneous determination of loan costs and covenant requirements (using the covenant index). We report in Tables 6-8 the results of logit models that relate each of three covenant types to board quality and other characteristics of the loans and the borrowers.

A. Multivariate relations for the cost of borrowing

A.1 Board Quality

Table 4 reports the results of ordinary least squares models relating the log of the cost of borrowing (LAISD or log of all-in-spread drawn) to board quality and control variables. These results include Fama-French industry dummies and year dummies. Our results indicate that firms that have larger boards are able to borrow at lower rates. This relation exists even after adjusting for firm size and for the financial characteristics of the firm, and it suggests that bank lenders view larger boards positively in terms of their appraisal of the credit risk of the borrower. Perhaps larger boards incorporate more combined expertise across members. These results are contrary to those reported by Yermack (1996) who finds a negative relationship between board size and Tobin's q. They are, however, consistent with Coles, Daniel, and Naveen (2008) who

report a positive relation between board size and Tobin's q for firms that are large, diversified, and highly leveraged.

Our results also indicate that firms with more directors who have served for more than 15 years (those with greater experience) borrow more cheaply than those with fewer experienced board members. Further, we observe a negative and statistically significant relation between the proportion of outside directors and loan costs. These results are consistent both with Anderson, Mansi, and Reeb (2004) and with Bhojraj and Sengupta (2003) who study the influence of board independence on bond borrowing costs.

We find that non-inside directors who perform advisory roles have a material impact on the cost of bank credit. The presence of at least one director who is able to provide an advisory function on the board lowers the cost of borrowing after controlling for board independence. Having such a director or directors on the board may serve to decrease the burden on the lender to provide expertise and advice to the firm.

The evidence thus far suggests that bank lenders are comforted by larger, more independent, more experienced boards with advisory members. Firms with directors who have served on the board for many years may develop personal relationships with bank loan officers. These personal relationships as well as the presence of an advisory board member may become a part of the "soft" information that banks use to evaluate credit requests. Note, however, the caveat that while these factors are important in bank credit relationships, we do not know how they would impact obtaining funds in the public debt market.

We do not find a statistically significant relation between the cost of bank debt and the number of other memberships, board diversity, board compensation, or board ownership. Other studies, however, have found a significant connections between these board-related variables and valuation metrics. For example, Fich and Srivdasani (2006) report that firms have lower market-to-book ratios when the majority of their directors serve on three or more boards. Erhardt, Werbel, and Shrader (2003) and Carter, Simkins, and Simpson (2003) find that board diversity is positively related to firm values and financial indicators of firm performance. Ryan and Wiggins (2004) find that independent directors incentivize boards better by allowing for greater equity-based compensation for board members. Note that in contrast to these studies, we focus on the importance of board quality variables in influencing the cost of borrowing rather than the value of equity or firm performance. Further, we will see later that some of these variables are influential in determining the type of loan covenants required by bank lenders.

A.2 Other Governance and Control Variables

Most previous research has focused on the relation between institutional ownership and the cost of equity rather than the cost of debt. Institutions often have holdings that are large enough to mitigate the diffusion of ownership that has long been associated with lack of incentives to properly monitor and discipline the firm (Grossman and Hart (1980), and Shleifer and Vishny (1986)).⁸ Thus, Bhojraj and Sengupta (2003) find that more concentrated ownership is

⁸Agrawal and Mandelker (1992) and Borokhovich, Brunarski, and Parrino (2004) show that institutional monitoring may have a positive effect on firm value. Smith (1996) suggests that a powerful activist institutional shareholder can directly influence managerial decision-making, while Bushee (2000) finds that institutions can influence managerial decision-making when the investment horizon is short and institutions engage in momentum trading.

associated with higher bond yields and lower bond ratings. Finally, Cremers, Nair, and Wei (2007) find that institutional shareholdings, as a proxy for shareholder control, increase bond yields if the firm is exposed to takeovers, but not in firms where bonds have event risk protection.

Consistent with the findings for bonds of Bhojraj and Sengupta (2003) and Cremers, Nair, and Wei (2007) we show in Table 4 a significant, positive relation between institutional ownership and the cost of bank debt. However, we find this relation to extend beyond firms exposed to takeovers.⁹ Our results accord with the notion that bank lenders view higher levels of institutional ownership negatively, either due to the fact that institutional owners are too active in pressuring managements to increase risk in order to generate higher shareholder returns or are too passive to provide complementary monitoring and discipline.¹⁰ In contrast, we do not find that inside ownership impacts the cost of bank loans.

The potential effect of CEO compensation on the cost of bank debt is ambiguous. Higher cash compensation for the CEO may imply that the manager is of higher quality, or it may imply that the CEO simply works at a larger firm or is entrenched. A greater percentage of options-based pay may better align managers' interests with those of shareholders. However, such an alignment of interests may be detrimental to debt holders if greater alignment means that

Hartzell and Starks (2003) suggest institutional ownership affects the degree to which institutions monitor internal firm operations.

⁹Note, however, that Cremers, Nair, and Wei (2007) examine large blockholdings, but the results reported in Table 4 include all institutional holders.

¹⁰We use other specifications of institutional ownership such as 5% or large block institutional ownership, the total percentage of small (less than 5% institutional ownership) institutional holdings, and a dummy variable equal to one for firms with 5% block institutional ownership and zero otherwise. We find for each of these variables either a positive and significant relation or a statistically insignificant relation with all-in-spread-drawn.

managers may be more inclined to take greater risks (consistent with maximizing shareholder wealth) and thereby expropriate wealth from creditors. On the other hand, if more stock-based pay (or cash compensation) motivates managers to increase effort, or gives managers more incentives not to invest in value destroying pet projects without increasing average project risk, then lenders may view stock based compensation positively. Our empirical evidence in Table 4 indicates that lenders view incentive-based pay positively because we find that the percentage of options-based compensation is significantly, negatively related to the cost of borrowing.

Shareholder protection is commonly measured using the Gompers, Ishii, and Metrick (2003) index where the sum of up to 24 shareholder protection provisions is used to calculate the GIM index. Recently, Bebchuk, Cohen, and Ferrell (2009) find that of the 24 provisions there are six that are most important in describing shareholder protection. We include the BCF-index in our models and find that the index is significantly and negatively related to the cost of borrowing. Thus, borrowers with greater shareholder protection (lower probability of a takeover) pay less for their bank loans, *ceteris paribus*. Our results are consistent with those of Chava, Livdan, and Purnanandam (2009) who find that fewer takeover defenses are associated with higher bank borrowing costs.¹¹

Several borrower financial characteristics also impact the cost of borrowing. Consistent with prior literature, we find that firms that are larger, have less leverage, and have lower risk (measured by the standard deviation of their stock prices) borrow at lower cost. Firms that have higher profitability as measured by ROA also pay less for their bank loans. Additionally, borrowers pay more for term loans, reflecting the sharply upward sloping yield curve during our

¹¹The results are robust to using the GIM index or an indicator variable with a value of one if the firm has a staggered board (zero otherwise) in place of the BCF index.

sample years.

Prior studies show that bank credit terms are influenced by the nature of the relationship between the borrower and the lender. For example, Boot and Thakor (1994) develop a model that predicts that longer bank-borrower relationships will result in lower loan rates and less collateral requirements. In contrast, Greenbaum, Kanatas, and Venezia (1989) predict that longer bank-borrower relationships will lead to higher borrowing rates. Empirical evidence on the effects of bank-borrower relationships is extensive. For example, Petersen and Rajan (1994) find that stronger bank-borrower relationships have only minor effects on the cost of credit but do increase the availability of funds. In contrast, Berger and Udell (1995) find that longer bank-borrower relationships result in both lower borrower costs and reduced collateral requirements.

While the exact effects of the bank-borrower relationship on the terms of bank credit is in dispute, both theory and empirical evidence indicate that the relationship may have an important influence. In contrast, we find no evidence in Table 4 that the extent of the borrower-bank relationship affects the cost of the loan (though as discussed later it does affect whether certain covenant requirements are part of the loan). This may reflect the large sizes of the firms in our sample, which are, on average, much larger than the borrowing firms used in most of the bank relationship studies. Bank/borrower relationships would be expected to be less significant for larger firms that have more alternative sources of credit, both at other banks and from the capital market. The lack of any strong relationship may also reflect the fact that most of the loans in our sample are syndicated.

Taken together, our results to this point support the notion that firms with favorable board and financial characteristics are those with the best bank loan rates. That is, our findings are consistent with banks viewing favorably high board quality because it provides monitoring that is complementary to their own monitoring efforts. Additionally, they view a board with an advisory presence favorably because it complements or even replaces the bank's advisory role. Given the high percentage of syndicated loans in our sample (over 96%), banks appear to highly value the presence of an advisory board member. In contrast, banks require greater loan price compensation for firms that have pressures for returns from their institutional investors and also for firms that are more likely to be takeover candidates.

Although not the main focus of our paper, we realize that, as with any governance study, there may be some concern regarding potential simultaneity and/or endogeneity issues. In particular, there may be feedback between the loan costs and board quality (e.g., perhaps firms with better loan rates simply attract a certain type of board of directors). We attempt to minimize the potential bias due to feedback in three ways. First, as discussed earlier, our data for the loan cost is measured in the year following the data year for the board characteristics. Therefore, the potential for loan costs to affect these characteristics is likely to be minor.

Nevertheless, we adopt an additional method to mitigate the reverse causality. Specifically, we consider firms whose first loan within our sample is not preceded by a loan in the previous two years. Our notion is that if firms have not taken out a loan in the past two years, it is unlikely that the current loan would be part of an ongoing and regular borrowing

program that could materially affect the previous year's board quality,¹² particularly since there is evidence that board turnover is typically quite low (Yermack (2004)).¹³ The subsample of such firms is constructed as follows. We initially find the first year in which the firm takes out a loan within our sample, and eliminate loans for the firms after that first year. We then see if the firm takes out its first loan previous to the in-sample loan two or more years ago. If it does, we retain all of the first sample year loans for that firm. If it does not, we eliminate that firm from the sample. The subsample so constructed consists of 526 observations, but only 462 of these have all of the variables available for the regression model. We run the regression reported in Model 3 of Table 4 for this subsample of firms.

Results for the subsample appear in the last column of Table 4. Many of the findings are preserved and none of the coefficients changes sign relative to the penultimate column for the full sample. The only variable related to board quality that loses significance completely is board independence, but again, the sign of the coefficient is preserved. The coefficients of the other board quality variables actually increase in magnitude, suggesting that the reduction in significance for a few cases is due to a smaller number of observations. The R^2 of the regression is very close to that for the full sample. Thus, our results largely survive consideration of this subsample, lending confidence to our assertion that the causality indeed runs from board quality to loan costs.

¹²Ideally, we would prefer to have firms with first time ever loans, or go back a longer period, but the Deal Scan database does not permit identification of first time borrowers, and coverage by Deal Scan changes over time, reducing confidence that over a long period of time, if a firm does not appear in the database, it truly did not take out a loan (as opposed to simply not being covered by Deal Scan).

¹³It is shown in Yermack (2004) that the annual departures frequency for directors aged less than 70 is less than 5%. While it rises to 20% for directors over 70 years old, the median director age is 54, far lower than the threshold of 70.

We next attempt to identify an instrumental variable for each of the board quality characteristics. Such an instrument would need to be related to a single board quality characteristic and not the other board quality characteristics or the other governance or firm characteristics. This clearly is a virtually impossible task with eight different board quality characteristics. Therefore, we first combine all of our board quality characteristics into a single board quality index and we use an instrument for that index in a two-stage least squares model.

The overall board quality index is created by assigning point values to the board quality measures contained in the previously presented models. A value of one is assigned to the variable within the index if a continuous firm characteristic is above its cross-sectional median, and a zero value is assigned otherwise. One point is assigned when the advisory director dummy equals unity, and one point when the ownership dummy is unity.¹⁴ We sum the points to obtain the index value with a maximum of eight and a minimum of zero. Second, we search for a variable that is correlated with the board quality index, but not with the other variables in the model. Given the difficulty in identifying such an instrument we use an instrument that is statistically adequate (in terms of its correlations). The only variable we identified that could reasonably be used is the firm's times interest earned ratio. Fortunately, the times interest earned ratio does appear to be a good instrument. Therefore, we instrument for the board quality index using the times interest earned in the first stage of the two-stage least squares model.¹⁵

¹⁴We view ownership as undesirable for creditors because it aligns director and shareholder (rather than director and creditor) interests. We mentioned in the introduction, directors with ownership might be more inclined to take riskier projects or otherwise expropriate creditor wealth. Note that, consistent with this interpretation, the ownership variable (representing the proportion of directors with zero ownership) bears a negative (albeit insignificant) relation with the loan spread in Table 4.

¹⁵It may be argued that all of the governance characteristics under consideration (not just the board quality measures) and the financial characteristics of the firms may be endogenously determined. Therefore, we also perform the analysis by creating an overall governance index that includes the board quality index and one point each for institutional ownership, inside ownership, CEO incentive compensation plus the BCF index. This

The results reported under Model 1 in Table 5 are for the second stage of our two-stage least squares model where we replace the numerous board quality characteristics with our board quality index. A Wu-Hausman test rejects the null hypothesis that our governance index is exogenously determined; therefore a two-stage least squares approach is needed. Model 1 reveals that the board quality index remains significantly and negatively related to loan cost. Thus, our approach to addressing endogeneity confirms the Table 4 results that firms with high quality boards borrow at lower rates.¹⁶

B. Multivariate relations for loan covenants

We next explore the effects of board quality and other governance characteristics on the covenant terms of the bank credit relationship. Because no other researchers have examined these relations we focus on not only board quality, but also on how other governance characteristics of the firm impact covenant requirements. Our expectation is that borrowers with high board quality and other favorable (but not pro-shareholder) governance attributes will be able to obtain loans with less onerous covenant restrictions. Although the link between governance characteristics and covenant requirements has not been evaluated previously, covenant restrictions may prove to be as important as or more important than the cost of the loan to the borrower. Chava and Roberts (2008) find that several aspects of firm life may be disrupted (e.g., reductions in capital spending) by covenant violations, potentially leading to

comprehensive governance index has a maximum value of 17, and a minimum value of zero.

¹⁶The results using the overall governance index do not differ qualitatively from the results using the board quality index in all likelihood because the board quality index drives the overall governance index results. Specifically, we find that the overall governance index is significantly, negatively related to loan cost.

reductions in borrowers' stock prices. Therefore if high board quality and certain governance characteristics reduce the possibility of having more restrictive or more often violated covenants (particularly if the same characteristics lead to decreased loan cost), ultimately the firm's cost of capital could be positively affected by a high quality board and other desirable governance characteristics.

In Table 5 we provide the results of the second stage of a two-stage least squares regression model where we attempt to control for the simultaneous determination of the loan cost and the loan covenants using the covenant index. In Table 5, Model 2 we estimate our basic models for loan cost from Table 4 using a two-stage least squares approach, but where we instrument for the covenant index (not previously included in the Table 4 models). In Model 3 within Table 5, the dependent variable is the covenant index, and we instrument for loan cost.¹⁷ For Model 2, a Wu-Hausman test reveals that the covenant index and loan costs are not endogenously determined, but again we report these results for completeness. Consistent with the results reported in Table 4, we find that borrowers with larger boards, a greater percentage of outside directors, the presence of an advisory director, and directors with longer tenure are able to borrow at lower rates (those with higher board quality). We also find that a larger institutional shareholder presence leads to higher borrowing costs. Again, we find that firms with greater percentages of incentive-based pay have lower borrowing costs. We do not, however, find that the BCF index variable is statistically significant. This finding may indicate that board quality is

¹⁷Finding instruments that are related to loan covenants but not to loan cost, and then those that are related to loan cost but not to covenants proved very difficult. Therefore, we relied only on statistical rather than on economically intuitive variables in our choice of instruments. We used the board variable, percentage of directors who failed to regularly attend board meetings, as our instrument for the covenant index, and board independence as the instrument for loan cost within the covenant index models. Each of these instruments was correlated with the instrumented variable, but not with the dependent variable.

more important than the shareholder protection mechanisms in determining loan costs. This result has important implications because other studies of corporate governance and loan costs and many of the bond studies consider only a GIM index or other shareholder protection measure as their sole governance variables.

For Model 3, Table 5 Wu-Hausman tests reveal that the null hypothesis of exogenous determination of loan cost is rejected at the 10% level. Further, we find no evidence that board quality affects the number of loan covenants that banks require. We do find some evidence that other, non-board governance characteristics affect the number of loan covenants. Specifically, a higher percentage of inside ownership and a lower probability of takeover (BCF index) are significantly and negatively (at the 5% level) related to the covenant index. We also find that longer previous relationships with the lead bank translate into fewer covenant requirements for the borrower. Additionally, loans that are larger or are lines of credit and those made to larger firms tend to have fewer covenant restrictions.

Taken together our findings suggest that board characteristics play an important role in determining the cost of borrowing for firms, but that non-board governance characteristics, loan-specific characteristics, and the previous borrower/bank relationship are important in determining the number of covenants that banks require.

C. Logit models for specific covenant types

Each of Tables 6 through 8 presents the results of logit models in which the existence or non-

existence of a particular loan covenant (as opposed to the number of covenants previously examined) is regressed upon board quality and other governance characteristics, borrower financial characteristics, and loan attribute control variables. In each table, the first model includes all variables of interest. The second model eliminates insignificant control variables, and the third model further eliminates insignificant governance variables. Following Bradley and Roberts (2004) and Demiroglu and James (2007) the dependent variables are the existence of more than two financial ratios (Table 6), the existence of asset, debt issue, and/or equity sweeps (Table 7), and the existence of one or more collateral requirements (Table 8). Overall, our results indicate a link between some board characteristics and covenant requirements, but these relations are quite covenant-specific. Additionally, those board characteristics that do prove to be important determinants of whether a loan has a particular covenant tend to be the board attributes that do not impact loan cost. Taken together, these results imply that the full range of board characteristics may be important in determining the total package "cost" (direct costs and restrictions) of the loan.

We recognize that modeling covenant requirements is complex since there are often scores of different types of covenants in bank loans and the potential effects of the covenants depend not only on their existence but also on the exact covenant requirement. For example, a financial ratio requirement is very important if the existing ratio is near the level required by the loan covenant, but may be of minor importance if it is not. While we select three sets of covenants that, *a priori*, appear to be very important and that have been used in prior studies, our interpretations of the empirical evidence in Tables 6-8 must be qualified by the inherent limitations in our ability to completely measure the covenant dimensions of credit.

Table 6 shows the results of each of three models for the financial ratio restriction covenants. Again, in these models the dependent variable is 1 if more than two ratio restrictions exist and equals zero otherwise. This table shows that borrowers are much less likely to have more than two financial ratios if their board is more independent (marginally significant), the board members serve on many other boards, and if there is diversity on the board. In other words, having a high quality board greatly reduces the chance of having financial ratio covenant restrictions. Ownership characteristics also are important in determining whether a loan has ratio restrictions. Borrowers are more likely to have more than two financial ratio covenants if they have greater inside ownership and greater institutional ownership.

Many of the control variables are also significantly related to the existence of more than two financial ratio covenants. Not surprisingly, larger firms, firms with higher market to book ratios, and investment grade firms are less likely to have more than two financial ratio covenants. Loans with longer maturities are more likely to have more financial ratio covenants as are loans extended under a line of credit. In contrast, firms with higher return on assets are more likely to have financial ratio covenants, perhaps because these firms achieve the higher profitability by taking more risk. This view is consistent with the positive relation between the standard deviation variable and financial ratio covenants. Neither the length of the lending relationship nor the strength of shareholder protection appears to influence the financial ratio covenants.

Table 7 suggests that board quality does not influence the existence of sweeps in the loan agreement. Thus, none of the board quality, ownership, or compensation variables is

consistently statistically significantly related to the existence of sweeps covenants. However, the BCF shareholder protection variable is statistically significant in two of the three models. This result suggests that the bank lenders add sweeps provisions to the covenants if it appears that there is some reasonable likelihood that the firm will be taken over. The control variables generally behave as expected. Specifically, sweeps are more likely if the borrower is smaller, has a high degree of leverage, and if the loan is a line of credit, is larger, or is of shorter maturity. Sweeps are less likely if the lender has a longer relationship with the borrower. We expect that lenders with longer relationships with borrowers would have more confidence in their borrowers and therefore would have less need to impose sweeps covenants in loan contracts.

Our final covenant requirement relates to the existence of collateral. Table 8 shows that loans are less likely to require collateral if the borrower has high board quality. Specifically, if a board is more diverse and more experienced, the borrower is less likely to have to put up collateral for the loan. Collateral is more likely for borrowers with large institutional ownership and with high executive compensation, but is less likely for borrowers who compensate their CEOs using a greater percentage of incentive-based pay. Collateral requirements are less important for firms with strong shareholder protection (or a low probability of a takeover) as proxied by the BCF index. Firms that are larger, have less leverage, are more profitable, and have longer lending relationships are less likely to have collateral requirements for their loans. Furthermore, collateral is more likely to be required for longer loans as well as for term loans.

Overall, our results provide important new evidence with respect to the characteristics of the firm and/or the loans that increase the likelihood of having covenants in bank loan

agreements. Firms with higher board quality are less likely to have more than two financial ratio requirements and to have collateral requirements, but board quality does not appear to impact whether or not sweeps covenants are included in loan agreements. Sweeps covenants are more likely to be present when the firm has a higher probability of being taken over. The likelihood of most of the loan covenants is affected by firm-specific and loan-specific characteristics in predictable ways. Of particular importance is our evidence regarding the importance of the length of the lending relationship between the borrower and the lead bank. Longer lending relationships appear to be important factors in reducing the chance of having onerous covenant requirements.

IV. Conclusions and Implications

We analyze the hypothesis that board quality is linked to the cost of debt capital. Our results from a large sample of bank loans to commercial borrowers suggest that the quality of borrowers' boards of directors is materially linked with both the price and covenant terms of their bank loans. We find that borrowers with more independent, more experienced boards, and those with members in advisory roles are able to borrow at lower interest rates, and those that also have greater board diversity are less likely to have financial ratio restrictions, even after adjusting for the influences of firm size and the financial characteristics of the borrower. Borrowers with non-insider directors who have expertise in similar industries and can provide advice to management also are able to obtain better credit terms. We also find that borrowers with more experienced board members and boards that are more diverse are less likely to require collateral. Board quality does not appear to impact whether bank loans contain sweeps

provisions, but sweeps are more likely for firms with a greater threat of takeover (poorer shareholder protection).

Ancillary findings indicate that firms with larger percentage ownership by institutional investors pay more for their bank loans, are more likely to have more than two financial ratio restrictions, and are more likely to be required to collateralize their loans. Firms subject to potential takeovers also pay more for their loans, have sweeps covenants, and are more likely to require collateral. While the length of the relationship between the borrower and the bank does not appear to influence the cost of the loan it does have an influence on which restrictive covenants are required in the loan contract.

Our results suggest that high board quality, thought to be beneficial for shareholders, is also good for creditors. These results have important implications for individual borrowers as well as for public policy. To the extent that our results may be generalized to firms not represented in the S&P 1500 and to other time periods, borrowers should be able to lower their direct costs of obtaining credit from their banks and also to reduce the covenant requirements in their loans by altering the composition and quality of their board of directors. From a broader, public policy perspective, our results are consistent with recent legislative initiatives and guidelines put in place by the exchanges and other groups that expand the importance of outside directors. For example, the New York Stock Exchange proposed in 2002 (and adopted in 2003) a requirement that all listed firms have a majority of independent directors and that these independent directors must have no material relationship with the firms. The NASDAQ adopted similar rules. Also, the Business Roundtable in 2002 adopted a set of Principles of Corporate

Governance that is very similar to those adopted by the exchanges. While our results suggest that this is clearly an improvement in terms of lowering the cost and decreasing the likelihood of some covenants requirements for bank credit, they also suggest that more explicit and comprehensive suggestions for boards including board member experience and diversity characteristics might lead to even further improvement.

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Table 1
Borrowing Firm Financial Characteristics

This table contains data for 1054 firm years of data for firms that obtained 1460 loans from commercial banks from 2003 through 2005. Firm accounting data are obtained from COMPUSTAT for the fiscal year-end prior to the lending agreement. *Market value of equity* is the fiscal year end stock price times the number of shares of common stock. *Leverage ratio* is total debt divided by total assets. *Quick ratio* is current assets minus inventory divided by current liabilities. *Times interest earned* is earnings before interest and taxes divided by interest expense. *Standard Deviation of Stock Returns* is the standard deviation of CRSP daily stock returns for each firm for the year prior to the lending agreement. The Compustat Universe excludes our sample firms.

Firm Financial Characteristics	N	Sample Mean	Sample Median	Compustat Universe
Total Assets (000s)	1053	8,033,710	2,744,200	146,880
Market Value of Equity (000s)	1053	9,236,030	2,945,020	97,000
Sales to Total Assets	1053	1.18	1.02	0.84
Return on Total Assets	1052	14.78%	13.76%	0.60%
Long-Term Debt to Total Assets (%)	1052	20.68%	20.13%	8.06%
Leverage Ratio (%)	1016	31.83%	29.82%	51.35%
Market to Book Ratio	1016	1.73	1.42	1.15
Tangible Assets to Total Assets (%)	1046	42.73%	40.27%	34.23%
Quick Ratio	999	1.31	1.09	1.41
Times Interest Earned	1018	34.07	10.33	3.53
Standard Deviation of Stock Returns	1053	3.81%	3.24%	3.56%

Table 2
Bank Loan Characteristics

This table provides information for loans originated for our sample firms from 2003 through 2005. Loan data are extracted from Dealscan. The all-in-spread drawn is the rate in basis points on the loan less the LIBOR rate. The covenants are given for firms with at least one covenant listed on Dealscan. Covenants include whether there are more than two financial ratio restrictions, the firm must use the proceeds from asset sales, debt issues, and/or equity issues to satisfy this loan obligation, and whether the loan requires security. The covenant index is the sum of the number of covenants in the previously listed five categories each loan has. Loans without at least one non-missing covenant value are excluded from the covenant statistics to avoid including loans with missing data rather than those that genuinely do not have a particular covenant. *Investment Grade* is a dummy variable with a value of one if the loan is rated Baa or higher, and zero if it is rated below Baa. We obtain from Dealscan the first year a loan to the firm was made by the lead arranger from this sample (to determine the length of the bank relationship), and we count the number of loans made to the firm by the lead arranger from the first year of their relationship.

Panel A – Loan Cost and Covenant Characteristics

	<u>N</u>	<u>Mean</u>	<u>Median</u>
All In Spread Drawn (basis points)	1460	113.63	87.50
Covenants (for firms with at least one covenant)			
Firms >2 ratio restrictions (%)	1189	23.04	n.a.
Firms with asset sales sweep (%)	1189	25.15	n.a.
Firms with debt issue sweep (%)	1189	20.27	n.a.
Firms with equity issue sweep (%)	1189	49.29	n.a.
Firms with secured loans (%)	1189	37.09	n.a.
Covenant Index (for firms with at least one covenant)	1189	1.74	1.00

Panel B – Loan Risk and Lending Relationship Characteristics

	<u>N</u>	<u>Mean</u>	<u>Median</u>
Months to Maturity	1460	44.37	60.00
Loan Amount (000,000 dollars)	1460	571	330
Percentage with Syndicated Loans (%)	1460	96.30%	n.a.
Number of Lenders	1460	12.53	10.00
Investment Grade (of loans with ratings)	271	47.60%	n.a.
Loans Without Ratings	1460	81.43%	n.a.
Relationship with Lead Bank (Years)	1456	5.34	4
Number of Loans from Lead Bank	1455	4.71	4
Established Lending Relationship (%)	1454	91.64%	n.a.

Table 3
Borrowing Firm Board Quality and Other Governance Characteristics

This table provides governance characteristics for 1054 firm years of data for firms that obtained 1460 loans from commercial banks from 2003 through 2005. Data are extracted from the Corporate Library, Execucomp, and IRRC for the year prior to the lending agreement. Board Quality measures includes board size, the percentage of directors with no direct ties to the firm such as employees (*Independent Directors*), the presence of at least one executive board member whose primary employer is in the same two-digit SIC code grouping as the borrower (*Advisory Director*), the percentage of board members with more than 15 years of service on the board, the percentage of board members with more than four other board appointments, the percentage of female board members (*Women Directors*), the percentage of directors with ownership, a dummy variable that is unity if no director has positive share ownership in the firm, and director compensation. With regard to other governance characteristics, we measure ownership concentration as the ownership of all officers and directors, of CEOs, and of institutional investors. CEO compensation variables include non-incentive based compensation (salary and bonus), the value of options granted, total compensation including the value of options granted, and the percentage of total compensation that is not salary and bonus. Measures of shareholder protection include the Gompers, Ishii, and Metrick (2003) Index, the Bebchuk, Cohen, and Ferrell (2004) Index, and whether the firm has a staggered board.

Board Quality	<u>N</u>	<u>Mean</u>	<u>Median</u>
Board Size (number of directors)	1054	9.85	10.00
Independent Directors (%)	1054	72.62%	75.00%
Advisory Director (1=advisory director on board)	1054	10.63%	n.a.
Directors with tenures > 15 years (%)	1054	14.80%	11.11%
Directors who serve on >4 boards (%)	1054	10.06%	7.69%
Women Directors (%)	1054	11.70%	11.11%
Directors with Zero Ownership (%)	1054	11.44%	6.90%
Directors with Zero Ownership dummy	1054	50.66%	n.a.
Director Base Pay (dollars)	1054	31,027	30,000
Other Governance Characteristics			
Officer & Director or Inside Ownership (%)	1033	14.06%	6.60%
CEO Ownership (%)	1023	0.41%	0.07%
Institutional Ownership (%)	1035	71.67%	74.30%
CEO Salary, bonus, and other (M dollars)	1037	1,990	1,527
CEO Options Granted Value (M dollars)	1034	3,108	0
CEO Total Compensation (dollars)	1019	6,066	4,085
CEO Incentive Pay/Total Compensation (%)	1019	53.38%	58.64%
Gompers, Ishii, Metrick GIM Index	1018	9.88	10.00
Bebchuk, Cohen, and Ferrell BCF Index	1018	2.45	3.00
Staggered Board	1018	63.85%	n.a.

Table 4
Ordinary Least Squares Regressions Results

This table presents results relating log of all-in-spread drawn to board quality, other governance characteristics, and firm and loan characteristics. The sample for the last column (labeled Model 3[†]) only includes loans for firms without loans (found in Dealscan) for the preceding two years. Loan data are extracted from Dealscan for firms obtaining loans from 2003-2005 that have governance data available from The Corporate Library, IRRC, and/or Execucomp for the year prior to the loan. Board Quality includes board size, the percentage of directors with no direct ties to the firm such as employees (*Independent Directors*), the presence of at least one executive board member whose primary employer is in the same two-digit SIC code grouping as the borrower (*Advisory Director*), the percentage of board members with more than 15 years of service, the percentage of board members with more than four other board appointments, the percentage of female board members (*Women Directors*), the percentage of directors with ownership positions, and director compensation. Other governance control variables include ownership by CEOs and by institutional investors, and CEO total cash and percentage options-based compensation, and the Bebchuk, Cohen, and Ferrell (2004) index as a measure of takeover vulnerability. Accounting variables are obtained from. All models contain year- and industry-dummies. Statistical significance is indicated as *** for 1%, ** for 5%, and * for 10%.

	All-in-Drawn Spread			
	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>	<u>Model 3[†]</u>
Intercept	6.3075***	6.3590***	6.2360***	6.6518***
<u>Board Quality Variables</u>				
Board Size (log)	-0.1531**	-0.1542**	-0.1741***	-0.1955*
Independent Directors	-0.0034***	-0.0033***	-0.0034***	-0.0006
Advisory Director	-0.1095**	-0.1084**	-0.1060**	-0.1189*
Directors with tenures > 15 years	-0.0020***	-0.0020**	-0.0021**	-0.0028**
Directors with > 4 other Boards	-0.0014	-0.0014		
Women Directors	-0.0002	-0.0003		
Directors with Zero Ownership (%)	-0.0004	-0.0111		
Director Base Pay (log)	0.0007	0.0005		
<u>Other Governance Control Variables</u>				
Office and Director Ownership	-0.0624	-0.0526		
Institutional Ownership	0.6099***	0.6225***	0.6384***	0.3551**
Total Non-option Pay (log)	-0.0060	-0.0104		
Options Granted/Total Compensation	-0.1208**	-0.1243**	-0.1196**	-0.2281***
Bebchuk, Cohen, Ferrell Index	-0.0335***	-0.0349***	-0.0359***	-0.0449**
<u>Control Variables</u>				
Total Assets (log)	-0.2708***	-0.2900***	-0.2973***	0.2413***
Leverage Ratio	2.0790***	2.0609***	2.1314***	2.1270***
Standard Deviation of Stock Returns	0.2644***	0.2628***	0.2429***	0.2057
ROA	-1.0315***	-1.0999***	-1.1281***	-0.5611
Market to Book	-0.0363	-0.0341	-0.0125	-0.0443
Investment Grade Dummy (yes=1)	0.0337			
Line of Credit Dummy (LOC=0)	0.3155***	0.3240***	0.3141***	0.2230***
Years Lending Relationship (log)	-0.0039			
Loan Size (log)	-0.0319*			
Maturity (log)	0.0937***	0.0865***	0.0907***	-0.0383
F-Value	46.86***	49.62***	55.75***	19.79***
Adjusted R ²	0.7151	0.7172	0.7169	0.6991
N	1262	1262	1298	462

Table 5
Second stage of 2SLS Analysis of the cost (log of all-in-spread drawn) and covenant restrictions (covenant index of bank loans)

The table presents the second stage of a two-stage least squares model (model 1) where the board quality index is calculated by assigning point values to the individual board quality characteristics in previously presented models, and using an instrumental variables approach to control for the potentially endogenous relations between board quality and loan costs. This table also presents the second stage results of a 2SLS analysis relating log of all-in-spread drawn (model 2) and covenant index (model 3) simultaneously to board quality, other governance characteristics, and firm and loan characteristics. Loan data are extracted from Dealscan for firms obtaining loans from 2003-2005 that have governance data available from The Corporate Library, Execucomp, and/or IRRC. Board Quality includes board size, the percentage of directors with no direct ties to the firm such as employees (*independent directors*), the presence of at least one executive board member whose primary employer is in the same two-digit SIC code grouping as the borrower (*Advisory Director*) the percentage of board members with more than 15 years of service, the percentage of board members with more than four other board appointments, the percentage of female board members (*Women Directors*), the percentage of directors with ownership positions, and director compensation. Other governance control variables include ownership by CEOs and by institutional investors, and CEO total non-option based compensation, the percentage of CEO total compensation that is options based, and the Bebchuk, Cohen, and Ferrell (2004) index as a measure of takeover vulnerability. Accounting variables are obtained from COMPUSTAT for the fiscal year-end for each firm prior to the lending agreement. All models contain year- and industry-dummies. Statistical significance is indicated as *** for 1%, ** for 5%, and * for 10%.

Table 5 continued on next page

Table 5, continued

Dependent Variable	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>
	LAISD	LAISD	COVIND
Intercept	4.0616***	6.6667***	1.9240
All-in-Drawn Spread			0.1447
Board Quality Index	-0.9449***		
Covenant Index		-0.0865	
Board Structure			
Board Size (log)		-0.2688**	0.0062
Independent		-0.0041***	
Advisory Director		-0.1272**	-0.0950
Directors with tenures > 15 years		-0.0028**	-0.0010
Directors with > 4 other Boards			-0.0058
Women Directors			-0.0064
Directors with Zero Ownership (%)			0.3516
Director Base Pay (log)			-0.0073
Other Governance Control Variables			
Office and Director Ownership	-0.1972		-0.6567**
Institutional Ownership	0.01744	0.6092***	0.1872
Total Non-option Pay (log)	0.1301		0.1181
Options Granted/Total Compensation	-0.0424	-0.1546**	-0.1390
Bebchuck, Cohen, Ferrell Index	0.1089*		-0.0950**
Control Variables			
Total Assets (log)	0.0435	-0.3237***	-0.4217*
Leverage Ratio	2.3672***	2.4462***	1.2202
Standard Deviation of Stock Returns	0.1286	0.3340***	0.0226
ROA	-2.5606**	-1.36504***	-1.7279
Market to Book	0.0845		0.0375
Investment Grade Dummy (yes=1)	0.0624		-0.1945
Line of Credit Dummy (LOC=0)	0.0997		0.7935***
Years Lending Relationship (log)	-0.0128		-0.0851***
Loan Size (log)	-0.0544		0.2469***
Maturity (log)	0.0861*	0.1269**	0.0365
F-Value	7.82***	42.10***	16.29***
N	1223	1347	1262

Table 6
Logit Model Results for Ratio Restriction Covenants

This table presents results of logit models relating whether firms' loans have two or more ratio covenant restrictions to board quality, other governance control variables, firm characteristics, and loan terms. Loan data are extracted from Dealscan for firms obtaining loans from 2003-2005 that have governance data available from The Corporate Library, Execucomp, and/or IRRC. Board Quality includes board size, the percentage of directors with no direct ties to the firm such as employees (*Independent Directors*), the presence of at least one executive board member whose primary employer is in the same two-digit SIC code grouping as the borrower (*Advisory Director*), the percentage of board members with more than 15 years of service, the percentage of board members with more than four other board appointments, the percentage of female board members (*Women Directors*), the percentage of directors with ownership positions, and director compensation. Other governance control variables include ownership by CEOs and by institutional investors, and CEO total non-option based compensation, the percentage of CEO total compensation that is options based, and the Bebchuk, Cohen, and Ferrell (2004) index as a measure of takeover vulnerability. Accounting variables are obtained from COMPUSTAT for the fiscal year-end for each firm prior to the lending agreement. All models contain year- and industry-dummies. Statistical significance is indicated as *** for 1%, ** for 5%, and * for 10%.

	Ratio Restriction (>2 ratios)		
	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>
Intercept	-2.7877	-2.3314	-0.5875
<u>Board Quality Variables</u>			
Board Size (log)	-0.8275	-0.8188	
Independent Directors	-0.0131*	-0.0132*	-0.0136**
Advisory Director	-0.1510	-0.1621	
Directors with tenures > 15 years	0.0063	0.0056	
Directors with > 4 other Boards	-0.0295***	-0.0296***	-0.0288***
Women Directors	-0.0613***	-0.0639***	-0.0678***
Directors with Zero Ownership (%)	0.8597	0.7832	
Director Base Pay (log)	-0.0155	-0.0099	
<u>Other Governance Control Variables</u>			
Office and Director Ownership	1.4875*	1.4876*	1.2842*
Institutional Ownership	1.4283*	1.2960*	1.1814*
Total Non-option Pay (log)	0.1810	0.2000	
Options Granted/Total Compensation	0.4528	0.4581	
Bebchuk, Cohen, Ferrell Index	0.0975	0.0883	
<u>Control Variables</u>			
Total Assets (log)	-0.3171*	-0.2645**	-0.2365***
Leverage Ratio	0.9142		
Standard Deviation of Stock Returns	0.2898		
ROA	3.7372*	3.3215*	3.1303**
Market to Book	-0.3912**	-0.4623***	-0.3859**
Investment Grade Dummy (yes=1)	-1.1843**	-1.1756**	-1.1026**
Line of Credit Dummy (LOC=0)	0.5888**	0.6079***	0.5107**
Years Lending Relationship (log)	-0.0016		
Loan Size (log)	0.0786		
Maturity (log)	0.4767**	0.5454***	0.4693**
N	1022	1027	1118

Table 7
Logit Model Results for Sweep Covenants

This table presents results of logit models relating whether loans have sweep covenants to governance and firm characteristics and loan terms. Loan data are extracted from Dealscan for firms obtaining loans from 2003-2005 that have governance data available from The Corporate Library, Execucomp, and/or IRRC. Board Quality includes board size, the percentage of directors with no direct ties to the firm such as employees (independent directors), the presence of at least one executive board member whose primary employer is in the same two-digit SIC code grouping as the borrower (*Advisory Director*), the percentage of board members with more than 15 years of service, the percentage of board members with more than four other board appointments, the percentage of female board members (*Women Directors*), the percentage of directors with ownership positions, and director compensation. Other governance control variables include ownership by CEOs and by institutional investors, and CEO total non-option based compensation, the percentage of CEO total compensation that is options based, and the Bebchuk, Cohen, and Ferrell (2004) index as a measure of takeover vulnerability. Accounting variables are obtained from COMPUSTAT for the fiscal year-end for each firm prior to the lending agreement. All models contain year- and industry-dummies. Statistical significance is indicated as *** for 1%, ** for 5%, and * for 10%.

	Asset Sales, Debt Issue, or Equity Issue Sweeps		
	Model 1	Model 2	Model 3
Intercept	27.8062	27.1910	29.1093
<u>Board Quality Variables</u>			
Board Size (log)	-0.2281	-0.2820	
Independent Directors	0.0077	0.0073	
Advisory Director	-0.1870	-0.1110	
Directors with tenures > 15 years	-0.0012	-0.0015	
Directors with > 4 other Boards	-0.0056	-0.0062	
Women Directors	0.0159	0.0132	
Directors with Zero Ownership (%)	-0.4620	-0.4612	
Director Base Pay (log)	0.0434	0.0417	
<u>Other Governance Control Variables</u>			
Office and Director Ownership	-2.7569*	-2.5067*	-1.7027
Institutional Ownership	-0.2085	-0.1784	
Total Non-option Pay (log)	0.3893	0.4077	
Options Granted/Total Compensation	0.1369	0.1594	
Bebchuk, Cohen, Ferrell Index	-0.3318***	-0.3287***	-0.1397
<u>Control Variables</u>			
Total Assets (log)	-1.2741***	-1.2300***	-0.9571***
Leverage Ratio	4.5759***	4.5416***	5.5248***
Standard Deviation of Stock Returns	1.569		
ROA	-7.2444**	-7.0489***	-0.1952
Market to Book	-0.0064		
Investment Grade Dummy (yes=1)	0.6303		
Line of Credit Dummy (LOC=0)	2.2308***	2.1921***	2.0779***
Years Lending Relationship (log)	-0.5849***	-0.5835***	-0.5038***
Loan Size (log)	0.5908***	0.5930***	0.5191***
Maturity (log)	-0.7801***	-0.7627***	-0.6546***
N	1022	1023	1076

Table 8
Logit Model Results for Collateral Requirements

This table presents results relating collateral requirements to governance and firm characteristics and loan terms. Loan data are extracted from Dealscan for firms obtaining loans from 2003-2005 that have governance data available from The Corporate Library, Execucomp, and/or IRRC. Board Quality includes board size, the percentage of directors with no direct ties to the firm such as employees (*independent directors*), the presence of at least one executive board member whose primary employer is in the same two-digit SIC code grouping as the borrower (*Advisory Director*), the percentage of board members with more than 15 years of service, the percentage of board members with more than four other board appointments, the percentage of female board members (*Women Directors*), the percentage of directors with ownership positions, and director compensation. Other governance control variables include ownership by CEOs and by institutional investors, and CEO total non-option based compensation, the percentage of CEO total compensation that is options based, and the Bebchuk, Cohen, and Ferrell (2004) index as a measure of takeover vulnerability. Accounting variables are obtained from COMPUSTAT for the fiscal year-end for each firm prior to the lending agreement. All models contain year- and industry-dummies. Statistical significance is indicated as *** for 1%, ** for 5%, and * for 10%.

	Security Requirement		
	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>
Intercept	-3.6632	-2.1485	-1.7227
<u>Board Quality Variables</u>			
Board Size (log)	-0.1463	-0.1811	
Independent Directors	-0.0026	0.0012	
Advisory Director	-0.2491	-0.3126	
Directors with tenures > 15 years	-0.0136**	-0.0138**	-0.0107*
Directors with > 4 other Boards	-0.0137	-0.0125	
Women Directors	-0.0500***	-0.0487***	-0.0470***
Directors with Zero Ownership (%)	0.4437	0.4817	
Director Base Pay (log)	-0.0332	-0.0285	
<u>Ownership</u>			
Office and Director Ownership	-0.0832	0.0711	
Institutional Ownership	1.4465*	1.3733*	1.4170**
Total Non-option Pay (log)	0.4136**	0.3630*	0.3045
Options Granted/Total Compensation	-0.7492*	-0.7795**	-0.7067*
Bebchuk, Cohen, Ferrell Index	-0.1805**	-0.1968***	-0.2233***
<u>Control Variables</u>			
Total Assets (log)	-0.6152***	-0.8036***	-0.8413***
Leverage Ratio	4.7716***	4.7626***	4.3330***
Standard Deviation of Stock Returns	0.9070		
ROA	-8.3527***	-8.7953***	-8.7570***
Market to Book	0.0123		
Investment Grade Dummy (yes=1)	-0.6505		
Line of Credit Dummy (LOC=0)	0.9879***	1.0176***	1.0934***
Years Lending Relationship (log)	-0.1125***	-0.1065***	-0.0984***
Loan Size (log)	-0.2411		
Maturity (log)	0.9383***	0.8508***	0.8713***
N	1022	1023	1054