Do Loans Carry a Control Spread? Evidence from the Allocation of Control Rights Across Creditors*

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ABSTRACT

This study investigates the influence of creditor control rights on the pricing of corporate loans. Using a novel hand-collected dataset, we differentiate between individual creditors who receive and do not receive control rights after a covenant violation. This differentiation allows us to isolate the influence of shifts in control rights on loan pricing from that of other factors related to covenant violations. We find that creditors exploit control rights to overprice new loans and that this pricing friction in the loan market is of first-order importance in explaining the variation in loan prices and the loan premium puzzle.

Keywords: Loan Pricing, Creditor Governance, Creditor Control Spread.

JEL Classification Numbers: G12, G21, G34.

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1. Introduction

Loans are by far the largest source of financing for corporations in OECD countries (e.g., Gorton and Winton, 2003). Control rights in the loan market frequently shift to creditors in various situations such as covenant violations, debt restructuring, renegotiations, or debt rollover (Chava and Roberts, 2008; He and Xiong, 2012; Roberts, 2015; Gao, Jiang, and Jin, 2023). It is widely acknowledged that creditors use these shifts in control rights to intervene in corporate decisions such as investment, financing, or employment (e.g., Nini, Smith, and Sufi (2012); Roberts (2015); Falato and Liang (2016); Ferreira, Ferreira, and Mariano (2018)). Despite the recent surge in attention paid to this creditor governance channel, little is known about the impact of shifts in control rights on loan pricing. This knowledge gap is surprising because creditors' primary motive for exercising their control rights is to protect or increase the value of their loans. Closing the gap is important because we still have an incomplete understanding of loan pricing (Schwert, 2020) and pricing frictions in the loan market have significant transmission effects on the real economy (e.g., Gan, 2007; Chodorow-Reich, 2014).

This study analyses the effects of shifts in creditor control rights on corporate loan pricing. The main identification challenge is that corporate events, which are commonly used to identify shifts in control rights, usually also affect alternative, potentially unobservable loan-pricing factors. For example, covenant violations not only shift control rights to creditors but also affect borrowers' credit quality, financial constraint, pricing grids, and reputation (e.g., Beneish and Press (1993); Chen and Wei (1993); Chava and Roberts (2008); Nini, Smith, and Sufi (2009); Roberts and Sufi (2009b); Freudenberg, Imbierowicz, Saunders, and Steffen (2017)). To overcome this challenge, we use a novel, hand-collected covenant violation dataset. These data allow us to differentiate between individual creditors who receive and do not receive control rights after a covenant violation, even within the same firm. By comparing the loan pricing of these two creditor types, we isolate the impact of control rights on loan pricing from that of other factors related to covenant violations.

Our analyses yield three primary results. First, shifts in control rights at the individual creditor level are important drivers of observed loan prices. In addition, they are crucial to understand the loan price increase after covenant violations. Second, shifts in control rights cause loan overpricing frictions, which is key to explaining the loan premium puzzle (see e.g., Schwert (2020)). Third, variables associated with the bargaining between borrowers and creditors around covenant violations influence loan prices. Overall, while shifts in control rights mitigate agency conflicts and information problems (e.g., Chava and Roberts, 2008), we highlight that these shifts also create pricing frictions in the loan market. Our results imply that control

rights are a key channel through which creditors extract rents from borrowing firms and that this channel is of first-order importance in explaining the variation in loan prices.

To construct our dataset we combine information on borrowers, creditors, and loan contracts. We then match this information with hand-collected covenant violations data. Using covenant violations to investigate creditors' impact on corporations is standard in the creditor governance literature (Roberts and Sufi, 2009a; Nini et al., 2012; Becher, Griffin, and Nini, 2022). Covenants appear in almost all loan contracts and usually define a set of minimum or maximum financial thresholds that the borrower should not breach, or describe a set of actions that the borrower must take. Creditors have the right to accelerate loan repayments if the borrower violates a covenant and does not cure the violation. Thus, a violation shifts the control rights to creditors, providing them with a strong hand to influence borrowers.

The novel aspect of our dataset is that we identify the individual creditor counterparty for each covenant violation.[1] To this end, we link all outstanding loans of borrowers who violate a covenant to the SEC filings of the corresponding covenant violation. This link allows us to differentiate between the two distinct creditor types after each covenant violation. The first (creditor Type I) is a creditor counterparty to a specific loan that has the covenant violated. This creditor receives direct control rights because the borrower needs to cure the violation to avoid a technical default by renegotiating the violated loan with the Type I creditor. The second (creditor Type II) is a creditor to a borrower who recently violated a covenant; however, this violation occurred with a loan from a different creditor. As Type II creditors lack the legal right to renege on their loans in the absence of a covenant violation, missed payment, or other breach of their loan contract (see, e.g., Chodorow-Reich and Falato, 2022), they do not receive direct control rights after a covenant violation. Type II creditors are only involved in rare cases, in which the borrower fails to cure a violation with a Type I creditor (Beneish and Press, 1993; Denis and Wang, 2014). We exploit our information about creditor types in a standard quasi-regression discontinuity design (QRDD), a sub-sample comparison of borrowers in covenant violations that receive new loans from Type I and/or Type II creditors, and a Regression Discontinuity Design (RDD). The key advantage of differentiating between Type I and Type II creditors is that Type II creditors provide a suitable counterfactual to control for the influence of covenant violations on loan prices. Thus, comparing loans from Type I and Type II creditors allows us to isolate the impact of a shift in control rights on loan pricing from that of other factors related to covenant violations.

The first result is that shifts in control rights increase the loan spreads of new loans. On average, a Type I creditor places new loans at a loan spread that is approximately 53 basis

[1] Chodorow-Reich and Falato (2022) collect this counterparty information for a subset of covenant violations during the 2008–2009 financial crisis.

points (bps) larger than the loan spread from a Type II creditor. The intuition behind this result is that borrowers accept pricing concessions for new loans during renegotiations with a Type I creditor to improve the creditor's willingness to cure the violation. Curing the violation is of the utmost importance for the borrower because failure to cure leads to a technical default with serious economic consequences (e.g., Beneish and Press, 1993; Chava and Roberts, 2008). The magnitude of this control spread is economically important, suggesting that shifts in control rights increase loan prices by 20% of the average loan spread. This effect is approximately nine times larger than the effect of a one standard deviation increase in leverage on loan prices, which is a prominent credit risk variable (e.g., Merton, 1974; Leland, 1994). Additionally, the control spread of corporate loans around covenant violations is much larger than the control spread of 15 bps reflected in public bonds (Feldhütter, Hotchkiss, and Karakaş, 2016). This finding is intuitive because corporate loan creditors can directly influence firms when they receive control rights, whereas public bondholders find it difficult to influence firms due to coordination and free-rider problems (Rajan, 1992; Krishnaswami and Subramaniam, 1999).[2] Overall, our analyses imply that capturing shifts in control rights among individual creditors is crucial to explaining the variation in observed loan prices.

We also show that loan spreads do not increase after a covenant violation for creditors who lack control rights (Type II creditors). This evidence contributes to the discussion of the potential reasons for loan price increase after covenant violations, such as deteriorating credit quality, pricing grids, reduced managerial flexibility, restrictions on corporate behavior, and adverse effects on borrower reputation (e.g., Beneish and Press (1993); Chen and Wei (1993); Chava and Roberts (2008); Nini et al. (2009); Roberts and Sufi (2009b); Freudenberg et al. (2017)). Specifically, the result suggests that shifts in control rights are a key reason for this loan price increase. Further, we find that creditors abstain from using shifts in control rights to tighten non-price loan terms such as maturity, amount, number of covenants, or collateral.

The second result concerns the loan premium puzzle. While the literature agrees that banks earn a substantial loan spread in excess of the market price of credit risk, extant studies call for explanations of this loan premium puzzle (e.g., Schwert, 2020). We replicate the approach suggested by Schwert (2020) to measure loan premiums in a structural credit risk model. We then analyse whether shifts in control rights contribute to the loan premium puzzle. We show that our first finding that Type I creditors charge higher loan spreads than Type II creditors is driven by the loan overpricing of Type I creditors as opposed to loan underpricing by Type II creditors. Additionally, shifts in control rights comprise, on average, 66% of the loan premium in the years around covenant violations. Moreover, the difference between the average loan

[2] Feldhütter et al. (2016) argue that public bonds nevertheless reflect a control spread because bondholders may indirectly benefit from the corporate loan holders' ability to influence firms.

premium of Type I and Type II creditors peaks in the quarters around the shifts in control rights to Type I creditors. Our results suggest that creditors exploit borrowers by extracting rent when they receive control rights and that this market friction is a key factor in explaining the loan premium puzzle. This insight has several important implications. Specifically, the existence of the loan premium highlighted in the literature does not call per se for intervention measures because loans offer benefits to borrowers such as borrowing flexibility or a positive signal from banks' willingness to lend funds (Rajan, 1992; Schwert, 2020), which may rationalize borrowers' willingness to pay higher bank loan spreads (compared to bond spreads). However, our finding that loan overpricing frictions are a key driver of loan premiums calls for policy discussions to mitigate loan overpricing. Discussing such measures is important not only for protecting borrowers from rent extraction in the loan market, but also because loan market frictions have important transmission effects on the real economy (e.g., Gan, 2007; Chodorow-Reich, 2014). Overall, while the benefit of shifts in control rights is to mitigate agency conflicts and information problems (e.g., Chava and Roberts, 2008), we highlight that these shifts also create a cost, namely pricing frictions in the loan market.

The third result highlights the cross-sectional patterns of creditor control spreads. We find that variables associated with bargaining between borrowers and creditors during covenant renegotiations are important determinants of the control spread. For example, shifts in control rights have a stronger effect on loan spreads for borrowers with weaker bargaining positions. By contrast, proxies that characterize information asymmetry or the borrower-creditor relationship do not explain the control spread. These results further support legal hold-up during covenant renegotiations as a key channel for loan overpricing.

We conduct additional analyses to rule out alternative explanations for the main results. First, some borrowers may self-select Type I or II creditors after a covenant violation for reasons correlated with loan spreads. We estimate a switching regression model in the spirit of Fang (2005) to control for the potential endogenous selection between Type I and Type II creditors. Second, the relationship banking literature argues that borrowers switching from a relationship creditor to a new creditor tend to receive lower loan spreads (e.g., Sharpe, 1990; Ioannidou and Ongena, 2010). To ensure that switching during the covenant renegotiation process does not affect our results, we exclude all switching loans from our estimation. Third, we conduct additional robustness checks for the main results. Specifically, we incorporate an alternative loan pricing measure, consider a smaller time window around covenant violations, restrict our tests to new covenant violations, incorporate borrower times quarter fixed effects, and consider additional covenant controls. Finally, we apply a RDD in the spirit of Ferreira et al. (2018), in which we explicitly consider the distance to the covenant threshold information. The results are robust to these additional estimations.

Our study contributes to several streams of literature. First, the loan pricing literature shows that loan and lender characteristics are important in explaining variations in loan pricing, but concludes that loan pricing is subject to significant inefficiencies and pricing errors (Schenone, 2010; Drucker and Puri, 2005; DeYoung and Phillips, 2009; Santos, 2011; Hale and Santos, 2009; Ivashina, Nair, Saunders, Massoud, and Stover, 2009; Dougal, Engelberg, Parsons, and Van Wesep, 2015; Gustafson, 2018; Botsch and Vanasco, 2019; Murfin and Pratt, 2019). Several studies examine the influence of creditor rights in bankruptcy on loan markets (e.g. Djankov, McLiesh, and Shleifer, 2007; Qian and Strahan, 2007; Houston, Lin, Lin, and Ma, 2010). Three studies are closely related to our analysis. Schwert (2020) finds that bank loans have higher spreads than implied by the market price of credit risk. He calls for further research to identify the reasons for this loan premium puzzle. Freudenberg et al. (2017) investigate the consequences of firm misbehavior and find that prior covenant violations are a signal of bad borrower quality, which induces lenders to act as tough principals in subsequent loans. Our empirical setting allows us to net out the impact of such stigma effects of covenant violations on loan pricing and, hence, isolate the influence of creditor control rights on loan spreads. Feldhütter et al. (2016) find that bond prices reflect creditor rights. We contribute to this literature by showing that shifts in control rights at the individual creditor level are an important driver of variations in loan prices and the loan premium puzzle.

Second, the fast-evolving empirical literature challenges the traditional view of creditor governance, which assumes that creditors remain silent on corporate decision-making outside bankruptcy. This literature highlights a novel view of creditor governance by showing that the transfer of control rights around covenant violations enables creditors to intervene frequently in firm decisions, even outside firm distress or bankruptcy. These shifts in control rights ensure fair returns on creditors' claims by mitigating agency conflicts and information problems (e.g. Chava and Roberts, 2008). Creditors use the transfer in control rights to influence a wide range of firm policies such as capital expenditures, CEO turnover, employment, board composition, financial policies, firm disclosures, and M&A activity (e.g., Chava and Roberts (2008); Nini et al. (2012); Vashishtha (2014); Falato and Liang (2016); Ferreira et al. (2018); Becher et al. (2022); Chodorow-Reich and Falato (2022)). Recent developments in this field include the emergence of covenant-lite loans with weaker covenant enforcement (Becker and Ivashina, 2016). Berlin, Nini, and Yu (2020), however, find that usually only one loan tranche in a loan package is covenant-lite, such that a creditor can still exert control through another loan tranche of the same package that features traditional covenant protection. Bird, Karolyi, and Ruchti (2019) estimate loans' control discount that creditors would accept in a competitive loan market for the right to influence firms. Our study contributes to the literature by showing that transfers of creditor control rights introduce pricing frictions in the loan market. Thus, our results raise questions regarding loan market competition during legal hold-ups.

Third, the literature describes numerous relationship banking advantages for borrowers, such as lengthening the firm's planning horizon, easier access to external funding, more flexibility to overcome financial difficulties, improved screening and monitoring, and the prevention of confidential information leakage (e.g., Campbell (1979); Diamond (1991); Chemmanur and Fulghieri (1994); von Thadden (1995); Bhattacharya and Chiesa (1995)). However, several studies show that relationship banking may harm borrowers. Specifically, banks can use their informational advantage to extract rent from their borrowers (e.g., Sharpe (1990); von Thadden (2004); Degryse and Ongena (2005); Schenone (2010); Ioannidou and Ongena (2010)). We contribute to the literature by identifying legal hold-ups in the covenant renegotiation process as a key channel for rent extraction in relationship banking.

The remainder of this study is organized as follows. Section 2 discusses the relation between creditor control rights and loan pricing. Section 3 describes the underlying data, sample selection procedure, and variable construction. Section 4 describes the empirical design of this study. Summary statistics and the main results are presented in Sections 5 and 6, respectively. Section 7 shows the robustness tests. Finally, Section 8 concludes the study.

2. The link between shifts in control rights and loan pricing

The link between shifts in creditor control rights and loan pricing is motivated by studies of the impact of covenant violations on firms (Chava and Roberts, 2008; Nini et al., 2012; Falato and Liang, 2016; Ferreira et al., 2018; Becher et al., 2022; Chodorow-Reich and Falato, 2022). The literature shows that creditors use the control rights they receive upon a covenant violation for a wide range of actions, such as influencing corporate investment, financing, employment, board composition, and M&A decisions. Creditors' primary motive for such interventions is to protect or increase the value of their debt claims. Thus, it is plausible that creditors use their control rights to promote the value of their claims directly by influencing loan pricing, as opposed to changing corporate policies only indirectly. We now discuss this argument in detail.

Covenants are ubiquitous in corporate loans, which are by far the largest source of corporate financing in OECD countries (Gorton and Winton, 2003; Bradley and Roberts, 2015). Covenant violations are common, because covenants are usually tightly set at loan origination (Dichev and Skinner, 2002). Specifically, approximately one-quarter to one-third of publicly listed U.S. firms violate financial covenants during a typical sample horizon (Roberts and Sufi, 2009a; Dichev and Skinner, 2002). In addition, these violations often occur outside of financial distress (Chava and Roberts, 2008; Denis and Wang, 2014). Therefore, shifts in control rights during

covenant violations are relevant for many firms in the economy and are not limited to firms facing unique financial circumstances.

To understand how, when, and which creditors receive control rights around covenant violations, we discuss the covenant violation process in detail. Figure 1 illustrates the typical timeline of a covenant violation and the corresponding renegotiation process. The solid and dashed lines indicate high and moderate debt renegotiation tendencies, respectively. Some borrowers already discuss an anticipated covenant violation with the creditor of the loan before the violation occurs (Denis and Wang, 2014). In Figure 1 we reflect this possibility by using the dashed line for creditor Type I before the violation. Once a covenant violation occurs, debt agreements require the borrower to immediately inform the creditor of the loan (Type I creditor) related to the covenant violation event. A covenant violation does not imply immediate "technical default" as loan contracts usually grant a grace period, during which the borrower can cure the breach by renegotiating loan term modifications or a covenant waiver with the Type I creditor (Beneish and Press, 1993; Denis and Wang, 2014; Chodorow-Reich and Falato, 2022).[3] More than 75% of all covenant violations lead to such a renegotiation (Roberts, 2015). The solid line for Type I creditors in Figure 1 reflects renegotiations after a covenant violation.

[Insert Figure 1 here.]

Curing a covenant breach during a grace period by renegotiating with Type I creditors is often crucial for borrowers. Failure to cure the violation leads to technical default, which has serious economic consequences for the borrowing firm because it gives the Type I creditor the right to immediately accelerate outstanding debt amounts, triggers cross-default clauses for the borrower's bonds or loans with other creditors, and imposes various costs on the borrower (Beneish and Press, 1993, 1995; Chava and Roberts, 2008; Nini et al., 2009; Li et al., 2015).[4] However, covenant renegotiations tend to be successful. Specifically, most renegoti-

[3]To illustrate how the grace period works in practice we refer the reader to the loan contract of Lifetime Brands, Inc (the borrower) available at the following Link (accessed December 14^{th}, 2022) and also used as a loan contract example in Chodorow-Reich and Falato (2022). In particular, Section 8.01 (e) of the Lifetime Brands credit agreement explicitly states that in the event of a covenant violation the borrower has a grace period of 30 days, after which a default event occurs if the covenant violation is unremedied. In general, the length of the grace period depends on individual agreements in the debt contract. The average grace period for a covenant violation clause is 71 days for bonds and six days for loans (Li, Lou, and Vasvari, 2015). Waiver agreements can define longer grace periods (e.g., Grant Thornton, 2018).

[4]Calling private debt to avoid technical default is costly or restricted because of call penalties, deferral periods, call premiums, search costs, rollover losses, issue costs of new debt, and restructuring costs (e.g., Fischer, Heinkel, and Zechner, 1989; Morellec, Valta, and Zhdanov, 2015; He and Xiong, 2012; Schwert, 2020). For example, Fischer et al. (1989) assume that the recapitalization cost upon calling outstanding debt is between one and ten percent of the called debt amount. Berg, Saunders, and Steffen (2016) show that the upfront fee alone, paid by borrowers to lenders at loan initiation, is 50 bps for credit lines and 80 bps for term loans. This fee is due to the replacement of a loan with a new loan. Debt contracts also define additional fees such as cancellation fees for

ations do not lead to a technical default, loan acceleration, or bankruptcy (Beneish and Press, 1993; Gopalakrishnan and Parkash, 1995; Chen and Wei, 1993; Denis and Wang, 2014). In fact, Chava, Fang, Kumar, and Prabhat (2019a) show that approximately 63% of the firms that violate a covenant receive a covenant waiver.

In contrast to a Type I creditor, a Type II creditor cannot renege on her loan as long as there are no covenant violations, missed payments, or other breaches of the Type II creditor's loan contract (e.g., Chodorow-Reich and Falato, 2022). In rare cases where a covenant violation of the Type I creditor's contract leads to a technical default, the cross-default clause can force the borrower to also renegotiate with Type II creditors whose covenants were initially not violated. This possibility is reflected in the dashed line for Type II creditors in Figure 1.

The timeline shown in Figure 1 has two primary implications. First, the Type I creditor, that is, the creditor of the loan related to a covenant violation, has strong control rights to influence the borrower in the renegotiation process around the covenant violation. Specifically, borrowers are likely to accept concessions to Type I creditors because a failure to cure the violation could lead to a technical default with serious economic consequences for the borrower. We label the borrower's need to cure the violation as "legal hold-up" by a Type I creditor. Second, in contrast to Type I creditors, Type II creditors usually do not receive direct control rights at covenant violations. They only receive control rights in rare cases, in which a technical default occurs and a cross-default clause is triggered.[5] Thus, Figure 1 shows that different creditors of the same borrower receive different levels of control rights around a covenant violations.

We examine whether Type I creditors exploit the temporary increase in their control rights after a covenant violation by overpricing new loans. Specifically, the borrower needs to cure a covenant violation with a Type I creditor because technical default (or calling a loan to avoid technical default) is costly. This legal hold-up may allow the Type I creditor to extract concessions from the borrower by overpricing the new loan, and hence avoiding credit market competition. In contrast, we expect lower loan rates from Type II creditors than from Type I creditors because they lack a legal hold-up position when granting new loans.

One objection to our narrative is that the borrower can take out a new loan from an alternative creditor if the loan from the Type I creditor is relatively overpriced. The literature, however, shows that creditors influence a wide range of firm policies when they receive control rights around covenant violations such as capital expenditures, M&A decisions, employment,

early repayments, which decrease over time. For instance, Eckbo, Nygaard, and Thorburn (2022) find that the average cancellation fee for calling a loan in the first year is 142 bps for term loans and 190 bps for credit lines. Consistent with the notion of the high costs of calling loans, Roberts and Sufi (2009a) show that borrowers rarely switch to new creditors after a violation.

[5]Even in these cases, a single Type II creditor usually does not receive exclusive control rights because a cross-default grants control rights to all creditors.

CEO turnover, financial policies, firm disclosures, and board composition (e.g., Chava and Roberts (2008); Nini et al. (2012); Vashishtha (2014); Falato and Liang (2016); Ferreira et al. (2018); Becher et al. (2022); Chodorow-Reich and Falato (2022)). Thus, it is plausible that a creditor also uses control rights to influence the borrower's new loan policy. For example, a Type I creditor may constrain the borrower from switching to an alternative lender during covenant renegotiation if the creditor is interested in financing the new loan. In addition, several studies argue that outside banks may be more reluctant than a relationship bank to finance a firm during difficult times because of informational disadvantages (e.g., Rajan, 1992; Gorton and Kahn, 2000; von Thadden, 2004). Because a Type I creditor is related to the outstanding loan of a borrower that violates a covenant, this creditor can be seen as a relationship bank with an informational advantage regarding the severity and potential consequences of this violation. Thus, informational asymmetries may prevent some borrowers from switching to alternative creditors during covenant renegotiation. Consistent with this notion, borrowers rarely switch to new lenders after covenant violations (see e.g., Roberts and Sufi (2009b)). Our arguments also imply that a borrower's decision to accept loan concessions during a legal hold-up depends on external financing options in the covenant renegotiation process. We discuss the effect of such external options on our results in Section 6.4.

3. Data

First, we discuss the construction of the dataset. We then describe how we identify the creditor counterparty to a covenant violation and the main variables.

3.1. Dataset construction

We construct a novel dataset that combines hand-collected covenant violation data with information on individual borrower, creditor, and loan characteristics. Our starting point is the LPC DealScan database of corporate loan facilities. To expand the database, we use two linking tables from previous studies. First, we use the DealScan Lender Link Table from Schwert (2018) to add lenders' financial statement information from Compustat.[6] Next, we apply the DealScan-Compustat Link from Chava and Roberts (2008) to add borrowers' financial information.[7] The information in this linking table enables us to merge borrower information through

[6]This table matches DealScan lender names with Compustat GVKEYs for all lenders with at least 50 loans or at least $10 billion in loan volume in the DealScan-Compustat sample. We thank Michael Schwert for making this linking table available.

[7]We thank Sudheer Chava and Michael Roberts for making this linking table available.

the end of 2016. Further, we add borrower and lender financial market information from CRSP. In addition, we hand-collect covenant violation information from 10-K and 10-Q filings in the EDGAR database provided by the SEC by closely following the approach of Nini, Smith, and Sufi (2012). We provide a detailed description of the text-search algorithm that we utilize to extract relevant text passages and how we manually flag these passages for violations in the Internet Appendix. Data from EDGAR are available from 1996. Thus, our merged dataset covers the period of 1996-2016.

We follow the literature by applying the following filters (see e.g., Schwert (2018)): We exclude loans to financial companies (SIC between 6000 and 6999) from the sample. The sample is heterogeneous in terms of accounting and regulatory treatments, non-lending activities, and liability structure. Accounting rules vary across countries, which significantly affects the interpretation of bank capital and other accounting ratios (see e.g., Barth and Prabha (2013)). Thus, we restrict our analysis to banks and borrowers in the United States. To ensure comparability among U.S. banks, we omit banks that do not have deposits reported in Compustat. This deposits restriction excludes pure investment banks (e.g., Goldman Sachs) and financial companies (e.g., CIT Group). We exclude the Bank of New York Mellon and State Street Bank because these banks are primarily custodian banks and, thus, are not focused on lending.

Most loans in DealScan are syndicated, with one or more lead arrangers and several participating lenders. We focus our analysis on the lead arranger(s) rather than the syndicate participants because the lead arranger takes the active role in originating the loan and monitoring the borrower, whereas participants are passive investors (see e.g., Schwert (2018)). In addition, Panyagometh and Roberts (2010) show that only the lead arranger renegotiates with the borrower and, thus, can use the shift in control rights after a covenant violation to influence loan pricing. Therefore, we are referring to a loan's lead arranger when we mention a firm's creditor, unless we specify a creditor as a participant.

The observation level in our dataset is the borrower-loan-creditor triplet; that is, for each observation, we have firm, loan, and bank creditor characteristics. Firm and bank characteristics are observed at the end of the quarter, whereas loan variables are observed at the end of the quarter of contract origination. Each bank has several loans per quarter, and some firms borrow multiple loans in one quarter, or receive a single loan from multiple lenders. For our final sample, we require non-missing quarterly information on the loan spread, covenant violations, and all control variables.[8]

[8]The sample construction procedure is summarized in Table IA.I in the Internet Appendix.

3.2. Identifying the creditor counterparty to a covenant violation

The key novel feature of our data is that we identify the creditor counterparty to each covenant violation. Specifically, we differentiate between two types of creditors after a covenant violation. The first type (creditor Type I) is the creditor counterparty of the specific loan that violates the covenant. The second type (creditor Type II) is a creditor of a borrower who recently violated a covenant; however, this violation occurred in a loan from another creditor. To differentiate between Type I and Type II creditors, we consider all outstanding loan facilities in DealScan during each covenant violation quarter. If a borrower has only a single loan outstanding at violation, we conclude that the creditor of this loan is Type I. If a borrower has several outstanding loans from different creditors during a covenant violation quarter, we manually review the SEC filings for the corresponding violation to collect information on the identity of the loan related to the violation and its lender. Firms usually provide information about the lender, origination date, maturity date, or interest spread of the loan, which helps identify the Type I creditor related to each covenant violation. For example, Fountain Powerboat Inds made the following statement regarding a covenant violation:

> "The long-term loan from *Bank of America* also contained restrictive covenants relative to tangible net worth, coverage of current maturities, funded debt to EBITDA (earnings before interest, taxes, depreciation and amortization), and gross profit percentage. As of June 30, 2005, the Company was in compliance with all covenants *except funded debt to EBITDA*."

Most SEC filings reveal the Type I creditor of a covenant violation, as in the example of Fountain Powerboat Inds. Some filings reveal that there are multiple lead arrangers to a loan related to a covenant violation. In this case, we consider all lead arrangers as Type I creditors. If a filing lacks creditor information, we manually collect the interest rate and loan amount for the loan in violation. Next, we review the credit agreements of all outstanding loans in the corresponding covenant violation quarters to collect interest rates and loan amounts. We extract these credit agreements, including all their amendments, from S&P Capital IQ. Finally, we identify a unique match between the interest rate and/or loan amount in SEC filings and all outstanding loans in the covenant violation quarter. This procedure allows us to identify Type I and Type II creditors in more than 95% of covenant violations in the full sample. We omit the remaining violations for which we cannot identify the creditor type.

3.3. Main variables

The main outcome variable is loan pricing. In line with the prior literature, we measure loan pricing using the all-in-drawn spread (Santos, 2011; Schwert, 2018). The all-in-drawn spread is the total amount the borrower pays, in basis points, over LIBOR for each dollar that the borrower draws down. This includes the spread and fees the borrower pays to the creditor. We refer to the all-in-drawn spread as the "loan spread". For robustness, we also use the total-cost-of-borrowing (TCB) measure defined in Berg et al. (2016). We follow the prior literature (see e.g., Ioannidou and Ongena (2010)) and investigate the pricing of new loans instead of the repricing of old loans outstanding at the covenant violation date for two reasons. First, the majority of loans contain pricing grids or performance pricing features that automatically alter the loan spread at covenant violations (see e.g., Bradley and Roberts (2015); Demiroglu and James (2010)). These features could introduce a mechanical relation between covenant violations and the pricing of outstanding loans in violations. Second, the repricing of an outstanding loan in violation is likely to depend on the evolution of both the firm's and economy's conditions since loan initiation as well as on the loan's past renegotiation rounds. Our focus on the pricing of new loans circumvents these path-dependencies by ensuring the timeliness of the loan pricing decision (see e.g., Ioannidou and Ongena (2010)).

The main independent variable captures whether the new loan is from a creditor that has recently received control rights. We construct this variable from our hand-collected data on covenant violations and from the related loan and creditor information. Specifically, we construct an indicator variable (*Control Rights*) that equals one if a new loan after a violation, that occurred in one of the previous four quarters, is from a Type I creditor and zero otherwise.

Furthermore, we follow the loan pricing literature and consider borrower characteristics that potentially influence loan pricing (see e.g., Schwert (2018), Santos (2011)). In particular, we include borrower distance-to-default, an indicator showing whether the borrower is bank-dependent; log assets; asset tangibility; cash; operating leverage; years since the IPO; industry dummies; credit rating dummies; state dummies; and indicators for whether the borrower issued debt or equity during the loan's lifetime. We also consider proxies for the relationship intensity and relationship length of the borrower with the creditor, which we construct following Schenone (2010) and Ioannidou and Ongena (2010), respectively. We refer to these explanatory variables as *Borrower Controls* in our analyses. We also incorporate loan characteristics. We include the loan amount as a percentage of borrower assets, loan maturity, dummy for securitisation, seniority dummy, several dummies for all loan types (revolving facility, term loan, term loan A, term loan B, etc.), and all loan purposes (corporate purposes, debt repayment, takeover, working capital, etc.). We also incorporate a proxy in the spirit of Bird et al.

(2019) to capture whether a loan is likely to be an amendment to a previous loan. We refer to these explanatory variables as *Loan Controls*. In addition, we consider lender characteristics by including the log of lender assets and lender's market-to-book ratio. We refer to these explanatory variables as the *Lender Controls*. Variable definitions and the corresponding data sources are presented in the Appendix.

4. Empirical Design

This section outlines the empirical strategy. We first motivate our study by applying a standard QRDD approach. Second, the main empirical strategy exploits our creditor-type identification by comparing the loan prices of Type I and Type II creditors.

4.1. Quasi regression discontinuity design

To motivate and align our study with existing work on creditor governance, we first implement the standard QRDD suggested in the creditor governance literature (Roberts and Sufi, 2009a; Nini et al., 2012; Becher et al., 2022, e.g.). QRDD exploits the discontinuity at covenant violations to measure the impact of violations on firm policies. This approach addresses identification concerns owing to the non-random assignment of violations by controlling for the continuous functions of the variables on which covenants are commonly written (*Covenant Controls*).[9] Following the literature, we apply profitability, book leverage, interest expense to assets, net worth to assets, current ratio, and equity market-to-book as covenant controls. We also consider 1-year lags to incorporate firm conditions when loan contracts are negotiated. In addition, we include the quadratic and cubic functions of the covenant controls (*Higher Order Covenant Controls*) to incorporate the potential non-linear relationships between these controls and loan pricing. The QRDD is defined as follows:

$$\begin{aligned} Y_{bilt} = {} & \beta Covenant\ Violation_{b,t} + \gamma_1 CovenantControls_{b,t-1} + \gamma_2 CovenantControls_{b,t-5} \\ & + \gamma_3 Higher\ Order\ Covenant\ Controls_{b,t-1} + \gamma_4 Borrower\ Controls_{b,t-1} \\ & + \gamma_5 Loan\ Controls_{i,t} + \gamma_6 Lender\ Controls_{l,t-1} + Quarter_t + FE_{b,l} + \varepsilon_{i,t}, \end{aligned} \tag{1}$$

where Y_{bilt} is a measure of loan pricing and b, i, l, and t represent borrowers, loans, lenders, and year-quarters, respectively. $Covenant\ Violation_{b,t}$ is a dummy variable equal to one if borrower b reports a covenant violation during one of the four quarters prior to quarter t, and

[9] The QRDD does not require information about the exact contractual threshold of each individual covenant. Thus, it does not compare firms that are just above and just below the covenant threshold.

zero otherwise. This period includes the time necessary to renegotiate violations and issue new loans (Nini et al., 2012). Applying a treatment period between two to four quarters after covenant violations is standard in the literature (Ferreira et al., 2018; Becher et al., 2022). We consider all borrower, loan, and lender controls as described in Section 3.3. We also include year-quarter dummies (*Quarter*) to incorporate time trends in loan pricing. Further, we consider borrower and lender dummies ($FE_{b,l}$) to control for unobservable borrower and lender time-fixed characteristics. In all specifications, we follow standard practice and cluster standard errors by borrower and quarter (see Petersen (2009)).

To motivate the role of control rights in loan pricing, we augment the QRDD with our novel information about the creditor counterparty to each covenant violation. Specifically, we construct the dummy $Control\ Rights_{i,l,t}$ which takes the value one after a violation for a loan from creditor Type I, and zero otherwise. $No\ Control\ Rights_{i,l,t}$ is a dummy equal to one after a covenant violation for a loan from creditor Type II, and zero otherwise. Then, we replace the $Covenant\ Violation_{b,t}$ dummy with $Control\ Rights_{i,l,t}$ and $No\ Control\ Rights_{i,l,t}$ dummies, respectively. This replacement helps us derive first insights into whether loan spreads increase after a violation due to shifts in control rights or due to alternative potential pricing factors of covenant violations such as deterioration in borrower's reputation, flexibility, or access to financing that are hard to observe or control for in the QRDD (Beneish and Press, 1993; Chen and Wei, 1993; Chava and Roberts, 2008; Nini et al., 2009; Roberts and Sufi, 2009b; Freudenberg et al., 2017).

In Section 7, we also apply this procedure to a standard RDD following Ferreira et al. (2018) as a robustness test to complement our QRDD results.[10] As in the QRDD, we augment the RDD with our information about the creditor type after each covenant violation.

The main challenge of applying the QRDD or RDD methodologies for analyzing the influence of control rights on loan pricing is that they measure this influence by comparing loan prices of borrowers with a covenant violation to loan prices of borrowers without a covenant violation. However, borrowers who violate a covenant may systematically differ from borrowers who do not violate a covenant along dimensions other than the control rights that influence loan pricing. For example, covenant violations are associated with an adverse impact on the borrower's reputation, reduced managerial flexibility, deterioration in unobservable credit quality aspects, and borrowing restrictions, which are potentially important drivers of observed loan prices (see e.g., Beneish and Press (1993); Chen and Wei (1993); Chava and Roberts (2008); Nini et al. (2009); Roberts and Sufi (2009b); Freudenberg et al. (2017)). These factors can also be discontinuous at the covenant violation threshold and difficult to observe. Thus, although

[10]The QRDD mimics a standard regression discontinuity design (RDD) if covenants are written at similar levels for similar firms.

the QRDD and RDD methodologies are suitable for measuring the impact of a covenant violation on loan spreads, they cannot isolate the impact of control rights on loan spreads from the impact of other factors related to covenant violations. We address this challenge in the violators regressions in the next section.

4.2. Violators regressions

Our main empirical strategy exploits novel information on Type I and Type II creditors within covenant violation events. Specifically, we focus the analysis on new loans issued in the four quarters following a covenant violation. We label this sub-sample the "violators sample." Because Type I creditors receive control rights and Type II creditors do not receive control rights, we can measure the cross-sectional difference in loan prices between these two creditor types to directly quantify the impact of control rights on loan spreads. Type II loans provide suitable counterfactuals for Type I loans because Type II loans are also issued after a covenant violation event. Thus, Type II loans control for all other unobservable influence factors of covenant violations, and hence allow us to isolate the impact of shifts in control rights on loan spreads. We estimate the following ordinary least squares (OLS) regression on the violators sample:[11]

$$\begin{aligned} Y_{bilt} = {} & \beta Control\ Rights_{i,l,t} + \gamma_1 Borrower\ Controls_{b,t-1} \\ & + \gamma_2 Loan\ Controls_{i,t} + \gamma_3 Lender\ Controls_{l,t-1} + Quarter_t + FE_{b,l} + \varepsilon_{i,t}, \end{aligned} \tag{2}$$

where Y_{bilt} is the measure of loan pricing. The $Control\ Rights_{i,l,t}$ dummy is measured at the loan level and takes the value of one for a loan from a Type I creditor and zero for a loan from a Type II creditor. β is the main coefficient of interest and measures the control spread; that is, the influence of shifts in control rights on loan pricing after incorporating all controls. The control variables are identical to Equation (1).[12] As in Equation (1), we cluster the standard errors by borrower and quarter for all specifications.

Figure 2 illustrates the underlying intuition behind this identification by providing an ideal sample example. Calgon Carbon Corp. violated the covenant for outstanding loan A in the second quarter of 2006. In the quarters following the violation, the borrower obtained two new loans. Specifically, the borrower received loan B from the same creditor to whom the borrower had violated the covenant (creditor Type I). Loan B had a loan spread of 250 bps. Simultaneously, the borrower also received a second new loan C from a creditor with whom

[11] A standard Difference-in-Differences approach is not feasible in this setting because an insufficient number of borrowers obtains new loans from the same Type II creditor before and after a covenant violation.

[12] Since all borrowers in the violators sample experience a covenant violation we do not need to flexibly control for the covenant controls. Section 7.3 demonstrates that our results remain robust when these controls are added.

the borrower had not previously violated a covenant (creditor Type II). Loan C had a spread of 175 bps. The idea behind our identification approach is that creditor Type I received control rights when lending loan B because the borrower had recently violated a covenant related to this creditor's loan A. However, creditor Type II did not receive control rights when lending the new loan C to the borrower despite the covenant violation, because this violation was related to a loan from the other creditor.

[Insert Figure 2 here.]

The pricing of the new loan C provides a suitable counterfactual for determining the impact of the shift in control rights on loan B's pricing for two reasons. First, the spread of loan C does not reflect a shift in control rights. Second, loan C was also issued after a covenant violation. Thus, using loan C as a counterfactual allows us to control for all potential consequences of the covenant violation on loan spreads (except for the shift in control rights), such as deteriorating credit quality, reduced managerial flexibility, restrictions on corporate behavior, and adverse impacts on borrower reputation. Comparing the spread of loan B with that of loan C, therefore, isolates the impact of the shift in control rights on loan pricing by netting out all other unobservable firm characteristics associated with covenant violations. For illustrative reasons, Figure 2 provides an idealized example of a borrower issuing two loans after the violation, with loan B of Type I and loan C of Type II. Our dataset allows us to also incorporate borrowers with only one new loan after a covenant violation from either creditor Type I or Type II, as well as borrowers with more than one Type I or Type II loan. In the example, Type I creditor places loan B at a loan spread that is 75 bps higher than that of loan C from Type II creditor. This 75 bps difference measures the effect of control rights on loan pricing. Estimating the control spread additionally requires controlling for observable borrower, loan, and lender characteristics that may influence loan pricing. We incorporate these characteristics in Model 2.

5. Summary statistics

We now present the summary statistics for both our full and violators samples.

5.1. Full Sample

Figure 3 shows the proportion of firms violating covenants over time. The solid line indicates that between 10% and 17% of firms violated a covenant in a given quarter between 1996 and

2008. A peak of approximately 17% occurred during the 2001-2002 recession. New covenant violations (dashed line) follow a similar cyclical pattern, with a peak of approximately 8% during 2001-2002. The number of violations has declined in recent years. On average, a borrower violates a covenant in 8% of all firm-quarters. Nearly 5% of the firms experience new violations in a given quarter. These summary statistics are in line with those of existing studies on covenant violations (see e.g., Nini et al. (2012); Griffin, Nini, and Smith (2018)).

[Insert Figure 3 here.]

Table I Columns (1) through (4) report summary statistics for our full sample. The sample includes 8,017 firm-quarter observations for 1,950 unique borrowers. The median borrower in our full sample is a large and well-established firm.

[Insert Table I here.]

The sample includes 11,886 distinct loans. The median loan is a $250-million revolving credit facility with a five-year maturity and a loan spread of 175 basis points (bps). Most loans are for general corporate purposes. Approximately two-thirds of the loans are revolving credit facilities, and approximately one-third are term loans.

The median syndicate size is four banks. The median lender has $65 billion in assets. As our sample focuses on the lead arrangers in the syndicated loan market, the banks are relatively large. The median bank has a market equity ratio of 14.1% and a Tier 1 capital ratio of 9.8%. Overall, our summary statistics are consistent with those reported in the literature. To validate our sample construction approach and mitigate sample selection concerns, we compare our summary statistic with that of Schwert (2018). Specifically, Table IA.II in the Internet Appendix shows our summary statistics when we restrict our sample period to the sample period in Schwert (2018). These summary statistics are very close to those on pages 12 and 13 in Schwert (2018).

5.2. Violators sample

We now focus on the summary statistics of borrowers who obtain at least one new loan in the four quarters after a covenant violation (violators sample) in Columns (5) to (8) of Table I. The sample includes 701 firm-quarter observations and 1,083 loans. The median loan is a $100-million revolving facility with four years maturity and a loan spread of approximately 250 bps.

Most of these loans are for general corporate purposes. The median lender has $141 billion in assets. The lenders' median market equity ratio is 14.8% and the median market-to-book ratio is 1.80. A borrower obtains a new loan from a Type I creditor in 58% of firm-quarter observations and from a Type II creditor in 42%, as shown by the *Control Rights* indicator.

Compared to the full sample, the violators sample contains smaller loans that have similar maturity, type, and purpose. The lenders in the violators sample have similar market equity and market-to-book ratios but are larger compared to the full sample.

Table IA.III of the Internet Appendix, provides separate summary statistics for Type I and Type II loans. The table shows that Type I and Type II loans are well balanced in terms of borrower, loan, and lender characteristics. For example, most institutional details such as loan type (revolving facility, term loan, term loan A, term loan B), loan purpose (corporate purposes, debt repayment, takeover, working capital), loan maturity, facility amount divided by borrower assets, and seniority are virtually identical. The only difference is that Type I loans are slightly larger and extended by a larger syndicate than Type II loans. Additionally, Type I creditors have a stronger relationship with the borrower (as measured by relationship length and intensity) than Type II creditors. We control for all of these characteristics in our analyses.

6. Main results

This section presents the main results of our estimations. We also discuss the economic magnitude of the effects and provide additional tests on the cross-sectional variations in our results.

6.1. Full sample results

Before presenting our main results, we discuss the evidence from the QRDD approach. This analysis helps us understand the potential role of control rights for loan prices and aligns our study with the standard empirical approach used in the creditor governance literature.

Table II shows the results from estimating Equation (1) on the full sample. Column (1) suggests that covenant violations are associated with a 24 bps increase in the loan spread. Column (2) confirms this result when adding lender controls and lender fixed effects. These results are consistent with the notion that covenant violations tend to increase the cost of new loans (Chava and Roberts, 2008; Nini et al., 2012; Freudenberg et al., 2017).

Next, we exploit the novel information in our data to obtain the first indication of the potential reason for this increase in loan spreads. Specifically, we replace the *Covenant Violation* dummy with the *Control Rights* dummy in Columns (3) and (4) and the *No Control Rights* dummy in Columns (5) and (6). The coefficients of *Control Rights* are significant, whereas those of *No Control Rights* are insignificant. Thus, after a covenant violation, loan spreads only increase for loans from creditors who receive control rights but not for loans from creditors who do not receive control rights. This suggests that shifts in control rights are a potential driver of the observed increases in loan spreads after covenant violations. We provide our main evidence for this result in the following sections.

[Insert Table II here.]

6.2. Violators sample results

This section discusses the estimation results of Equation (2) for the violators sample. Specifically, we focus on new loans after covenant violations and estimate the difference in loan spreads between Type I and Type II creditors. Using Type II creditors' loan spread as a counterfactual allows us to control for all the unobservable influencing factors of covenant violations on loan spreads and, hence, isolate the impact of shifts in control rights. In these estimations, we also incorporate relevant observable borrower and loan characteristics as well as quarter and borrower fixed effects. We report the results separately if we additionally control for relevant lender characteristics and lender fixed effects. Columns (1) and (2) of Table III imply that Type I creditors charge a loan spread that is approximately 53 bps larger than the spread on loans from Type II creditors. These estimates imply that, relative to the average loan spread of all loans in the violators sample of 262 bps, creditors charge a control spread of 20% when they receive control rights.

[Insert Table III here.]

We compare our results with the impact of standard credit risk measures on loan spreads to gauge the economic importance of the control spread of corporate loans. For example, in our estimation in Table III, a one standard deviation increase in leverage is associated with six bps increase in the loan spread. Furthermore, a one standard deviation increase in distance-to-default is associated with a 57 bps increase in the loan spread. Thus, our estimate of a 53 bps control spread implies that shifts in control rights have an economic impact on loan spreads that is in the range of prominent credit risk measures.

We also quantitatively compare the creditor control spread of corporate loans with that of corporate bonds. Feldhütter et al. (2016) find an average control price premium of corporate bonds in the four quarters after a covenant violation of 1.05%. To convert this price premium into an annualized control spread, we divide the price premium by the annuity factor for an average bond maturity of 7.4 years and a bond yield of 7.4% in their covenant violation sample. These calculations yield a bond control spread of 15 bps. Thus, our estimate of approximately 53 bps in Table III implies that the additional control spread of loans is more than three times larger than the entire control spread of public bonds during covenant violations.[13] This result is intuitive, because loan creditors can directly influence firms when they receive control rights, whereas it is difficult for public bondholders to influence firms because of coordination and free-rider problems (Rajan, 1992; Krishnaswami and Subramaniam, 1999).[14] Thus, loan creditors have more powerful control rights than bond holders, which allows them to extract more rents from firms by demanding larger control spreads.

In Columns (3) to (10) of Table III, we estimate Equation (2) using each of the following non-price loan terms as an alternative dependent variable: i) maturity, ii) loan amount, iii) number of covenants, and iv) secured indicator. None of the coefficient estimates for *Control Rights* are significant. These results provide further evidence that the loan spread increase of new loans to Type I creditors is not associated with changes in non-price loan terms, such as maturity, amount, or number of covenants.

Overall, our violators sample results show that shifts in control rights at the individual creditor level are key to explaining the variation in the observed loan spreads. Thus, to understand loan pricing better, it is important to go beyond borrower, loan, and lender characteristics by incorporating variation in the allocation of control rights at the individual creditor-borrower relationship level.

6.3. Loan premium

An established puzzle in the loan pricing literature is that banks earn a substantial loan premium, that is, a spread in excess of the market price for credit risk (Schwert, 2020). We now discuss the role of shifts in control rights in explaining the loan premium puzzle.

[13]The total control spread of loans at covenant violation can even be larger than that isolated by the shift in control rights. Specifically, our comparison of Type I loans with Type II loans nets out the control spread of Type II loans. Type II loans, however, may also reflect a certain control spread because Feldhütter et al. (2016) show that debt claims without direct control rights also feature a control spread.

[14]Feldhütter et al. (2016) argue that public bond prices nevertheless reflect control rights because bond holders may indirectly benefit from the loan holders' ability to influence firms.

6.3.1. Calculating the loan premium

We follow the approach in Schwert (2020) and measure the loan premium in a structural model estimation. Specifically, we directly compare the prices of new loans with those of outstanding bond contracts from the same firm on the same date. The advantage of this loan-bond pairing at the firm-date level is that the probability and timing of default, as well as the systematic risk, are identical for paired loan and bond contracts. Thus, the comparison controls for unobservable, time-varying firm characteristics that may correlate with loan pricing.

We start by merging our loan data for each origination date with the data for bond trades from TRACE by matching on the ticker level. TRACE reports implied yields, prices, and dates on which bonds trade.[15] We also obtain information on the maturity, seniority, and security of bond contracts from the Mergent Fixed Income Securities Database (FISD).[16] We match corporate bond information by utilizing the nine digit CUSIP (issue CUSIP) with the same identifier in TRACE. As in Benmelech, Kumar, and Rajan (2022), for a given bond on each loan origination date, we calculate the trade-volume weighted implied yield using all transactions for the bond on the corresponding date. We exclude bond trades that are canceled or corrected (see e.g., Benmelech et al. (2022)). Next, we follow Schwert (2020) by matching senior unsecured bonds with the smallest absolute maturity difference to each loan. We also apply the filters proposed by Schwert (2020). Specifically, we disregard matched pairs with an absolute maturity difference greater than two years, drop loans and bonds with less than three years to maturity, and exclude bonds with negative credit spreads or spreads in excess of 1,500 bps.

The structural model approach also requires measuring senior and junior debt at the time of loan origination. We obtain these data from Capital IQ at the quarter-end immediately before the loan origination date. We measure total senior debt as the sum of bank debt, leases, and undrawn debt capacity, and total junior debt as the difference between total debt (including undrawn capacity) and senior debt. Further, we compute quasi-market assets as the sum of total debt from CapitalIQ and equity market capitalization. Risk-free rates are maturity-matched LIBOR swap rates adjusted for continuous-time discounting. Finally, to ensure data quality, we require that secured and unsecured debt sum to total debt, and that total debt from Capital IQ matches total debt from Compustat. Our final sample for the structural estimation consists of 1,044 loan-bond pair observations for 352 firms.

[15] All broker-dealers who are member firms of the Financial Industry Regulatory Authority (FINRA) have an obligation to report transactions in corporate bonds to the Trade Reporting and Compliance Engine (TRACE). TRACE was introduced in July 2002 under guidance and rules provided by the Securities and Exchange Commission (SEC).

[16] Mergent FISD is a comprehensive database of publicly offered U.S. bonds. The database contains detailed information on more than 140,000 bonds.

To quantify the magnitude of the loan premium, we first estimate the counterfactual loan spreads in a structural model of credit risk outlined in the Appendix. The model allows us to incorporate the absolute priority of different credit claims (Schwert, 2020) and, hence, the observation that bank loans tend to be senior to bonds.[17] To avoid ambiguity about loan priority and to mitigate the impact of embedded options, we follow Schwert (2020) and report the results for a restricted sample consisting only of term loans secured by a first lien. Our restricted sample consists of 231 loan-bond pairs for 100 firms, which is comparable to the corresponding sample of 199 observations in Schwert (2020).[18]

The structural model recovers the asset volatility parameter that prices a firm's bond from Equation (11) in the Appendix. This equation considers bonds to be debt claims, which are junior to bank loans. Next, Equation (8) applies this volatility estimate to derive the counterfactual loan model spread by recognizing the seniority of loan claims. Intuitively, the counterfactual loan model spread is the market price of a loan derived from the same firm's bond price on the same date. The loan premium is the difference between a loan's all-in-drawn spread and the counterfactual loan spread under the structural model.

6.3.2. Loan premium results

Panels A and B in Table IV present the summary statistics of the loan premiums in the final and the restricted samples, respectively. The average loan premium in the final sample of our structural estimation is 140 bps. This evidence confirms the conjecture that loans are priced significantly higher than implied by the market price of credit risk. For ease of comparison with Schwert (2020), we now discuss our restricted sample. Specifically, the average loan premium of 216 bps and its distributional features are consistent with those of Schwert (2020)'s restricted sample in Panel C. This evidence confirms the conjecture that loans are priced significantly higher than implied by the market price of credit risk. The average loan premium in our restricted sample is approximately 25% higher than that in Schwert (2020). One reason for this difference is the higher average all-in-drawn spread of our restricted sample.

[Insert Table IV here.]

[17] Welch (1997) argues that the vast majority of bank loans are senior to public debt and that banks have both the incentive and the ability to contest formal priority structures than bondholders more strongly.

[18] The restricted sample in Schwert (2020) covers the period 1997-2017 with 115 unique firms whereas our restricted sample covers the period 2003-2016 with 100 unique firms. The start date of our sample is restricted by the introduction of TRACE.

We now analyze the loan premiums in the final sample in more detail. We first calculate the average loan premiums of Type I and Type II loans in the four years around covenant violations. We find that both loan types are overpriced compared with the price implied by the market price of credit risk. Specifically, Type I and Type II loans carry average loan premium of 180 bps and 129 bps, respectively (not tabulated). This difference of 51 bps (40% relative to the average Type II loan premium) is statistically significant at the 5% level. Next, we calculate the average loan premiums of Type I and Type II loans in four-quarter rolling windows up to and including a given quarter. Figure 4 plots the difference in the average loan premiums of the rolling windows around the time of covenant violations. The choice of a four-quarter rolling window ensures that there are sufficient observations to calculate the difference in loan premiums between Type I and Type II loans in each window. Furthermore, our window length choice is consistent with the creditor governance literature (see e.g., Nini et al. (2012)) which usually measures the impact of covenant violations over a four-quarter window. Figure 4 shows that the difference between Type I and Type II loan premiums becomes more pronounced closer to covenant violations. For instance, the average loan premium of Type I and Type II loans is 192 bps and 98 bps, respectively, in the four quarters around the covenant violation, i.e., in quarters minus one, zero, one, and two. This difference of 94 bps (96% relative to the average Type II loan premium) is statistically significant at the 1% level. In contrast, the differences become insignificant for quarters further away from the violation. While the graph shows that the loan premium difference between Type I and Type II loans is the largest around the covenant violation, it also implies that this premium increases before the violation. This observation is consistent with Denis and Wang (2014), who argue that borrowers frequently renegotiate with creditors before or in anticipation of a potential covenant violation.

[Insert Figure 4 here.]

Next, we test whether shifts in control rights explain variation in the loan premium after controlling for borrower, lender, and loan characteristics. To this end, we replicate our main violator regressions in Columns (1) and (2) of Table III in Section 6.2 using the loan premiums of Panel A in Table IV as the dependent variable. Because we are interested in the impact of shifts in control rights on loan premiums, we consider only the loan premium observations of the final sample in Panel A, for which we know the creditor type. Thus, we can only incorporate observations during the four years around the covenant violations, which reduces the number of observations in our analysis. Columns (1) and (2) of Table V present the results.[19] The coefficient on *Control Rights* in the most restrictive specification in Column (2) indicates that

[19]We only have around 94 observations in the four years around a covenant violation (violators sample). Thus, borrower fixed effects are collinear to control rights and, hence, need to be omitted from this analysis.

a shift in control rights increases the loan premium by approximately 93 bps. The economic magnitude of the coefficient suggests that a shift in control rights increases the loan premium by approximately 66%. For comparison, we also compute the impact of a one standard deviation change in the borrower, loan, and lender control variables in column (2) on loan premiums. Of all significant controls, only a one standard deviation increase in asset tangibility has a stronger impact on loan premiums than a shift in control rights (not tabulated).[20]

[Insert Table V here.]

Finally, in Column (3) of Table V we replicate the loan premium regression specification presented in Table VI of Schwert (2020) and augment it with our *Control Rights* dummy. The positive and highly significant coefficient of *Control Rights* confirms that shifts in control rights are important for explaining the variation in loan premiums.

The loan premium results are subject to certain limitations. First, we require the firms in our sample to have traded bonds. Firms with traded bonds are larger and less financially constrained than those without traded bonds (Saretto and Tookes, 2013; Chava, Ganduri, and Ornthanalai, 2019b). Intuitively, this selection could bias the impact of shifts in control rights downwards, because larger and less financially constrained firms tend to have better outside options in renegotiations with banks than firms without traded bonds.

Second, the model involves some simplifying assumptions, such as zero coupon payments, identical maturity of the different credit claims, a fixed debt structure between the valuation date and maturity, zero issue costs, and the absence of a prepayment option. Schwert (2020) shows that loan premiums are robust to these assumptions.

Finally, loans are less liquid than bonds and hence may carry a liquidity spread. We follow the baseline specification of Schwert (2020) by ignoring this liquidity spread. This simplification is unlikely to affect our conjecture because we focus on comparing the loan premiums between Type I and Type II creditors. Thus, the potential differences between the general liquidity of loans and bonds cancel each other in this comparison.

6.3.3. Implications of the loan premium estimations

The results in Section 6.3.2 provide evidence that shifts in control rights cause pricing frictions in the loan market in several dimensions. First, the loans of both Type I and Type II creditors are priced significantly higher than implied by the market price of credit risk, and this overpricing is

[20] For example, a one standard deviation increase in distance-to-default raises the loan premium by 24 bps.

stronger for Type I creditors. Thus, the results in Section 6.2 are driven by the loan overpricing of Type I creditors as opposed to loan underpricing of Type II creditors. Second, Figure 4 shows that Type I loans are not generally more overpriced than Type II loans, but only around shifts in control rights to Type I creditors. Third, our comparison of loan premiums allows us to exclude several alternative explanations. For example, any observable or unobservable firm characteristic, such as the probability or timing of default, cannot drive our results because the loan premiums are constructed from paired claims on the same firm. Further, while loans offer certain benefits that can explain the difference between loan and bond spreads, we compare the loan premiums of Type I creditors to those of Type II creditors. Thus, the difference in benefits between bonds and loans should not affect our results.

Our analysis also helps gauge the quantitative importance of creditor control rights in explaining the loan premium puzzle. Section 6.3.2 shows that the loan premiums of Type I creditors are 40% and 96% larger than those of Type II creditors in the four years and quarters around covenant violations, respectively. Additionally, the results in Table V suggest that shifts in control rights increase loan premiums by approximately 93 bps, which corresponds to 66% of the average loan premium. Thus, shifts in control rights explain a large proportion of the observed loan premiums in the years around covenant violations. While we use covenant violations to empirically identify shifts in control rights, control rights also shift to creditors in many alternative situations, such as debt renegotiation, rollover of existing debt, distress, bankruptcy, or restructuring (e.g., He and Xiong, 2012; Roberts, 2015; Feldhütter and Schaefer, 2018; Gao et al., 2023). Thus, creditors can exploit transfers of control rights to overprice loans more frequently than those implied by covenant violations.

Overall, while shifts in control rights mitigate agency conflicts and information problems (e.g., Chava and Roberts, 2008), we highlight that these shifts also create pricing frictions in the loan market. Specifically, we find that creditors extract rent from borrowers by overpricing loans when they receive control rights. The loan premium results have important economic implications. First, loans offer benefits to borrowers, such as flexibility in borrowing or a positive signal of a firm's quality from the bank's willingness to lend funds (Rajan, 1992; Schwert, 2020), which may explain the higher loan spread compared to bond spreads. These benefits do not require intervention measures to mitigate the loan premium. In contrast, our finding that loan overpricing frictions are a key reason for loan premiums justifies the discussion of lending regulations or legal and contract design approaches to mitigate this friction. This discussion is not only important to protect borrowers in the loan market, but also because loan market frictions have important transmission effects on the real economy (e.g., Gan, 2007; Chodorow-Reich, 2014). Second, rent extraction in the loan market raises questions about the

nature of competition in the loan market during times when creditors can "legally hold up" their borrowers due to shifts in control rights.

6.4. Cross-sectional evidence

We now explore the cross-sectional differences in the creditor control spread along several important dimensions. To this end, we interact the *Control Rights* indicator in our main regression with a dummy that equals one if the variable of interest is above the median and zero otherwise. As in our main specification in Table III in Section 6.2, we separately report the results with and without lender characteristics and lender fixed effects.

First, we analyze the influence of renegotiation frictions on control spreads, which captures the difficulty of renegotiating a company's debt. Following Davydenko and Strebulaev (2007), we use the portion of short-term debt in the debt structure as proxy for higher renegotiation frictions. Columns (1) and (2) of Table VI show a significantly positive coefficient of the interaction term between this proxy and *Control Rights*. The effect is economically large, implying that borrowers with high renegotiation frictions pay an approximately 40 bps larger control spread than borrowers with low frictions. This result is consistent with our conjecture that the legal hold-up plays a key role in loan pricing. Specifically, higher renegotiation frictions increase the borrower's need to cure a covenant violation with creditor Type I because it is more difficult for the borrower to reach an out-of-court workout for technical default.

[Insert Table VI here.]

Second, we consider borrowers' credit quality by incorporating a dummy equal to one for speculative-grade rating, and zero for investment-grade rating. Speculative-grade borrowers have limited access to both bank credit and the public debt market (e.g., Denis and Mihov (2003)). This limited access to alternative external funding weakens the borrower's bargaining position against creditors in a covenant renegotiation. Therefore, we expect speculative-grade borrowers to pay larger control spreads. Columns (3) and (4) confirm this conjecture, implying that speculative-grade borrowers experience approximately 48 bps higher loan spreads than investment-grade borrowers do. Hence, the effect is statistically and economically significant.

Third, we analyze the impact of information asymmetry on creditor control spreads. Informationally opaque borrowers face more difficulties in forming new banking relationships and switching to new creditors (e.g., Gopalan, Udell, and Yerramilli, 2011). Thus, we expect informationally opaque firms to pay higher control spreads because they have a weaker bargaining

position in covenant renegotiations with creditors. We apply the ratio of annual R&D expenses to sales and intangible assets as two proxies for borrowers' information asymmetry (see e.g., Armstrong, Core, Taylor, and Verrecchia (2011) Barth and Kasznik (1999), Barth, Kasznik, and McNichols (2001)). Columns (5) to (8) of Table VI indicate that while the interaction term of *R&D Expenses* with *Control Rights* shows the expected sign, this term is significant in only one specification. The interaction between *Intangible Assets* and *Control Rights* is not significant.

Fourth, we investigate how the relationship between borrowers and creditors affects control spreads. To this end, we use two proxies. First, we use the relationship intensity measure of Schenone (2010), which captures the frequency with which a borrower turns to the same creditor. Specifically, we calculate the ratio of the number of loans a firm borrowed from its existing creditors to the total number of borrowed loans. Second, we apply the relationship length measure of Ioannidou and Ongena (2010); that is, the number of days between the initiation of the relationship with the creditor of the loan related to the covenant violation and the violation. Columns (9) through (12) show that the interaction terms of these measures with *Control Rights* are insignificant. This evidence suggests that the borrower-creditor relationship dimensions do not drive creditors' tendencies to extract rents during legal hold-ups.

Fifth, we examined whether the control spread is larger for credit lines or term loans. In a credit line contract, a draw-down occurs only when the firm needs liquidity, whereas the principal is transferred at origination in a term loan.[21] Berlin, Nini, and Yu (2020) show that control rights are often concentrated in credit lines, giving the creditor of these contracts exclusive rights to monitor the borrower and renegotiate financial covenants. In addition, Chaderina and Tengulov (2015) argue that a creditor can revoke access to credit lines as an alternative to changing the loan price if the creditor receives control rights. In Columns (13) and (14), *Term Loan* is a dummy variable that equals one if the loan is a term loan, and zero if it is a credit line. The interaction term with the *Control Rights* indicator is not significant. This result implies that creditors charge a control spread irrespective of whether the loan is a term loan or a credit line.

Finally, we use the Altman Z-score as a measure of firm distress (Altman, 1968). 49% of all observations in our violators sample have an Altman Z-score above the distress indicator threshold of 1.81 (Altman, 2018).[22] This observation is consistent with the literature that shows that covenant violations often occur outside of financial distress (Gopalakrishnan and Parkash, 1995; Chava and Roberts, 2008; Roberts, 2015). In addition, Columns (15) and (16) show that the coefficient of the interaction term between the lower than median Altman Z-score and the

[21] The borrower pays a fee in exchange for the promise that the bank will provide the credit line funds at agreed terms when needed by the firm.

[22] Altman (2018) argues that this threshold is around zero in recent times. A total of 91% of all observations in our violators sample have an Altman Z-score above zero.

Control Rights indicator is insignificant. Furthermore, the coefficient of the stand-alone *Control Rights* indicator is virtually unchanged compared to our baseline specification. Thus, firms in distress do not drive the control spreads.

Overall, the results in Table VI support the conjecture that creditors charge loan control spreads when they obtain control rights. In addition, they highlight that shifts in control rights are key to understanding the cross-section of observed loan prices. Specifically, we find that variables associated with bargaining between creditors and borrowers during covenant renegotiations are important determinants of the control spread. The results also suggest that the control spread is not driven by a borrower-creditor relationship, information asymmetry, or a firm distress channel.

Next, we examine the interaction between the macroeconomic cycle and the creditor control spread. Falato and Liang (2016) argue that creditor governance after covenant violations has a stronger impact during recessions. Thus, we test whether borrowers pay higher control spreads during NBER recessions, when they have fewer alternative borrowing opportunities (see e.g., Ivashina and Scharfstein (2010)). Columns (1) and (2) of Table VII show that the interaction term of *NBER recession* and *Control Rights* is insignificant. This evidence suggests that creditor control spreads are prevalent in both normal and recessionary environments.

[Insert Table VII here.]

Furthermore, we explore the impact of lenders' health on the control spread. Recent literature shows that lenders in worse financial conditions are more likely to force reductions in loan commitments following covenant violations (see e.g., Chodorow-Reich and Falato (2022)). Thus, we investigate whether the magnitude of the control spread depends on lenders' financial health. We proxy for lenders' financial health by examining bank book assets and risk-adjusted capital ratios. Columns (3) through (6) of Table VII show that the interactions between the lenders' financial health variables and the *Control Rights* indicator are insignificant. These results imply that the lenders' financial health is not a driver of the creditor control spread.

Finally, we analyze the influence of syndicate concentration on the control spreads. To this end, we incorporate a *Sole Lender* dummy that equals one if the violated loan is from a single creditor, and zero if the violated loan is from multiple syndicate creditors. Shivdasani and Song (2011) argue that sole lenders have stronger incentives to screen and monitor borrowers than lead underwriters in lending syndicates, and Lim, Minton, and Weisbach (2014) show that syndicate size is negatively related to loan spreads. We expect larger control spreads for sole creditors because of the absence of free-rider or coordination problems among syndicate

participants during covenant renegotiations. Columns (7) and (8) of Table VII, however, show that the interaction between *Sole Lender* and *Control Rights* is insignificant.

7. Robustness

In this section, we provide additional estimations that consider a borrower's potential endogenous switching between creditor Type I and II, aspects of relationship banking, and various additional robustness tests.

7.1. Endogenous switching regression model

Our main estimation is based on the dummy *Control Rights*, which equals one for loans from Type I creditors and zero for loans from Type II creditors. In this specification, conditional on a large set of borrower, loan, and creditor covariates, the selection between Type I and Type II creditors is treated as exogenous. Because creditor-type selection may be nonrandom, this selection could confound the effect of *Control Rights* on loan spreads.

To mitigate this concern, we measure the impact of control rights on loan spreads using a "what-if" analysis. Specifically, for a new loan issued by a Type I creditor, what would the alternative loan spread be if the same loan was issued by a Type II creditor? This "what-if" analysis can be estimated empirically using a switching regression model with endogenous switching (see e.g., Fang, 2005; Gopalan et al., 2011; Gande, Puri, and Saunders, 1999; Puri, 1996; Lee, 1978). In particular, we estimate a reduced form model consisting of a first-stage equation with a binary outcome that reflects the selection between Type I and Type II creditors, and two second-stage equations on the loan spreads of each creditor type. We use the second-stage estimations to construct a hypothetical loan spread that a Type II creditor would charge for a loan with the same borrower, loan, and creditor characteristics as the Type I loan. Then, we compute the difference between the actual loan spread of a Type I creditor and this hypothetical loan spread to answer the what-if question.

Specifically, we first estimate the following equations:

$$Control\ Rights_i = Z'_{i,t}\gamma + \varepsilon_{i,t}, \tag{3}$$

$$Loan\ Spread_{1,i} = X'_{i,t}\beta + u_{i,t}, \tag{4}$$

$$Loan\ Spread_{2,i} = X'_{i,t}\beta + u_{i,t}, \tag{5}$$

where Equation (3) captures the first-stage creditor-type selection equation. $Control\ Rights_i$ is a dummy variable equal to one if the firm borrows from a Type I creditor, and zero if the firm borrows from a Type II creditor. We estimate Equation (3) using a probit regression. Vector $Z'_{i,t}$ contains variables that can influence a borrower's creditor-type selection. We include the same borrower, loan, and creditor variables as in the main estimation in Equation (2). In addition, $Z'_{i,t}$ contains the regressors *Large bank*, *Time between deals*, and *Relationship intensity*, which serve as identification (exclusion) restrictions in the estimation procedure.[23] The inclusion of these three variables is motivated by the literature that analyzes why borrowers form new banking relationships (see e.g., Gopalan, Song, and Yerramilli (2014)). This literature suggests that these variables are significant drivers of borrowers' decisions to switch to a new lender but are not correlated with loan spreads.[24]

Equation (4) is the second-stage loan spread equation for Type I creditors and Equation (5) is the second-stage loan spread equation for Type II creditors. In these equations, $Loan\ Spread_{1,i}$ and $Loan\ Spread_{2,i}$ are the all-in-drawn spreads in the Type I and II loan subsamples, respectively. To estimate the model, we employ a method based on the two-stage estimation procedure used in Lee (1978) as discussed in Heckman (1979) and Maddala (1983). Specifically, we compute the inverse *Mills-ratio* from Equation (3), and include it as an additional regressor in Equations (4) and (5). In addition to the inverse *Mills-ratio*, the vector $X'_{i,t}$ in Equations (4) and (5) contains all the borrower, creditor, and loan variables from Equation (3), excluding the variables *Large bank*, *Time between deals*, and *Relationship intensity*.

Finally, we compute the difference between the actual loan spread of a Type I creditor and the hypothetical loan spread that a Type II creditor would charge for a loan with the same borrower, loan, and creditor characteristics as the Type I loan. Specifically, we estimate the following difference:

$$Loan\ Spread_{1,i}^{actual} - Loan\ Spread_{1,i}^{hypothetical} \tag{6}$$

where, $Loan\ Spread_{1,i}^{actual}$ is the actual average loan spread of Type I creditors and $Loan\ Spread_{1,i}^{hypothetical}$ is the hypothetical average loan spread that Type II creditors would charge for loans with the borrower, loan, and creditor characteristics of the loans from Type I creditors. We compute this hypothetical loan spread as the average predicted loan spread by applying the coefficient

[23] The exclusion restriction requires that any effect of the proposed instrument on the outcome is exclusively through its potential effect on borrowers' decision to switch.

[24] We confirm that *Large bank*, *Time between deals*, and *Relationship intensity* are uncorrelated with the loan spread in our violators sample. To this end, we re-estimate the regression model in Column (2) of Table III by incorporating these variables. We report the corresponding coefficients in Table IA.IV in the Internet Appendix. The coefficients on *Large bank*, *Time between deals*, and *Relationship intensity* are not statistically significant.

estimates of Equation (5) to the borrower, loan, and creditor characteristics of the Type I loans of Equation (4).

Panel A of Table VIII summarizes the estimation results of Equations (3), (4), and (5). Column (1) presents the results of the first-stage creditor-type selection regression. They suggest that borrower characteristics, such as operating leverage, whether the borrower has recently issued debt, the availability of a credit rating, and loan characteristics, such as amount, maturity, amendment status, and takeover purpose, are correlated with the decision to borrow a new loan from a Type I creditor. Importantly, the exclusion restriction variable *Relationship intensity* is the most significant determinant in the matching equation, suggesting that the intensity of the borrower-creditor relationship is positively associated with the selection of a Type I creditor.

[Insert Table VIII here.]

Columns (2) and (3) of Table VIII show the results from the second-stage loan spread equations. While the majority of the variables have the same sign in both equations, *tangibility* is significant only for Type II loans, and *corporate purpose* as well as *takeover* are significant only for Type I loans. Type I loan spreads increase in operating leverage. This effect is reversed for Type II loans. The inverse *Mills ratio* is indistinguishable from zero in both second-stage estimations. This ratio can be interpreted as capturing the unobservable characteristics that correlate with creditor-type selection. This result suggests that although creditor-type selection is nonrandom, we do not find significant evidence for potentially omitted confounding factors.

Panel B of Table VIII shows the results from Equation (6), that is, the difference between the actual and hypothetical loan spreads. The mean actual spread charged by Type I creditors is 242 bps and the mean hypothetical spread is 137 bps, implying a difference of 105 bps. This difference is statistically significant (t = 22.8). Thus, Type II creditors would have charged a lower loan spread than that actually charged by Type I creditors for loans with the same borrower, loan, and creditor characteristics. This result suggests that our conjecture that shifts in the allocation of control rights at the individual creditor level are important in explaining the variation in observed loan spreads is robust to the potentially endogenous selection between Type I and Type II creditors.

7.2. Relationship banking

Section 7.1 addresses the concern that borrowers may endogenously select between Type I and Type II loans. One aspect of this potential endogeneity is particularly relevant in our setting:

relationship banking. Specifically, the literature finds that borrowers switching from a relationship creditor to a new creditor tend to receive lower loan spreads (see e.g., Ioannidou and Ongena (2010)). As Type I creditors already have a previous loan and, hence, a relationship with the borrower, the lower spread of Type II creditors could be driven by borrowers switching from a Type I relationship creditor to a new creditor of Type II. We now provide further evidence that the relationship banking aspect of the choice between Type I and Type II loans does not affect our results.

To this end, we first classify a relationship loan as a loan from a creditor with which the borrower already had a lending relationship during the previous 12 months, as suggested by Ioannidou and Ongena (2010). Next, we estimate our main specification by including relationship loans only. Hence, we exclude all switching loans, such that all Type II loans are also from banks, with which the borrower already had a relationship before the covenant violation. Columns (1) and (2) of Table IX show that our results are robust, with coefficient magnitudes very similar to those in our main estimations in Columns (1) and (2) of Table III. Therefore, our results are not driven by switching loans.

[Insert Table IX here.]

A related concern may be that some of our Type I loan observations are borrowers with limited flexibility to switch to a new lender even in the absence of a covenant violation. If borrower inflexibility is unobservable and correlated with new loan spreads, this limitation could bias our results. Therefore, we also consider the restriction that borrowers must receive a loan from both Type I and Type II creditors in the four quarters following a covenant violation. These borrowers demonstrate considerable financial flexibility after the covenant violation by borrowing new loans from different relationship lenders. Columns (3) and (4) in Table IX show that the results are even stronger in this sub-sample, which further supports our conjecture that it is driven by the legal hold-up of Type I creditors and not by the general limited financial flexibility of borrowers.

For completeness, we estimate our main model on a sub-sample that contains all firms but excludes the borrowers in Columns (3) and (4). Columns (5) and (6) of Table IX show that our results also hold for this sub-sample, suggesting that the creditor control spread is not concentrated among borrowers with multiple relationship loans.

7.3. Additional robustness tests

We first re-estimate the violators sample tests by following Berg, Saunders, and Steffen (2016) and use the total cost of borrowing as an alternative measure for loan pricing. Columns (1) and (2) of Table X show that the coefficients of *Control Rights* remain positive and significant. The estimated coefficient is 27 bps. A comparison of this estimate with the average total cost of borrowing in our sample of 125 bps implies that shifts in control rights increase loan costs by 22%. This economic magnitude is consistent with the main results presented in Section 6.2.

[Insert Table X here.]

Next, we adapt the duration after a covenant violation during which we assign control rights to a Type I creditor. Specifically, (*Control Rights*) now equals one if the creditor of a new loan is the Type I creditor of a violation that occurred in one of the previous two quarters (instead of the previous four quarters as in our main specification), and zero otherwise. The results are presented in Columns (3) and (4) of Table X. The coefficient estimates of *Control Rights* are significantly positive and slightly larger than those in the main estimation in section 6.2.

Borrowers often violate covenants for several subsequent quarters, which reflects both the length of time necessary to cure a violation and the increased monitoring of lenders after an initial violation (see e.g., Nini et al. (2012)). We also re-estimate Equation (2) by considering only the shifts in control rights after new covenant violations ($New\ Control\ Rights_{i,l,t}$). A new covenant violation is defined as a covenant violation by a firm that has not violated a covenant in the previous four quarters (Ferreira et al., 2018). The estimates of $New\ Control\ Rights_{i,l,t}$ in Columns (5) and (6) of Table X are significantly positive. This evidence mitigates the concern that multiple or stale covenant violations may influence the main results.

Columns (7) and (8), include the interaction of borrower fixed effects and quarter fixed effects. Thus, the *Control Rights* coefficient is identified from the spreads of Type I loans minus those of Type II loans to the same borrower in the same quarter. The advantage of this estimation is that it controls for all observable and unobservable borrower characteristics. The drawback is that, by construction, the coefficient of interest is only identified from borrowers who issue multiple loans in the same quarter with at least one loan from a Type I creditor and one loan from a Type II creditor. The coefficient estimates are significantly positive and consistent with the estimates in Table VIII Panel B.

Covenant controls and higher order covenant controls are common in the QRDD setting to mitigate the potential non-random assignment between violators and non-violators (see e.g.,

Nini et al. (2012)). Even though our violators sample estimations only consider violators, we add these controls for completeness in Columns (9) to (12). The coefficients of *Control Rights* are virtually unchanged compared with our main specification in Section 6.2.

7.4. Regression discontinuity design

We perform a regression discontinuity design (RDD) following Ferreira et al. (2018) for two reasons. First, we lack information on the distance to the covenant threshold in our hand-collected covenant data. In contrast, we can explicitly incorporate a firm's distance from the covenant threshold in the RDD approach. Thus, we compare the new loans of borrowers who violate a covenant and are just below the covenant threshold with those of borrowers who are just above the threshold. The primary assumption is that observations close to the threshold are (as good as) random, thereby mitigating endogeneity concerns. Second, the RDD provides an alternative method for identifying covenant violations. Thus, we address the concern that our results are biased by the manual identification of covenant violations in SEC filings.

We closely follow Ferreira et al. (2018) for the implementation of the RDD. We utilize loan-level covenant threshold data from DealScan. These data allows us to identify the creditors of each loan. A drawback of using covenant thresholds from DealScan is that the thresholds are recorded only at contract initiation. Therefore, we cannot track threshold renegotiations over the life of a contract. We focus on four covenant types: (i) current ratio, (ii) net worth, (iii) tangible net worth, and (iv) debt-to-EBITDA. We only include those observations in the RDD tests, for which the absolute value of the binding distance of the corresponding variable to the covenant threshold is less than h=0.2 (the bandwidth). This choice is motivated by Ferreira et al. (2018), who show that h = 0.2 yields a fairly random sample split around covenant thresholds.[25]

In Columns (1) and (2) of Table XI, we estimate the impact of covenant violations on loan spreads in the RDD approach. The results suggest that a covenant violation is associated with an approximately 42 bps increase in the spread. In Columns (3) to (6), we exploit our novel information about whether a creditor is of Type I or Type II. Specifically, Columns (3) and (4) test the impact of covenant violations on the loan spread of creditors with control rights (Type I). Columns (5) and (6) test the impact of covenant violations on the loan spread of creditors without control rights (Type II). We only find significantly positive coefficients for the creditors who receive control rights. The coefficient estimates in Columns (3) and (4) are 34.9 bps and 122.7 bps, respectively. Consistent with Section 6.1, this evidence confirms that shifts in control rights are a potential driver of the observed increase in loan spreads after covenant violations.

[25]The trade-off with the bandwidth choice is that a narrower bandwidth improves sample balance but reduces sample size.

[Insert Table XI here.]

Overall, the evidence in this section confirms the main results and is consistent with our conjecture that shifts in the allocation of control rights at the individual creditor level are important for explaining the variation in observed loan spreads.

8. Conclusion

This study examines the impact of creditor control rights on corporate loan pricing. We construct a novel dataset that combines hand-collected covenant violation data with individual borrower, creditor, and loan contract information. Our data allow us to differentiate between individual creditors who receive and those who do not receive control rights after a covenant violation, even within the same firm. By comparing the loan pricing of these two creditor types, we isolate the impact of shifts in control rights on loan prices from the impact of other factors related to covenant violations. We find that shifts in control rights are of first-order importance in explaining the variation in loan prices. These results also shed light on the loan premium puzzle in the recent banking literature (see e.g., Schwert, 2020). Specifically, we show that creditors exploit shifts in control rights to overprice new loans and that this loan market friction is a key driver of the loan premium puzzle.

These results have two important economic implications. First, our finding that a market friction is a key reason for loan premiums encourages a discussion on lending regulations, legal settings, and contract design approaches to mitigate loan overpricing. This discussion is important for protecting borrowers in the loan market. It is also useful because loan market frictions have important transmission effects on the real economy (e.g., Gan, 2007; Chodorow-Reich, 2014). The loan premium per se does not justify this discussion because loans offer benefits such as flexibility in borrowing or a positive signal of a firm's quality from the bank's willingness to lend funds (Rajan, 1992; Schwert, 2020), which legitimate a certain loan premium. Second, the rent extraction that we identify questions the nature of competition in the loan market when creditors can legally hold-up their borrowers due to shifts in control rights.

This study raises important questions for future research. For example, the adverse effects of shifts in control rights may also occur in alternative situations, in which control rights switch to creditors, such as a debt rollover or restructuring. Moreover, our data on individual creditors who receive control rights allow researchers to analyze how creditors' specific positions, mandates, or borrower relations influence their intervention in firm policies.

Appendix

Table A1: **Variable Descriptions.** This table defines the variables used in the analyses. The variables are grouped by their respective source and sorted alphabetically within these groups.

Variable	Description
Hand-collected	
Control Rights	An indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise.
Covenant Violation	An indicator that equals one if the firm reported a financial covenant violation in one of the four previous quarters, and zero otherwise.
New Control Rights	An indicator that equals one if the firm reported a new financial covenant violation in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise.
New Covenant Violation	An indicator that equals one if the firm reported a new financial covenant violation in one of the four previous quarters, and zero otherwise. A new financial covenant violation is defined as a financial covenant violation by a firm that has not violated a financial covenant in the previous four quarters.
No Control Rights	An indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters not related to the counterparty that originated the new loan, and zero otherwise.
DealScan	
All-in-drawn Spread	The amount the borrower pays in basis points over LIBOR for each dollar drawn down. It adds the spread of the loan with any annual (or facility) fee paid to the creditor.
Amount/Borrower Assets	The ratio of facility amount to borrower book assets.
Corporate Purposes	An indicator variable for corporate purposes as loan purpose.
Debt Repayment	An indicator variable for debt repayment loan purpose.
Facility Amount	The facility amount in million USD.
Lead Arranger Count	The number of lead arrangers with non-missing data. We follow Bharath, Dahiya, Saunders, and Srinivasan (2011) and define a lender as a lead bank if it receives a lead arranger credit, has a role of "Agent," "Admin. agent," "Arranger," or "Lead bank," or if the bank is the sole lender.
Loan Amended	An indicator variable that equals one if the loan purpose is debt repayment or credit enhancement or if the loan has the same collateral status and is within a 10% band of the all-in-drawn spread amount and maturity of a prior loan that is outstanding at the time of the reported start date. This proxy for loan amendments follows the approach of Bird et al. (2019).
Maturity	The number of years between facility start and end dates.
Number of Covenants	The number of financial covenants included in the loan facility.

(*Continued*)

Table A1: *Continued*

Variable	Description
Participant Count	The number of participants with non-missing data.
Relationship Intensity	The number of loans that a firm has drawn from its current lead lender as a proportion of the total number of loans that the firm has drawn to date (Schenone, 2010).
Relationship Length	The number of days between the initiation of a new relationship and the loan. Following Ioannidou and Ongena (2010) we define a new relationship when a firm obtains a new loan from a bank with which it did not have a lending relationship during the prior 12 months.
Revolving Facility	An indicator variable for a revolving credit line.
Senior Loan	An indicator variable that takes the value of one if the loan is senior, and zero otherwise.
Sole Lender	An indicator variable for a sole lender.
Syndicate Size	The number of participants in a syndicate.
Takeover	An indicator variable for a takeover loan purpose.
Term Loan	An indicator variable for a term loan.
Term Loan A	An indicator for term loan A facilities, which are repaid on an amortization schedule.
Term Loan B	An indicator for term loan B facilities, which have minimal amortization before maturity.
Working Capital	An indicator variable for working capital loan purpose.
Compustat & CRSP	
Bank Book Assets	Total bank assets in USD billion (*atq*).
Bank Market Equity	The ratio of market capitalization ($prccq \times cshoq$) to book assets (*atq*) minus book equity (*ceqq*) plus market capitalization.
Book Leverage	The ratio of debt (*dlttq*+*dlcq*) to assets.
Cash	The ratio of cash (*cheq*) and equivalents to book assets.
Current Ratio	The ratio of current assets (*actq*) to current liabilities (*lctq*).
Distance-to-Default	The naive distance-to-default of Bharath and Shumway (2008).
Firm Book Assets	Total firm assets in USD billion (*atq*).
Intangible Assets	Intangible assets other than goodwill (*intanq-gdwlq*) to total assets other than goodwill (*atq-gdwlq*).
Interest Expense	The ratio of interest expense (*xintq*) to assets.
Market Leverage	The ratio of debt to quasi-market assets (debt plus equity market capitalization).
Net Worth	The ratio of stockholders equity (*seqq*) to assets.
Operating Leverage	The ratio of SG&A expense (*xsgaq*) to SG&A expense plus cost of goods sold (*cogsq*).

(*Continued*)

Table A1: *Continued*

Variable	Description
Profitability	The ratio of operating income before depreciation (*oibdpq*) to book assets.
Research Expenses	The ratio of R&D expenditure to sales.
Short-term Debt	Short-term debt (*dlcq*) divided by total debt (*dlttq*+*dlcq*).
Tangibility	The ratio of property, plant, and equipment (*ppentq*) to book assets.
Tier 1 Capital Ratio	The risk-weighted Tier 1 capital ratio (*capr1q*).
Tobin's Q	The ratio of quasi-market assets to book assets.
Years since IPO	Years since IPO or years of information on CRSP if IPO year is missing.

Structural model of credit risk

We replicate the bankruptcy cost specification approach in Schwert (2020) by measuring the loan premium in a structural model with proportional bankruptcy costs. This approach offers a closed-form solution for the values of senior and junior debt claims.

A firm's value V follows a geometric Brownian motion under the risk-neutral measure:

$$dlnV_t = (r - 0.5\sigma^2)dt + \sigma dW_t^Q \tag{7}$$

The firm has two zero-coupon debt claims outstanding, a senior loan with face value K_S and a junior debt with face value K_J, both maturing at time T. In case of default, a fraction α of firm value is lost to direct and indirect costs of financial distress. Following Schwert (2020), the value of senior loan in this setup is

$$D_S = (1-\alpha)(1-\Phi(d_{1,S}))V + K_S e^{-rT}\Phi(d_{2,S}), \tag{8}$$

where

$$d_{1,S} = \frac{ln(\frac{V}{min(K_S/(1-\alpha), K_S+K_J)}) + (r+0.5\sigma^2)T}{\sigma\sqrt{T}} \tag{9}$$

$$d_{2,S} = d_{1,S} - \sigma\sqrt{T}. \tag{10}$$

The value of junior debt is

$$D_J = (1-\alpha)[V(\Phi(d_{1,S}) - \Phi(d_1)) - K_S e^{-rT}(\Phi(d_{2,S}) - \Phi(d_2))] + K_J e^{-rT}\Phi(d_2), \tag{11}$$

where

$$d1 = \frac{ln(V/(K_S+K_J)) + (r+0.5\sigma^2)T}{\sigma\sqrt{T}} \tag{12}$$

$$d2 = d1 - \sigma\sqrt{T}. \tag{13}$$

Senior and Junior debt maturities are allowed to differ, with the respective values used in Equations 8 and 11. The yields of the senior and junior debt are $y_S = \frac{1}{T}ln(K_S/D_S)$ and $y_J = \frac{1}{T}ln(K_J/D_j)$, respectively.

Figures

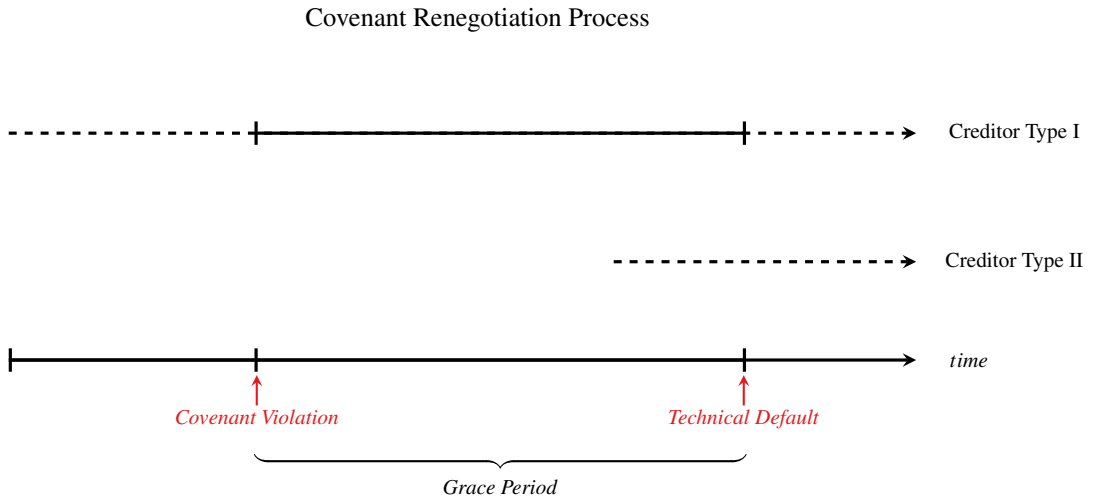

Figure 1. Timeline Around Covenant Violation. This figure plots the events around a covenant violation. We consider one borrower that has two outstanding loans, one loan from a Type I creditor and one loan from a Type II creditor. The Type I creditor is the creditor counterparty to the specific loan that is related to the covenant violation. The Type II creditor is a creditor counterparty to a firm with a covenant violation, but this creditor's loan is not related to the covenant violation. The solid and dashed lines indicate a high and low probability of renegotiation, respectively.

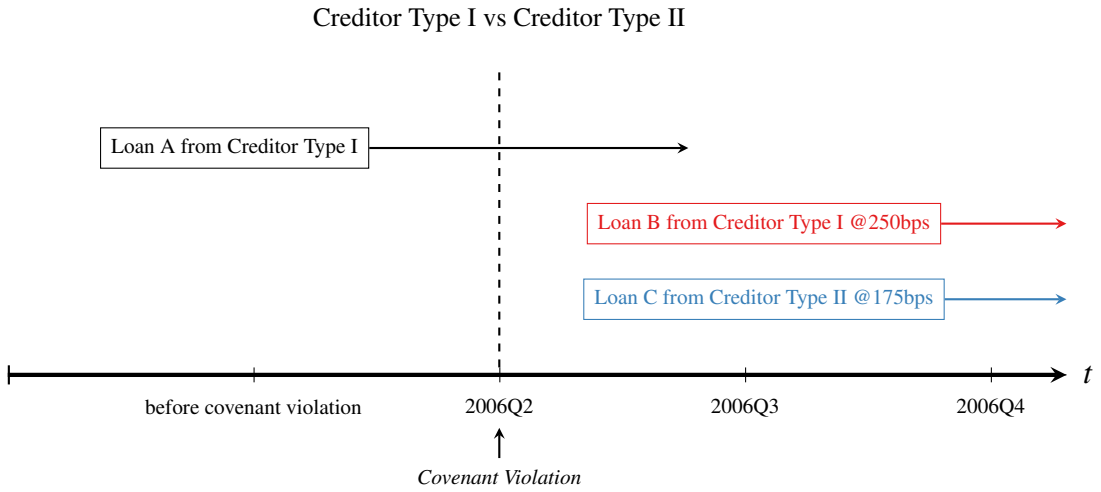

Figure 2. Identification Approach. This figure illustrates our identification approach based on an ideal example. Calgon Carbon Corp. has an outstanding loan from a Type I creditor in the quarter of the covenant violation. In the quarters after this violation, the borrower obtains two new loans. One loan is from the Type I creditor and carries a loan spread of 250 bps. The second loan is from a Type II creditor and carries a spread of 175 bps. In this example, the Type I creditor charges a loan spread that is 75 bps higher than that of the Type II creditor.

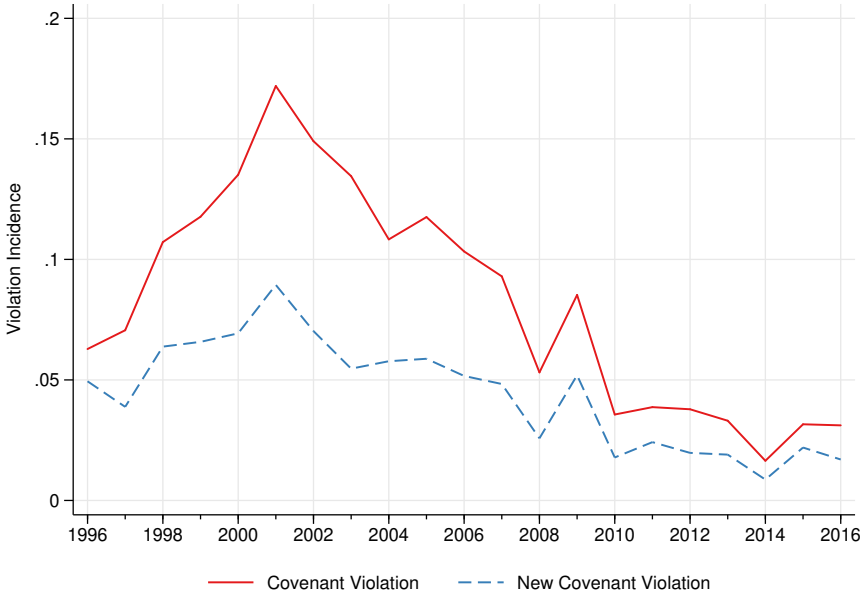

Figure 3. Covenant Violations over Time. This figure tracks the financial covenant violations over the entire sample period from 1996 to 2016. The red line depicts the time series of all violations. The dashed blue line depicts the time series of new covenant violations. A new covenant violation is a financial covenant violation by a firm that has not violated a covenant in the previous four quarters. The sample includes 1,950 firms.

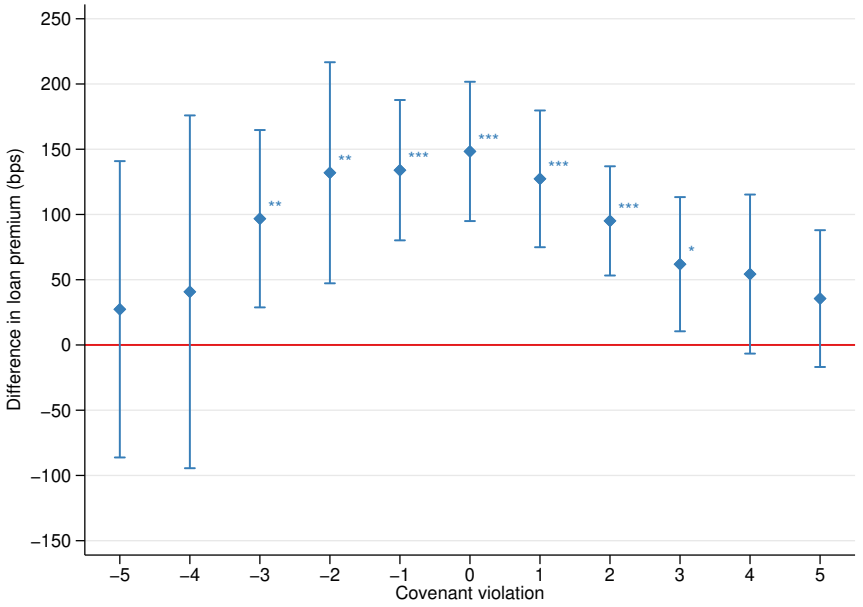

Figure 4. Difference in Loan Premiums for Type I and Type II Creditors Around Covenant Violations. This figure shows estimates of the difference in loan premiums between Type I and Type II creditors in the time-window around a covenant violations. We estimate this difference in a rolling-window analysis. Specifically, for each rolling window over four quarters, we plot the difference together with the 90% confidence band. The sample construction and estimation procedure are described in Section 6.3. The x-axis shows the last quarter in the respective four-quarter rolling window and *, **, and *** indicate that the p-values are less than 0.10, 0.05, and 0.01, respectively.

Tables

Table I
Summary Statistics

This table reports summary statistics for the sample of loans merged with borrower and lender characteristics and covenant violations information. Columns (1) through (4) report statistics for the full sample, while columns (5) through (8) refer to the violators sample of loans initiated within four quarters after a covenant violation. The samples contain new loan originations matched with lead arrangers and borrowers characteristics observed from the quarterly filing in the loan origination quarter. For borrower variables, observations are counted by firm-quarter. For loan variables, observations are counted by loan. For bank variables, observations are counted by bank-quarter. We winsorize all variables at the 1% level to mitigate the influence of outliers. Variable definitions are available in Appendix A1 to this paper.

	Full Sample				Violators Sample			
	Obs.	Mean	Median	*SD*	Obs.	Mean	Median	*SD*
Hand-collected Variables								
Covenant Violation	8,017	0.08	0.00	0.27				
New Covenant Violation	8,017	0.05	0.00	0.22				
Control Rights	8,017	0.05	0.00	0.22	701	0.58	1.00	0.49
Borrower Variables								
Bank-Dependent Indicator	8,017	0.34	0.00	0.47	701	0.52	1.00	0.50
Book Leverage	7,991	0.34	0.31	0.20	699	0.38	0.36	0.22
Cash	8,016	0.07	0.04	0.08	701	0.06	0.03	0.08
Current Ratio	8,017	1.81	1.62	0.94	701	1.81	1.60	1.03
Distance-to-Default	7,933	6.42	5.62	4.15	677	3.88	2.98	3.42
Firm Book Assets ($B)	8,017	7.53	2.05	20.09	701	3.15	0.64	9.67
Intangible Assets	6,288	0.10	0.04	0.15	464	0.07	0.02	0.13
Interest Expense	7,988	0.01	0.00	0.00	694	0.01	0.01	0.01
Market Leverage	7,991	0.30	0.26	0.21	699	0.42	0.40	0.26
Net Worth	8,017	0.37	0.38	0.21	701	0.33	0.34	0.24
Operating Leverage	7,991	0.24	0.21	0.17	694	0.24	0.20	0.16
Profitability	7,967	0.04	0.03	0.02	691	0.03	0.03	0.03
Research Expenses	3,200	0.01	0.00	0.01	251	0.01	0.00	0.01
Relationship Intensity	7,413	0.36	0.33	0.25	615	0.36	0.35	0.27
Relationship Length	7,287	1891	1457	1664	608	1174	867	1175
Tangibility	8,017	0.32	0.26	0.24	701	0.32	0.26	0.23
Tobin's Q	7,991	1.41	1.19	0.79	699	1.10	0.93	0.66
Years since IPO	8,017	23.7	16.8	20.6	701	16.0	10.3	15.2
Loan Variables								
All-in-drawn Spread (bps)	11,886	190	175	114	1,083	262	250	118
Amount/Borrower Assets	11,886	0.17	0.12	0.15	1,083	0.18	0.13	0.15
Corporate Purposes	11,886	0.47	0.00	0.50	1,083	0.35	0.00	0.48
Debt Repayment	11,886	0.09	0.00	0.29	1,083	0.19	0.00	0.39
Facility Amount ($M)	11,886	520	250	764	1,083	250	100	474
Lead Arranger Count	11,886	1.76	1.00	1.05	1,083	1.36	1.00	0.83
Loan Amended	11,886	0.33	0.00	0.47	1,083	0.36	0.00	0.48
Maturity	11,886	4.21	5.00	1.71	1,083	3.72	4.00	1.73
Number of Covenants	7,389	2.27	2.00	0.99	769	2.71	3.00	1.13
Participant Count	11,886	2.01	1.00	2.29	1,083	1.41	1.00	1.82
Revolving Facility	11,886	0.68	1.00	0.47	1,083	0.64	1.00	0.48
Secured Loan	8,679	0.70	1.00	0.46	721	0.89	1.00	0.31
Senior Loan	11,886	1.00	1.00	0.03	1,083	1.00	1.00	0.04
Sole Lender	11,886	0.14	0.00	0.34	1,083	0.32	0.00	0.47
Syndicate Size	11,886	4.74	4.00	3.16	1,083	3.17	2.00	2.55
Takeover	11,886	0.11	0.00	0.31	1,083	0.06	0.00	0.24
Term Loan	11,886	0.29	0.00	0.45	1,083	0.34	0.00	0.47
Term Loan A	11,886	0.08	0.00	0.28	1,083	0.07	0.00	0.25
Term Loan B	11,886	0.10	0.00	0.29	1,083	0.12	0.00	0.32
Total Cost of Corporate Borrowing	6,641	125	94.8	104	762	185	154	114
Working Capital	11,886	0.16	0.00	0.37	1,083	0.26	0.00	0.44
Lender Variables								
Bank Book Assets ($B)	1,540	257	65.0	524	930	491	141	672
Bank Market Equity (%)	1,540	14.95	14.13	6.03	930	15.43	14.84	5.97
Tier 1 Capital Ratio	1,529	10.0	9.80	2.06	926	9.22	8.50	1.88

Table II
Covenant Violations, Control Rights, and Loan Spreads - Full Sample

This table reports regressions of loan spreads on a financial covenant violation indicator and control variables. The estimation procedure is defined in Equation 1. The dependent variable is the all-in-drawn spread, expressed in basis points. *Covenant Violation* is defined as an indicator that equals one if the firm reported a financial covenant violation in either of the previous four quarters, and zero otherwise. *Control Rights* is defined as an indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise. *No Control Rights* is defined as an indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters not related to the counterparty that originated the new loan, and zero otherwise. *Covenant Controls* include the borrower's profitability, Tobin's Q, leverage ratio, interest coverage, net worth and current ratio. All of these covenant controls enter the model lagged by one and five quarters. *Higher Order Covenant Controls* are the squared and cubic versions of the covenant controls. *Borrower Controls* include credit rating dummies, log assets, asset tangibility, cash, operating leverage, years since IPO, industry and state dummies, indicators for whether the borrower issued debt or equity during the life of the loan, an indicator equal to one if the borrower does not have an S&P long-term issuer rating, and the naive distance-to-default of Bharath and Shumway (2008). *Lender Controls* are bank market equity (%) and log assets. *Loan Controls* are loan maturity, loan amount as a percentage of borrower assets and dummies for collateral status, loan amendments, loan type and purpose. The borrower and lender controls are lagged by one quarter. Calendar quarter fixed effects are included to account for time trends. Lender and borrower fixed effects account for unobservable time-fixed characteristics at the lender and borrower level. t-statistics are reported in parenthesis and are based on standard errors clustered by borrower and quarter (see Petersen (2009)). *, **, and *** indicate that the corresponding p-values are less than 0.10, 0.05, and 0.01, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Covenant Violation	23.93***	23.93***				
	(5.44)	(5.47)				
Control Rights			26.23***	26.16***		
			(4.38)	(4.40)		
No Control Rights					-3.38	-3.34
					(-0.36)	(-0.36)
Covenant Controls	YES	YES	YES	YES	YES	YES
Higher Order Covenant Controls	YES	YES	YES	YES	YES	YES
Borrower Controls	YES	YES	YES	YES	YES	YES
Borrower FEs	YES	YES	YES	YES	YES	YES
Loan Controls	YES	YES	YES	YES	YES	YES
Quarter FEs	YES	YES	YES	YES	YES	YES
Lender Controls	NO	YES	NO	YES	NO	YES
Lender FEs	NO	YES	NO	YES	NO	YES
Adjusted R^2	0.784	0.784	0.784	0.784	0.782	0.783
Observations	38,788	38,788	38,788	38,788	38,788	38,788

Table III
Control Rights and Loan Terms - Violators Sample

This table reports regression estimations of loan terms on a control rights indicator and control variables. The estimation procedure is defined in Equation 2. The dependent variable in columns (1) and (2) is the all-in-drawn loan spread, expressed in basis points. In columns (3) and (4) the dependent variable is the maturity of the loan, in columns (5) and (6) the dependent variable is the loan amount scaled by the borrower's assets, in columns (7) and (8) the dependent variable is the number of covenants included in the loan, and in columns (9) and (10) the dependent variable is a variable that captures if a loan is secured or not, respectively. *Control Rights* is defined as an indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise. *Borrower Controls* include credit rating dummies, log assets, asset tangibility, cash, operating leverage, years since IPO, industry and state dummies, indicators for whether the borrower issued debt or equity during the life of the loan, an indicator equal to one if the borrower does not have an S&P long-term issuer rating, and the naive distance-to-default of Bharath and Shumway (2008). *Loan Controls* are loan maturity, loan amount as a percentage of borrower assets and dummies for collateral status, loan amendments, loan type and purpose. *Lender Controls* are bank market equity (%) and log assets. The borrower and lender controls are lagged by one quarter. Calendar quarter fixed effects are included to account for time trends. Lender and borrower fixed effects account for unobservable time-fixed characteristics at the lender and borrower level. t-statistics are reported in parenthesis and are based on standard errors clustered by borrower and quarter (see Petersen (2009)). *, **, and *** indicate that the corresponding p-values are less than 0.10, 0.05, and 0.01, respectively.

Dependent Variable	All-in-drawn Spread		Maturity		Facility Amount		# of Covenants		Secured Loan	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Control Rights	55.22***	52.76***	0.02	0.05	0.01	0.01	0.28	0.30	-0.00	-0.00
	(4.49)	(4.60)	(0.11)	(0.29)	(0.68)	(0.83)	(1.19)	(1.26)	(-0.06)	(-0.06)
Borrower Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Borrower FEs	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Loan Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Quarter FEs	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Lender Controls	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Lender FEs	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Adjusted R^2	0.896	0.896	0.833	0.834	0.604	0.601	0.934	0.937	0.948	0.947
Observations	2,472	2,470	2,472	2,470	2,472	2,470	1,822	1,820	1,978	1,977

Table IV
Estimates of the Loan Premium from the Structural Model

This table reports estimates of the loan premium from the structural model. First, we estimate counterfactual loan spreads in a structural model of credit risk that is outlined in Appendix Equation 8. Subsequently, we subtract these counterfactual loan spreads from the actual all-in-drawn spread to quantify the loan premium. We specify recovery rates using a firm-level bankruptcy cost $\alpha = 0.45 - 0.2Lev_{Book}$. Model spreads are obtained by computing implied asset volatility using the bond credit spread for the loan. Fraction of loan spread is the loan premium divided by the observed all-in-drawn spread. Panels A and B show the estimates for the sample of all loans and only secured term loans, respectively. Panel C reports the estimates in Schwert (2020) for comparison purposes.

Panel A: Final sample *(n=1,044)*					
	Mean	*SD*	p10	p50	p90
All-in-drawn spread (bps)	185	109	65	160	325
Loan premium (bps)	140	98	28	123	271
Fraction of loan spread	0.78	0.28	0.40	0.89	1.00
Panel B: Restricted Sample *(n=231)*					
	Mean	*SD*	p10	p50	p90
All-in-drawn spread (bps)	290	105	150	300	450
Loan premium (bps)	216	107	100	208	356
Fraction of loan spread	0.74	0.23	0.43	0.80	0.98
Panel C: Schwert (2020) *(n=199)*					
	Mean	*SD*	p10	p50	p90
All-in-drawn spread (bps)	279	122	163	275	425
Loan premium (bps)	171	108	61	153	315
Fraction of loan spread	0.59	0.23	0.31	0.60	0.87

Table V
Regression Analysis of the Loan Premium

This table reports regression estimations of the loan premium on a control rights indicator and control variables. We estimate counterfactual loan spreads in a structural model of credit risk that is outlined in Appendix Equation 8. Subsequently, we subtract these counterfactual loan spreads from the actual all-in-drawn spread to quantify the loan premium. The dependent variable is the loan premium, expressed in basis points. *Control Rights* is defined as an indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise. *Borrower Controls* include credit rating dummies, log assets, asset tangibility, cash, operating leverage, years since IPO, industry and state dummies, indicators for whether the borrower issued debt or equity during the life of the loan, an indicator equal to one if the borrower does not have an S&P long-term issuer rating, and the naive distance-to-default of Bharath and Shumway (2008). *Lender Controls* are bank market equity (%) and log assets. *Loan Controls* are loan maturity, loan amount as a percentage of borrower assets and dummies for collateral status, loan amendments, loan type and purpose. The borrower and lender controls are lagged by one quarter. Calendar quarter fixed effects are included to account for time trends. Lender fixed effects account for unobservable time-fixed characteristics at the lender level. t-statistics are reported in parenthesis and are based on standard errors clustered by borrower and quarter (see Petersen (2009)). *, **, and *** indicate that the corresponding p-values are less than 0.10, 0.05, and 0.01, respectively.

	Violators Sample		Schwert (2020) Controls
	(1) Premium	(2) Premium	(3) Log(Premium)
Control Rights	91.31**	93.37**	1.16***
	(2.28)	(2.52)	(14.70)
Borrower Controls	YES	YES	NO
Loan Controls	YES	YES	NO
Quarter FEs	YES	YES	NO
Lender Controls	NO	YES	NO
Lender FEs	NO	YES	NO
Schwert (2020) Controls	NO	NO	YES
Adjusted R^2	0.790	0.768	0.997
Observations	94	92	95

Table VI
Control Rights and Loan Spreads - Cross-sectional Results

This table reports cross-sectional results. The estimation procedure is defined in Equation 2. The dependent variable is the all-in-drawn loan spread, expressed in basis points. *Control Rights* is defined as an indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise. *Borrower Controls* include credit rating dummies, log assets, asset tangibility, cash, operating leverage, years since IPO, industry and state dummies, indicators for whether the borrower issued debt or equity during the life of the loan, an indicator equal to one if the borrower does not have an S&P long-term issuer rating, and the naive distance-to-default of Bharath and Shumway (2008). *Lender Controls* are bank market equity (%) and log assets. *Loan Controls* are loan maturity, loan amount as a percentage of borrower assets and dummies for collateral status, loan amendments, loan type and purpose. The borrower and lender controls are lagged by one quarter. Calendar quarter fixed effects are included to account for time trends. Lender and borrower fixed effects account for unobservable time-fixed characteristics at the lender and borrower level. The variables for the cross-sectional tests are discussed in Section 6.4. t-statistics are reported in parenthesis and are based on standard errors clustered by borrower and quarter (see Petersen (2009)). *, **, and *** indicate that the corresponding p-values are less than 0.10, 0.05, and 0.01, respectively.

	Short-term Debt		Speculative Grade		R&D expenses		Intangible Assets		Relationship Intensity		Relationship Length		Term Loan		Altman Z-score	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Control Rights	31.31**	30.59**	29.91**	28.85**	49.60***	46.85***	65.45***	62.41***	58.21***	55.08***	55.79***	53.60***	53.99***	51.77***	53.67***	50.58***
	(2.25)	(2.23)	(2.44)	(2.40)	(3.63)	(3.72)	(3.87)	(4.04)	(4.03)	(4.19)	(4.36)	(4.52)	(4.45)	(4.53)	(3.44)	(3.53)
Short-term debt > median	-18.84	-15.60														
	(-1.10)	(-0.93)														
Control Rights × Short-term debt > median	42.59**	39.83**														
	(2.08)	(2.10)														
Speculative Grade			117.92**	120.60**												
			(2.35)	(2.40)												
Control Rights × Speculative Grade			50.27**	47.70**												
			(2.36)	(2.45)												
Research Expense > median					-5.27	-6.13										
					(-0.25)	(-0.29)										
Control Rights × Research Expense > median					33.78	35.49*										
					(1.61)	(1.72)										
Intangible Assets > median							50.92*	50.21*								
							(1.87)	(1.89)								
Control Rights × Intangible Assets > median							-27.33	-25.21								
							(-1.27)	(-1.25)								
Relationship Intensity > median									-0.68	-1.42						
									(-0.06)	(-0.12)						
Control Rights × Relationship Intensity > median									-4.63	-3.01						
									(-0.35)	(-0.24)						
Relationship Length > median											1.81	2.51				
											(0.40)	(0.56)				
Control Rights × Relationship Length > median											-1.63	-2.26				
											(-0.34)	(-0.49)				
Term Loan													41.28	44.65		
													(0.90)	(0.95)		
Control Rights × Term Loan													4.07	3.45		
													(0.48)	(0.41)		
Altman Z-score < median															22.34	22.24
															(1.18)	(1.19)
Control Rights × Altman Z-score < median															2.24	3.65
															(0.11)	(0.19)
Borrower Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Loan Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Borrower FEs	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Quarter FEs	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Lender Controls	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Lender FEs	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Adjusted R^2	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Observations	2,459	2,459	2,459	2,459	2,459	2,459	2,459	2,459	2,459	2,459	2,459	2,459	2,459	2,459	2,459	2,459

Table VII
Control Rights and Loan Spreads - Time-series and Cross-sectional Results

This table reports time-series and cross-sectional results. The estimation procedure is defined in Equation 2. The dependent variable is the all-in-drawn loan spread, expressed in basis points. *Control Rights* is defined as an indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise. *Borrower Controls* include credit rating dummies, log assets, asset tangibility, cash, operating leverage, years since IPO, industry and state dummies, indicators for whether the borrower issued debt or equity during the life of the loan, an indicator equal to one if the borrower does not have an S&P long-term issuer rating, and the naive distance-to-default of Bharath and Shumway (2008). *Lender Controls* are bank market equity (%) and log assets. *Loan Controls* are loan maturity, loan amount as a percentage of borrower assets and dummies for collateral status, loan amendments, loan type and purpose. The borrower and lender controls are lagged by one quarter. Calendar quarter fixed effects are included to account for time trends. Lender and borrower fixed effects account for unobservable time-fixed characteristics at the lender and borrower level. The variables for the time-series and cross-sectional tests are discussed in Section 6.4. t-statistics are reported in parenthesis and are based on standard errors clustered by borrower and quarter (see Petersen (2009)). *, **, and *** indicate that the corresponding p-values are less than 0.10, 0.05, and 0.01, respectively.

	Time-Series		Lender Characteristics					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Control Rights	33.5***	31.9***	57.1***	54.7***	55.3***	53.1***	61.7***	58.3***
	(2.66)	(2.67)	(4.32)	(4.53)	(4.48)	(4.47)	(4.09)	(4.20)
NBER Recession	15.5	12.9						
	(0.78)	(0.69)						
Control Rights × NBER Recession	-17.4	-17.9						
	(-0.49)	(-0.52)						
Bank Book Assets ($B) > median			2.7	-6.7				
			(0.89)	(-1.34)				
Control Rights × Bank Book Assets ($B) > median			-3.8	-3.4				
			(-0.89)	(-0.93)				
Capital Ratio > median					2.9	4.1		
					(0.95)	(1.26)		
Control Rights × Capital Ratio > median					0.0	-0.5		
					(0.00)	(-0.12)		
Sole Lender							48.0***	46.4***
							(2.76)	(2.72)
Control Rights × Sole Lender							-32.8	-28.7
							(-1.40)	(-1.30)
Borrower Controls	YES	YES	YES	YES	YES	YES	YES	YES
Borrower FEs	YES	YES	YES	YES	YES	YES	YES	YES
Loan Controls	YES	YES	YES	YES	YES	YES	YES	YES
Quarter FEs	NO	NO	YES	YES	YES	YES	YES	YES
Lender Controls	NO	YES	NO	YES	NO	YES	NO	YES
Lender FEs	NO	YES	NO	YES	NO	YES	NO	YES
Adjusted R^2	0.853	0.855	0.895	0.896	0.895	0.896	0.897	0.898
Observations	2,461	2,459	2,459	2,457	2,459	2,457	2,459	2,457

Table VIII
Robustness: Endogenous Switching Regression Model

This table presents the results of the endogenous switching regression estimation outlined in Section 7.1. Column (1) shows the probit estimation results for the matching equation between borrowers and loans from different creditor types. The dependent variable in this column is the *Control Rights* dummy - a binary variable that equals 1 if a Type I creditor issued the loan, and 0 otherwise. Columns (2) and (3) report estimation results for the two second-stage loan spread equations, one for the Type I loans (With Control Rights) and the other for the Type II loans (Without Control Rights). The dependent variable in these two columns is the all-in-drawn spread, expressed in basis points. The variable *Mills Ratio* is the inverse Mills-ratio variable used to adjust for self-selection. Panel B compares the means of the actual loan spreads with their hypothetical counterparts for Type I loans. The hypothetical measure reflects what the loan spread would be if the Type II creditor had been the issuer of the new loan (see Section 7.1 for more details). Variable definitions are available in Appendix A1 to this paper. The *t*-statistic for differences in means are reported.

Panel A: Estimation results for the two-stage method

	(1) Pr(Creditor Control)	(2) With Control Rights	(3) Without Control Rights
Bank-dependent	0.17	3.40	57.70***
	(1.12)	(0.32)	(3.86)
Distance-to-default	-0.02*	-17.08***	-9.94***
	(-1.72)	(-21.72)	(-9.64)
Total Assets (log)	0.04	-15.57***	-13.12***
	(1.32)	(-7.79)	(-4.24)
Tangibility	0.15	-10.96	42.13**
	(1.00)	(-1.06)	(2.52)
Cash	0.01	192.72***	49.12
	(0.03)	(5.51)	(1.15)
Operating Leverage	0.77***	64.01***	-47.52**
	(3.78)	(4.62)	(-2.15)
Years since IPO	0.00	-0.53***	-0.11
	(1.28)	(-3.98)	(-0.52)
Issued Debt	0.19**	23.95***	4.95
	(2.49)	(4.44)	(0.69)
Issued Equity	-0.08	-6.71	-53.78***
	(-1.03)	(-1.32)	(-7.34)
Speculative Grade	0.30*	10.23	47.04***
	(1.94)	(0.92)	(3.11)
Investment Grade	0.51***	-82.96***	-51.98***
	(2.76)	(-6.30)	(-2.80)
Bank Total Assets (log)	0.02	0.01	2.33
	(0.53)	(0.00)	(0.92)
Bank Market Equity	0.01	-0.68	-2.11***
	(0.87)	(-1.52)	(-3.64)
Amount/Borrower Assets	0.46**	-44.43***	-85.81***
	(2.02)	(-2.96)	(-3.75)
Maturity	-0.08***	-7.85***	-5.74**
	(-4.13)	(-5.46)	(-2.44)
Loan Amended	0.24***	-23.83***	-10.71
	(3.13)	(-4.63)	(-1.36)
Corporate Purposes	0.02	12.25**	-10.54
	(0.26)	(2.20)	(-1.24)
Working Capital	0.07	-7.29	-14.77
	(0.81)	(-1.16)	(-1.64)
Takeover	0.36***	-27.45***	22.70
	(2.80)	(-3.09)	(1.62)
Term Loan	-0.09	61.93***	47.11***
	(-1.18)	(11.87)	(6.90)
Large Bank	0.03		
	(0.42)		
Time between deals	0.04		
	(1.55)		
Relationship Intensity	1.54***		
	(14.06)		
Mills Ratio		3.72	-19.42
		(0.35)	(-1.46)
Constant	-0.27	325.50***	264.47***
	(-0.94)	(14.94)	(9.86)
Pseudo R^2	0.108		
R^2		0.592	0.532
Observations	2,148	1,439	709

Panel B: Comparison between actual and hypothetical loan spreads

	Actual	Hypothetical	Difference	*t*-statistic
All-in-drawn spread (bps)	241.55	136.81	104.74	22.84

Table IX
Robustness: Relationship Banking

This table reports regression estimations of loan spreads on a control rights indicator and control variables. The estimation procedure is defined in Equation 2. The dependent variable is the all-in-drawn spread, expressed in basis points. *Control Rights* is defined as an indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise. *Borrower Controls* include credit rating dummies, log assets, asset tangibility, cash, operating leverage, years since IPO, industry and state dummies, indicators for whether the borrower issued debt or equity during the life of the loan, an indicator equal to one if the borrower does not have an S&P long-term issuer rating, and the naive distance-to-default of Bharath and Shumway (2008). *Lender Controls* are bank market equity (%) and log assets. *Loan Controls* are loan maturity, loan amount as a percentage of borrower assets and dummies for collateral status, loan amendments, loan type and purpose. The borrower and lender controls are lagged by one quarter. Calendar quarter fixed effects are included to account for time trends. Lender and borrower fixed effects account for unobservable time-fixed characteristics at the lender and borrower level. In columns (1) and (2) we perform our analyses on a sub-sample of relationship loans. We define a relationship loan as a new loan a borrower obtains from a bank with which the borrower had a lending relationship during the prior 12 months. In columns (3) and (4) we perform our analyses on a sub-sample of borrowers that obtain multiple loans from multiple relationship lenders after a covenant violation. In columns (5) and (6) we perform our analyses on a sub-sample of borrowers that excludes i) borrowers obtaining multiple loans after a covenant violation or ii) borrowers that obtain loans from relationship lenders. t-statistics are reported in parenthesis and are based on standard errors clustered by borrower and quarter (see Petersen (2009)). *, **, and *** indicate that the corresponding p-values are less than 0.10, 0.05, and 0.01, respectively.

	Relationship Loans		Multiple Relationship Loans		Without Multiple Relationship Loans	
	(1)	(2)	(3)	(4)	(5)	(6)
Control Rights	55.27***	55.16***	86.19***	88.20***	42.85***	43.68***
	(4.75)	(4.74)	(3.46)	(3.53)	(3.00)	(3.09)
Borrower Controls	YES	YES	YES	YES	YES	YES
Borrower FEs	YES	YES	YES	YES	YES	YES
Loan Controls	YES	YES	YES	YES	YES	YES
Quarter FEs	YES	YES	YES	YES	YES	YES
Lender Controls	NO	YES	NO	YES	NO	YES
Lender FEs	NO	YES	NO	YES	NO	YES
Adjusted R^2	0.930	0.929	0.974	0.972	0.920	0.919
Observations	1,770	1,768	466	463	1,987	1,984

Table X
Additional Robustness Tests

This table reports regression estimations of loan spreads on a control rights indicator and control variables. The estimation procedure is defined in Equation 2. The dependent variable is either the all-in-drawn spread or the total cost of borrowing as defined in Berg et al. (2016), both expressed in basis points. *Control Rights* is defined as an indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise. *Covenant Controls* include the borrower's profitability, Tobin's Q, leverage ratio, interest coverage, net worth and current ratio. All of these covenant controls enter the model lagged by one and five quarters. *Higher Order Covenant Controls* are the squared and cubic versions of the covenant controls. *Borrower Controls* include credit rating dummies, log assets, asset tangibility, cash, operating leverage, years since IPO, industry and state dummies, indicators for whether the borrower issued debt or equity during the life of the loan, an indicator equal to one if the borrower does not have an S&P long-term issuer rating, and the naive distance-to-default of Bharath and Shumway (2008). *Lender Controls* are bank market equity (%) and log assets. *Loan Controls* are loan maturity, loan amount as a percentage of borrower assets and dummies for collateral status, loan amendments, loan type and purpose. The borrower and lender controls are lagged by one quarter. Calendar quarter fixed effects are included to account for time trends. Lender and borrower fixed effects account for unobservable time-fixed characteristics at the lender and borrower level. Columns (1) and (2) present the results for an alternative loan pricing measure, the total cost of borrowing as defined in Berg et al. (2016). Columns (3) and (4) report results on a sample of loans that were originated within two quarters after a covenant violation. In columns (5) and (6) we only consider a shift in creditor control rights after new financial covenant violations. In columns (7) and (8) we estimate the model with Borrower × Quarter fixed effects. Finally, in columns (9) through (12) we perform our analyses including the covenant and higher order covenant controls. t-statistics are reported in parenthesis and are based on standard errors clustered by borrower and quarter (see Petersen (2009)). *, **, and *** indicate that the corresponding p-values are less than 0.10, 0.05, and 0.01, respectively.

Dependent Variable	Total Cost of Corporate Borrowing		All-in-drawn spread									
			2 quarters		new violations		Borrower × Quarter FEs		covenant controls		higher order	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Control Rights	26.81***	26.89***	62.11***	60.28***			104.60**	94.01**	50.75***	48.25***	53.30***	50.92***
	(3.61)	(3.65)	(3.71)	(3.56)			(2.57)	(2.45)	(3.51)	(3.68)	(3.51)	(3.70)
New Control Rights					24.39**	23.83**						
					(2.10)	(2.08)						
Covenant Controls	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES
Higher Order Covenant Controls	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
Borrower Controls	YES	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES
Borrower FEs	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Loan Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Quarter FEs	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Borrower × Quarter FEs	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO
Lender Controls	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Lender FEs	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Adjusted R^2	0.932	0.931	0.925	0.924	0.889	0.890	0.932	0.932	0.905	0.906	0.908	0.908
Observations	1,838	1,835	1,798	1,795	2,472	2,470	2,387	2,385	2,472	2,470	2,472	2,470

Table XI
Robustness: Regression Discontinuity Design following Ferreira et al. (2018)

This table reports regressions of loan spreads on a financial covenant violation indicator and control variables. *Covenant Violation* is defined as an indicator that equals one if the firm violates at least one out of four types of covenants (current ratio, net worth, tangible net worth, and debt-to-EBITDA) in either of the previous four quarters, and zero otherwise. *Control Rights* is defined as an indicator that equals one if the firm breached a covenant in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise. *No Control Rights* is defined as an indicator that equals one if the firm breached a financial covenant in one of the previous four quarters not related to the counterparty that originated the new loan, and zero otherwise. *Borrower Controls* include credit rating dummies, log assets, asset tangibility, cash, operating leverage, years since IPO, industry and state dummies, indicators for whether the borrower issued debt or equity during the life of the loan, an indicator equal to one if the borrower does not have an S&P long-term issuer rating, and the naive distance-to-default of Bharath and Shumway (2008). *Lender Controls* are bank market equity (%) and log assets. *Loan Controls* are loan maturity, loan amount as a percentage of borrower assets and dummies for collateral status, loan amendments, loan type and purpose. The borrower and lender controls are lagged by one quarter. Robust t-statistics adjusted for firm-level clustering are in parentheses. *, **, and *** indicate that the corresponding p-values are less than 0.10, 0.05, and 0.01, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Covenant Violation	58.2***	41.6***				
	(8.58)	(4.09)				
Control Rights			34.9***	122.7*		
			(3.31)	(1.71)		
No Control Rights					-6.8	-59.3
					(-0.40)	(-0.97)
Bandwidth $h = 0.2$	NO	YES	NO	YES	NO	YES
Second-order Polynomial	NO	YES	NO	YES	NO	YES
Borrower Controls	NO	YES	NO	YES	NO	YES
Lender Controls	NO	YES	NO	YES	NO	YES
Loan Controls	NO	YES	NO	YES	NO	YES
Quarter FEs	NO	YES	NO	YES	NO	YES
Firm FEs	NO	YES	NO	YES	NO	YES
Adjusted R^2	0.055	0.921	0.016	0.926	0.000	0.926
Observations	13,839	2,035	2,946	1,203	2,946	1,203

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Internet Appendix
Do Loans Carry a Control Spread? Evidence from the Allocation of Control Rights Across Creditors

IA.1. Construction of the covenant violation database

This section describes our process of constructing the database of covenant violations from 10-K and 10-Q SEC quarterly filings for the universe of Compustat non-financial firms from 1996 through 2019. Our methodology closely follows the work of Nini, Smith, and Sufi (2012).

Covenant violation data

The initial sample of firm-quarter observations are derived from a May 2020 extract of the *Compustat* fundamentals quarterly table. We include any U.S. firm (*fic* = "USA") outside of the financial industry (sic outside of 6000 to 6999) and all firm-quarter observations with non-missing information on total assets (*atq*), total sales (*saleq*), common shares outstanding (*cshoq*), closing share price (*prccq*), and the exact calendar quarter (*datacqtr*) of the observation. We exclude the observations with missing information because, as Nini, Smith, and Sufi (2012) state, observations without any of these five variables are difficult to match to the corresponding SEC filings. In contrast, the observations with all five of these variables nearly always can be matched with a corresponding SEC filing.

1. Matching Compustat quarterly observations to Edgar websites

The first step in our data collection process is matching each quarterly *Compustat* observation to the SEC filing that generated the *Compustat* data. Our starting point is the SEC Edgar website that contains indices of every filing submitted to the commission. It is located at: `https://www.sec.gov/Archives/edgar/full-index/`. Using these index files, we create a list of each 10-Q and 10-K filing by any firm. We use a R script to download all submitted 10-K, 10-Q, 10KSB, 10KSB40, 10QSB, and 10-K405 filings for the firms in the Compustat universe that correspond to a quarter between 1996 and 2019. Moreover, we extract identifying information from each observation from the corresponding filing. Each SEC filing has a standard header which contains important information including firm name, firm address, the central index key (CIK), the IRS tax number of the firm, and the reporting date of the filing. We extract this information to form an SEC matching file. If a filing contains multiple filers, our output file contains header information on all the filers in multiple rows.[1]

[1]We thank Gunratan Lonare and Bharat Patil for their *edgar* package, which facilitated the completion of this step to a great extent. The package and its documentation are available at: `https://CRAN.R-project.org/package=edgar`.

In all cases, we match by firm-quarter, using the calendar quarter of the *Compustat* observation and the reporting date of the SEC filing. The reporting date of the SEC filing is only accurate in 80% of the cases, since firms sometimes hand in their forms too early or too late. Rounding the dates up to the closest month increases the matching rate to 96%. Further allowing for late or early hand-ins by up to one month, we are able to match 373,281 observations. This corresponds to a final matching rate of more than 98%.

The resulting database can be merged with *Compustat* information using the unique six-digit number key assigned to each company (*gvkey*) and a quarterly period descriptor (*datacqtr*). This data set includes several valuable pieces of information pulled from the filing header: the website of the filing associated with the quarterly observation, the exact date of the report and the date of the filing, the exact name of the firm at the time of the filing, and the filing type (i.e., 10-K, 10-Q, etc.). As opposed to the firm name variable in Compustat (*conm*), the company name in this filing is not back-filled. It represents the exact firm name at the time of the filing. This representation is very useful for matching historical data to other data sets based on name.

2. Searching for violations

Our goal is to scan the SEC filings to identify the occurrence of a covenant violation, using the same text-search algorithm as Nini, Smith, and Sufi (2012). Their methodology reflects a desire to minimize the number of false negatives while limiting the amount of false positives that must be corrected manually. A false negative in this case is a true reported covenant violation that our text-search does not find, whereas a false positive is a text passage that our algorithm flags as a covenant violation, even though after manual inspection we find that no violation occurred. This methodology is purposely conservative, meaning that it generates a lot of false positives and requires abundant manual inspection.

The text-search algorithm to identify violations works as follows: If the filing contains the word "covenant," then the algorithm searches for the following five terms within the three lines above or below the line containing "covenant": "waiv," "viol," "in default," "modif," and "not in compliance." This search methodology is superior to the methodology applied in Roberts and Sufi (2009b) and Nini, Smith, and Sufi (2009) that use a more limited set of search terms, resulting in a significant increase in false negatives. Although the text-search algorithm finds roughly 90% of all actually reported violations, it also produces a large number of false positives. Thus, we must manually inspect the paragraphs around each "hit" to ensure that the proposed violation is an actual violation. Our text search algorithm outputs the five lines before and after the hit to allow for manual reading.

It is important to note that the vast majority of covenant violations are handled by a contractual waiver. In a waiver, the lender voluntarily relinquishes the rights granted following the violation, often in exchange for certain concessions from the borrower. In our coding methodology, we count such waivers as violations because also waivers shift control rights to creditors. This classification is important because, as discussed in Dichev and Skinner (2002) and Roberts and Sufi (2009b), information on firm covenant violations is available given SEC Regulation S-X, which requires that "any breach of a covenant of a[n] ... indenture or agreement which ... exist[s] at the date of the most recent balance sheet being filed and which has not been subsequently cured, shall be stated in the notes to the financial statements" (SEC (1988), as quoted by Beneish and Press (1993)). Moreover, as Sufi (2007) notes, the SEC has reinforced this requirement in recent interpretations. Since waivers typically expire after a fairly short period, violating firms will often be again in violation of the contract. This encourages companies to report violations, even if granted a waiver prior to the filing date. However, firms do have some discretion when reporting waivers of violations. One common concern for studies in this area of research is that a number of firms possibly choose not to report violation waivers for relatively minor waivers, leading to the reported waivers representing, on average, more serious violations. However, a comparison of observable measures of credit quality and investment around the initial reported covenant violation in versus the initial violation in previous studies reveals very similar patterns (Roberts and Sufi, 2009b). For example, cash flow and capital expenditures show patterns around the first reported violation that are almost identical to those found in studies by Dichev and Skinner (2002) and Chava and Roberts (2008), which suggests that initial reported violations in our sample correspond closely to initial actual violations.

3. Additional notes

There are a few additional notes worth mentioning. First, we collect the covenant violation data for the 10-Ks and 10-Qs separately. When we collect the data for the 10-Ks, we classify any violation that occurred at any point during the year as a violation. We follow this classification because the 10-K filing is often a "catch-all", in which the firm reports information that it avoids reporting in the typically shorter 10-Q filing. Violations on 10-Qs are only recorded if the violation takes place in the quarter in question. Second, the incidences of repeated covenant violations are quite frequent in the data. This is due to two factors. First, the violation data for 10-Ks represents a violation at any point in the year. If the firm repeats information on the violation in both a 10-Q and the 10-K in the same year, the violation is counted twice. Second, there is high serial correlation in violations given that the waivers expire and must often be granted repeatedly. Third, we do not collect violations of non-financial covenants, such as limits on capital expenditures or acquisitions.

IA.2. Additional tables

Table IA.I
Sample Construction

This table presents the sample selection procedure and shows the number of facilities, packages, lenders, and borrowers remaining in the sample after each successive stage of data merging and filtering. To generate our estimation sample, we start with all available commercial loans (Facilities) in the DealScan Facility file for our sample period. Next, we merge information about the lenders of these loans available in the DealScan Lenders file. In order to obtain lender financial statements information from Compustat, we utilize the lender link table provided by Michael Schwert (see Schwert (2018)). In order to obtain borrower financial statements information from Compustat we next utilize the borrower link table provided by Michael Roberts (see Chava and Roberts (2008)). Furthermore, we add borrower and lender financial markets information from CRSP. In a next step, we merge hand-collect covenant violations information. We extract these data from 10-K and 10-Q filings in the SEC's EDGAR utilizing a text-search algorithm (see Internet Appendix IA.1 for details). We also merge data on the Total Cost of Borrowing made available by Berg et al. (2016). Next, we follow the literature and implement the following filters: i) we exclude loans to financial companies (SIC between 6000 and 6999) from the sample, ii) we restrict our analysis to banks and borrowers based in the US, iii) we exclude banks that do not have deposits information reported in Compustat, iv) we exclude Bank of New York Mellon and State Street Bank because these banks are primarily custodian banks and are not focused on lending (see e.g., Schwert (2018)). For our full sample, we require non-missing information about all variables that enter into regression Equation 1. Finally, for our main regression model (Equation 2) we restrict our sample to loans that were initiated within four quarters of a covenant violation (violators sample).

	Facilities	Δ	*Packages*	Δ	*Lenders*	Δ	*Borrowers*	Δ
DealScan	292,551		199,129		-		-	
DealScan-Compustat lender		-77,161		-51,616				
	215,390		147,513		84		-	
DealScan-Compustat borrower		-99,517		-65,769		0		
	115,873		81,744		84		14,966	
CRSP		-65,866		-46,3672		-17		-8,555
	50,007		35,377		67		6,411	
Covenant violations data		-15,110		-11,180		0		-1,691
	34,897		24,197		67		4,720	
Filters		-23,011		-15,915		-19		-2,770
Full sample	**11,886**		**8,282**		**48**		**1,950**	
Violators sample	**1,083**		**713**		**39**		**472**	

Table IA.II
Replicated Summary Statistics following Schwert (2018)

The sample consists of new loan originations matched with lead arrangers, with characteristics observed from the first quarterly filing after origination. For loan variables, observations are counted by loan. For borrower variables, observations are counted by firm-quarter. For bank variables, observations are counted by bank-quarter.

	Mean	*SD*	p25	p50	p75	Obs.
Loan Variables						
Credit Spread (bps)	181	119	75	175	255	27,888
Maturity (Years)	3.91	2.1	2.00	4.00	5.00	29,755
Facility Amount ($MM)	339	617	40	130	350	31,765
Amount/Borrower Assets	0.17	0.17	0.06	0.12	0.24	31,582
Bank Allocation	0.36	0.36	0.09	0.19	0.50	12,345
Bank Position/Equity (%)	0.47	0.66	0.09	0.23	0.53	12,345
Revolving Facility	0.70	0.46	0	1	1	31,766
Term Loan	0.23	0.42	0	0	0	31,766
Corporate Purposes	0.36	0.48	0	0	1	31,766
Working Capital	0.16	0.37	0	0	0	31,766
Debt Repayment	0.17	0.38	0	0	0	31,766
Takeover	0.11	0.31	0	0	0	31,766
Lead Arranger Count	1.37	0.8	1	1	1	31,766
Participant Count	1.67	2.28	0	1	3	31,766
Borrower Variables						
Book Assets ($B)	5.97	22.77	0.27	0.98	3.60	21,656
Distance-to-Default	5.73	3.83	2.92	4.94	7.63	18,996
Market Leverage	0.30	0.22	0.12	0.26	0.44	20,611
Equity Volatility	0.46	0.25	0.28	0.40	0.56	21,740
Equity Beta	0.99	0.50	0.66	0.96	1.28	20,655
Tangibility	0.34	0.25	0.14	0.28	0.52	21,548
Profitability	0.03	0.03	0.02	0.03	0.05	20,086
Cash	0.07	0.10	0.01	0.03	0.09	21,625
Operating Leverage	0.26	0.18	0.13	0.23	0.36	18,276
Tobin's Q	1.40	0.87	0.84	1.13	1.67	20,611
Years since IPO	19.7	20.1	4.58	12.1	29.1	21,732
Bank Variables						
Book Assets ($B)	125	310	17.6	40.7	93.2	2,787
Market Equity (%)	12.9	6.48	7.84	12.4	17.0	2,785
Book Equity (%)	7.62	2.15	6.17	7.71	9.02	2,786
Tier 1 Capital (%)	9.64	1.99	8.14	9.19	10.9	2,004
Equity Market-to-Book	1.66	0.69	1.18	1.60	2.04	2,785
Equity Volatility	0.32	0.18	0.21	0.28	0.37	2,785
Equity Beta	1.21	0.42	0.92	1.15	1.44	2,785
Deposits/Assets	0.68	0.11	0.63	0.69	0.76	2,787

Table IA.III
Summary Statistics - Violators Sample

This table reports summary statistics for the restricted sample of loans merged with borrower and lender characteristics and covenant violations information. Columns (1) through (4) report statistics on observations where we do not observe a shift in control rights after the violation, while columns (5) through (8) refer to cases where we observe a shift in control rights. The sample contains new loan originations matched with lead arrangers and borrowers characteristics observed from the quarterly filing in the loan origination quarter. For loan variables, observations are counted by loan. For borrower variables, observations are counted by firm-quarter. For bank variables, observations are counted by bank-quarter. We winsorize all variables at the 1% level to mitigate the influence of outliers. Variable definitions are available in Appendix A1 to this paper.

	Without Control Rights After Violation				With Control Rights After Violation			
	Obs.	Mean	Median	*SD*	Obs.	Mean	Median	*SD*
Borrower Variables								
Bank-Dependent Indicator	291	0.56	1.00	0.5	410	0.5	1.00	0.5
Book Leverage	289	0.37	0.35	0.22	410	0.39	0.37	0.22
Cash	291	0.06	0.03	0.08	410	0.06	0.03	0.08
Current Ratio	291	1.8	1.5	0.96	410	1.8	1.7	1.1
Distance-to-Default	283	3.9	3	3.4	394	3.8	3	3.5
Firm Book Assets ($B))	291	2.7	0.64	6.8	410	3.5	0.66	11
Intangible Assets	192	0.08	0.02	0.13	272	0.07	0.01	0.14
Interest Expense	289	0.01	0.01	0.01	405	0.01	0.01	0.01
Market Leverage	289	0.41	0.38	0.25	410	0.43	0.41	0.26
Net Worth	291	0.34	0.36	0.22	410	0.31	0.33	0.24
Operating Leverage	290	0.24	0.2	0.17	404	0.24	0.2	0.16
Profitability	288	0.03	0.03	0.03	403	0.03	0.03	0.02
Research Expenses	108	0.01	0.00	0.01	143	0.01	0.00	0.01
Relationship Intensity	222	0.18	0.00	0.24	395	0.46	0.50	0.24
Relationship Length	219	882	518	1,180	391	1,341	1,057	1,143
Tangibility	291	0.32	0.26	0.23	410	0.32	0.27	0.24
Tobin's Q	289	1.1	0.94	0.54	410	1.1	0.93	0.73
Years since IPO	291	16	10	15	410	16	10	16
Loan Variables								
All-in-drawn Spread (bps)	447	262	250	121	636	262	250	117
Amount/Borrower Assets	447	0.17	0.13	0.14	636	0.18	0.13	0.15
Corporate Purposes	447	0.35	0.00	0.48	636	0.36	0.00	0.48
Debt Repayment	447	0.19	0.00	0.4	636	0.18	0.00	0.39
Facility Amount ($M)	447	210	85	387	636	277	100	525
Lead Arranger Count	447	1.2	1.00	0.72	636	1.4	1.00	0.9
Loan Amended	447	0.34	0.00	0.47	636	0.37	0.00	0.48
Maturity	447	3.9	4	1.6	636	3.6	3.5	1.8
Number of Covenants	317	2.73	3.00	1.15	452	2.69	3.00	1.12
Participant Count	447	1.4	1.00	1.7	636	1.4	1.00	1.9
Revolving Facility	447	0.62	1.00	0.49	636	0.65	1.00	0.48
Secured Loan	300	0.90	1.00	0.30	421	0.89	1.00	0.32
Senior Loan	447	1.00	1.00	0.07	636	1.00	1.00	0.00
Sole Lender	447	0.36	0.00	0.48	636	0.29	0.00	0.46
Syndicate Size	447	2.9	2.00	2.2	636	3.4	2.00	2.8
Takeover	447	0.06	0.00	0.23	636	0.07	0.00	0.25
Term Loan	447	0.35	0.00	0.48	636	0.33	0.00	0.47
Term Loan A	447	0.06	0.00	0.23	636	0.07	0.00	0.26
Term Loan B	447	0.12	0.00	0.33	636	0.12	0.00	0.32
Total Cost of Corporate Borrowing	311	178	150	110	451	189	156	117
Working Capital	447	0.26	0.00	0.44	636	0.25	0.00	0.43
Lender Variables								
Bank Book Assets ($B))	414	498	142	670	516	486	138	674
Bank Market Equity (%)	414	15.0	15.0	6.00	516	15.0	15.0	6.00
Tier 1 Capital Ratio	413	9.2	8.5	1.8	513	9.2	8.5	1.9

Table IA.IV
Endogenous Switching Regression - Exclusion Restriction Variables

This table reports a regression estimation of loan spreads on a control rights indicator and control variables. The estimation procedure is defined in Equation 2. The dependent variable is the all-in-drawn loan spread, expressed in basis points. *Control Rights* is defined as an indicator that equals one if the firm reported a financial covenant violation in one of the previous four quarters and the counterparty to the financial covenant violation originated the new loan, and zero otherwise. *Borrower Controls* include credit rating dummies, log assets, asset tangibility, cash, operating leverage, years since IPO, industry and state dummies, indicators for whether the borrower issued debt or equity during the life of the loan, an indicator equal to one if the borrower does not have an S&P long-term issuer rating, and the naive distance-to-default of Bharath and Shumway (2008). *Loan Controls* are loan maturity, loan amount as a percentage of borrower assets and dummies for collateral status, loan amendments, loan type and purpose. *Lender Controls* are bank market equity (%) and log assets. The borrower and lender controls are lagged by one quarter. Calendar quarter fixed effects are included to account for time trends. Lender and borrower fixed effects account for unobservable time-fixed characteristics at the lender and borrower level. t-statistics are reported in parenthesis and are based on standard errors clustered by borrower and quarter (see Petersen (2009)). *, **, and *** indicate that the corresponding p-values are less than 0.10, 0.05, and 0.01, respectively.

	(1)
Control Rights	56.07***
	(5.264)
Large Bank	-1.81
	(-0.794)
Time between deals	2.31
	(0.489)
Relationship Intensity	7.96
	(1.183)
Borrower Controls	YES
Loan Controls	YES
Borrower FEs	YES
Quarter FEs	YES
Lender Controls	YES
Lender FEs	YES
Adjusted R-squared	0.925
Observations	2,140