Lender Forbearance*

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June 29, 2017

Abstract

We use a regression discontinuity design to study ex-post discretion in lender's contractual enforcement of restrictive covenant violations. At pre-set thresholds, we find that lenders enforce contractual breaches at an 11% rate, varying between 5% and 18% and peaking when credit conditions are tightest, consistent with enforcement exacerbating credit cycles. Costly coordination reduces enforcement; increasing the number of lenders required to vote for enforcement action by one reduces the enforcement propensity by 6.3%. Enforcement is less frequent for borrowers with easy access to external financing and for well-reputed lead arrangers, suggesting that optimal enforcement depends on endogenous matching.

JEL Classification: G21, G32, K12, L14, E32, E44
Keywords: contract enforcement, financial covenants, credit cycles, external financing, reputation, creditor coordination

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* We thank Greg Nini for helpful comments and suggestions.
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1 Introduction

Most private loan contracts contain restrictive financial covenants (Bradley and Roberts 2015). These covenants are written on a multitude of financial ratios and amounts and contain pre-set thresholds that, if breached, provide lenders with the right to accelerate the loan (Aghion and Bolton 1992; Roberts and Sufi 2009). This state contingent transfer of control rights, known as a covenant violation, is typically resolved when borrowers in breach of the contract agree to pay a waiver fee, agree to increase the spread on the balance of the loan maturity, or renegotiate the loan altogether (Freudenberg, Imbierowicz, Saunders and Steffen 2017).

Ex post estimates of the cost of covenant violations range from 2.5% to 3.5% of firm value (Beneish and Press 1993), and ex ante estimates that account for anticipation, renegotiation, and selection on leverage are even larger (Denis and Wang 2014; Roberts 2015; Glover 2016; Ertan and Karolyi 2017). The overall cost to a firm of a covenant violation includes not only the direct waiver fees and spread increases, but also any fallout with respect to equityholders' views on resultant changes in corporate policies (Chava and Roberts 2008; Nini, Smith, and Sufi 2009; Roberts and Sufi 2009; Nini, Smith, and Sufi 2012; Falato and Liang 2016). Corporate managers themselves acknowledge the cost of covenant violations and claim to make significant efforts to avoid breaching covenant thresholds (Graham, Harvey, and Rajgopal 2005).

In this paper, we introduce and investigate a novel feature of loan contracting, namely that lenders use ex post discretion in contractual enforcement of restrictive financial covenants.

Although contractual breaches provide lenders the right to accelerate the loan and extract material benefits from borrowers, we find that lenders enforce contractual breaches only 11% of the time.[1] This laxity suggests that lenders forbear from enforcement on borrowers in contractual breach, and raises questions about why lenders do not act in all cases. We provide several novel findings that explain variation in lender enforcement behavior around contractual thresholds and discuss the external funding consequences of enforcement behavior for borrowers.

Estimating contractual enforcement presents several empirical challenges. Contractual breaches are typically unobservable to the econometrician, and even in settings in which contractual enforcement is observable, selection on counterparty quality is a concern. We solve these problems by exploiting restrictive financial covenants in loan contracts as a setting in which breaches are observable, on both the extensive and intensive margins, and contractual thresholds vary with counterparty quality, allowing us to fix counterparty quality when estimating enforcement rates. Because we observe ex ante covenant thresholds (i.e., the minimum or maximum value an underlying financial ratio or amount can take without breaching the contract) and the underlying financial ratios or amounts at all future dates, we can calculate the distance to covenant thresholds through the duration of each contract. This allows us to implement a regression discontinuity design for a panel of loan packages that estimates differences in enforcement propensities for borrowers whose financial ratios or amounts quasi-randomly fall just above or just below the pre-set thresholds. Our preferred specification,

[1]This result is consistent with practitioners' long-held perspective on covenant breach enforcement as documented in Zinbarg (1975): *"My own institution's experience may serve as an illustration. … In no more than about five per cent of these cases will we refuse the request or even require any quid pro quo…"*.

which holds fixed both time-varying borrower quality at the industry level as well as time invariant characteristics of the borrower-lender pair, including those which lead them to endogenously match, suggests that lenders enforce covenant breaches 11% of the time. Aside from our statistically and economically significant evidence on the time series and cross-sectional determinants of enforcement, we conduct several additional tests that demonstrate that this primary finding cannot be explained by measurement error. For example, our results are quantitatively robust in subsamples of loans that contain only covenant types that are not modified, do not have dynamic thresholds, or are not renegotiated before maturity.

We complement this discontinuity evidence with a selection model that demonstrates how lenders enforce contractual breaches. We focus on distance to covenant thresholds as a salient measure of breach severity, and present evidence that, conditional on borrower quality, lenders are more likely to enforce covenant violations for severe breaches. In particular, among borrowers in breach of a covenant threshold, the breaches by those subject to lender enforcement are more severe by one-eighth to one-third of a standard deviation, on average. Figure 1 presents the distribution of enforcement propensities across the standardized distance to covenant thresholds, which is measured as in Chava and Roberts (2008). Together, this evidence suggests that lenders enforce breaches infrequently, but are more likely to enforce severe breaches.

Using this regression discontinuity methodology, we find that enforcement rates vary significantly over time. Figure 2 displays this time series variation. In our sample, average

enforcement rates range from 5% to 18% and peak when credit conditions are tightest, suggesting that enforcement exacerbates credit cycles. This contrasts with the low rate of enforcement overall, which otherwise suggests that long-term loans mitigate rollover risk typically associated with short-term debt. Moreover, we find that lenders are less likely to enforce contractual breaches for loans with initially strict covenant packages, which is also consistent with explicit ex ante contracting and implicit ex post contractual enforcement being behavioral complements. It further suggests that empirical measures of ex ante contract strictness should be adjusted for the likelihood of ex post forbearance (Murfin 2012; Demerjian and Owens 2016).

We also find that cross-lender coordination costs reduce enforcement. We construct several proxies for coordination costs, including the syndication status and, conditional on syndication, the size and concentration of the syndicate, the lead arranger's retained share, and the number of participating institutional investors. Our preferred measure of coordination costs identifies the minimum number of lenders required to pass an enforcement action, calculated using the distribution of loan shares across syndicate participants and the pre-determined contractual voting rules, typically following majority or supermajority conventions. On average, increasing this threshold by one lender reduces enforcement by 6.3%.

Additionally, we investigate cross-sectional determinants of forbearance on the borrower and lender sides. Lenders are less likely to enforce contractual breaches for borrowers with easy access to alternative sources of funds, suggesting that bargaining power determines equilibrium

enforcement. However, lenders are more likely to enforce contractual breaches for relationship borrowers, consistent with the literature on hold-up. Lead arrangers with high reputation, as measured by their ranking in aggregate or industry-specific league tables, are less likely to enforce breaches, consistent with low reputation lenders lacking ex ante commitment to avoid opportunistic enforcement. These results further suggest that optimal enforcement depends on endogenous matching in the loan market.

Our work contributes to the bank lending literature on lender control and monitoring as well as to the applied microeconomics literature on bilateral contracting with imperfect information and the potential for renegotiation. The lender control literature has documented several consequences of covenant violations for borrowers, including investment (Chava and Roberts 2008), debt issuance (Roberts and Sufi 2009), executive compensation and corporate governance (Nini, Smith, and Sufi 2012), and employment (Falato and Liang 2016). To this literature, we contribute evidence of when and how, from a contracting perspective, the economic consequences of covenant breaches for borrowers arise in equilibrium. Our findings that lenders tend to forbear from enforcement, particularly for mild contractual breaches, suggest that estimates of the effect of breaches may (i) significantly understate the magnitude of various economic consequences of realized enforcement, or (ii) conflate the causal effect of lender enforcement with preventative action taken by borrowers whose breaches are not enforced by their lenders.

To the growing literature on bank monitoring, we provide novel evidence of ex post discretion in contractual enforcement as well as a series of cross-sectional findings that show how enforcement heterogeneity is determined by syndicate structure and voting rules, lender reputation, and borrower access to alternative funding sources. Our direct evidence of lender enforcement complements recent evidence on the frequency with which lenders acquire information using borrower data requests (Gustafson, Ivanov, and Meisenzahl 2016) or process information using updates to internal ratings (Plosser and Santos 2016). Banks acquire and process new borrower information and we show that they use this information to select which contractual breaches to enforce. Together, our work complements the extant literature that studies bank monitoring using ex ante characteristics of loan syndicates and covenant packages (Lee and Mullineaux 2004; Sufi 2007; Sufi 2009; Wang and Xia 2014; Becker and Ivashina 2016).

2 Data and Measurement

The data for our investigation come from two main sources: quarterly firm financials from Standard & Poor's Compustat and loan-level information from Thomson Reuters' DealScan. To link these data sources, we use Michael Roberts' link table to match DealScan borrowers to Compustat and Aytekin Ertan's link table to match DealScan lead lenders to Compustat. Finally, we obtain data on material covenant violations from the websites of Amir Sufi and Michael Roberts. Our main estimation sample covers the period from 1996 to 2008, since data on material covenant violations are only available for this period, and excludes

borrowers from the financial and utilities sectors.[2] After the linking procedure, we have a total sample of 5,171 distinct loan packages, covering 2,762 borrowers and 410 lenders. These loans make up, on average, one-third of the loan portfolio for banks in our sample.

Our main sample is constructed at the loan package-quarter level in order to follow loans over time. We use package-level rather than tranche-level or borrower-level observations because covenants are defined at the package level and because a single borrower may have more than one loan outstanding across multiple lenders in a given period. We use the stated start and end dates to convert packages into package-quarters.[3] We then match each loan package to Compustat and get the borrower financial statement information necessary to calculate covenant slack for each quarter. Variable definitions are in Appendix A. Panel A of Table 1 reports summary statistics for lenders, borrower, and loans.

We calculate the slack for firm i's j$^{\text{th}}$ covenant in quarter t as:

$$Slack_{ijt}^{min} = \frac{u_{ijt} - \underline{u}_{ijt}}{\sigma_{ijt}} \tag{1}$$

for minimum covenants, such as a minimum interest coverage ratio, or:

$$Slack_{ijt}^{min} = \frac{\overline{u_{ijt}} - u_{ijt}}{\sigma_{ijt}} \tag{2}$$

in the case of maximum covenants, such as a maximum debt-to-EBITDA ratio. In each of these equations, the variable u denotes the underlying financial ratio or amount, while $\underline{u}$ ($\bar{u}$) is the

[2] These sectors have two-digit SIC codes between 60 and 69, and 44 and 50, respectively.

[3] We define package maturity as the stated maturity date of the largest tranche.

relevant threshold in the case of a minimum (maximum) covenant, and σ the volatility of the underlying u, measured over the previous eight quarters for that firm.[4] We code firm-quarter *Slack* as the minimum across the standardized values for each covenant for that package-quarter. *NegativeSlack* is an indicator variable equal to one in firm-quarters for which *Slack* is less than zero. *Violation* is an indicator variable equal to one for package-quarters with a material covenant violation, as identified in the Roberts and Sufi (2009) and Nini, Smith, and Sufi (2012) data.[5] Note that material covenant violations are required to be disclosed by borrowers as part of SEC rules. Specifically, the rules for "General Notes to Financial Statements" (17 CFR 210.4-08) require borrowers to disclose not only breaches of covenant thresholds that exist at the time the filing is made (e.g. in an 8-K, 10-K, or 10-Q), but also breaches which have been cured at the time of filing, such as through a waiver or an amendment, if these are associated with material consequences, such as fees or changes in loan terms.

3 Contractual Enforcement around Covenant Thresholds

The lead arranger of a syndicated loan is the primary point of contact for the borrower. As a result, the lead arranger is known as the delegated monitor, and is responsible for engaging

[4] Specific covenant threshold calculations are in Appendix B and are similar to those in Demerjian and Owens (2016).

[5] Technically, we observe *Violation* at the firm-quarter level. This could be a source of measurement error if a borrower is in violation of a covenant in a different loan package in the same quarter. However, since this measurement error can only push in the direction of incorrectly coding a violation where none exists, it should only lead to attenuation in our estimates of the likelihood of enforcement.

with the borrower on a regular basis for its own benefit and that of its syndicate participants. These engagements are generally known as monitoring, but typically include coordinating payments and ensuring compliance with contractual terms. Assessing the borrower's conformity with restrictive financial covenants is among the most frequent of these engagements (Gustafson, Ivanov, and Meisenzahl 2016).

In their role as delegated monitor, lead arrangers have two avenues for influencing the resolution of contractual breaches. First, the lead arranger has discretion over whether to report back to the syndicate participants about breaches discovered while monitoring the borrower. Second, conditional on the lead arranger reporting the contractual breach to the lending syndicate, the syndicate must vote on whether to accelerate the loan, which could require refinancing, renegotiation, or payment default, but is typically resolved with a waiver (Gopalakrishnan and Parkash 1995; Dichev and Skinner 2002). Lead arrangers can exercise voting power in accordance with their retained share and the voting rule adopted by the lending syndicate. Thus, in resolving contractual breaches, lead arrangers have discretion over the intensity of their detection technology and, conditional on detection, the punishment (Lee and Mullineaux 2004).[6]

We begin our analysis with two motivating observations that demonstrate that lenders use ex post discretion in contractual enforcement. First, Figure 1 shows nonparametric evidence

[6] For covenant waivers, simple majority or super majority voting rules apply. As lead arrangers typically retain between one-quarter and one-half of the loan amount, they have a proportionally large voting stake in technical default proceedings.

that lenders increase contractual enforcement to about 10% at borrowers' pre-set covenant thresholds. Statistically, this evidence suggests that optimal enforcement is not trivially zero or one, meaning that lenders use discretion in enforcement. This is consistent with the anecdotal notion that some contractual breaches are important and others are not – the latter are commonly known as "foot-faults". Second, Figure 1 also shows nonparametric evidence that lenders are more likely to enforce the most severe breaches. This suggests that lenders use ex post discretion to enforce contracts in the most severe cases first, which could be due to noisy detection technologies, costly renegotiation or resolution, or enforcement selection on borrower quality.

This motivating evidence suggests that lenders use ex post discretion in contractual enforcement. However, unobservable characteristics of lenders or borrowers might explain these observations. For a more formal treatment of such issues, we turn to a regression discontinuity design that incorporates increasingly restrictive fixed effects to isolate alternative sources of identifying variation (Jiang 2015). Our baseline regression model is as follows:

$$Violation_{it} = a + b_1 NegativeSlack_{it} + f(Slack_{it}) + g(Slack_{it}) + e_{ijt} \qquad (3)$$

in which $Violation_{it}$ is an indicator that equals one if borrower i discloses a material covenant violation in quarter t and zero otherwise, *NegativeSlack* is an indicator that equals one if the borrower is in breach of at least one covenant threshold, and $f()$ and $g()$ are polynomial control

functions of *Slack*, the standardized distance to covenant thresholds, in the positive and negative regions, respectively. We present estimates of this model in Table 2.

Our preferred specifications in Table 2 use global polynomial control functions. The Akaike and Bayesian information criteria select a linear functional form for *f()* and *g()*. From column to column, the estimates in Table 2 correspond to an increasingly restrictive set of fixed effects, which isolate and eliminate various confounding explanations for the baseline result. In column (1), we present baseline estimates that include no fixed effects. This shows that lenders enforce contractual breaches at a 10.7% rate in the neighborhood of pre-set covenant thresholds. This effect is statistically different from zero. Perhaps more interestingly, it is also statistically smaller than one, consistent with lax enforcement.

Columns (2)–(4), which include industry and year-quarter fixed effects, industry by year-quarter pair fixed effects, and industry by year-quarter pair and lender fixed effects, respectively, all present estimates in the 9–10% range. These findings suggest that unobservable trends in industry performance or loan contracting do not explain variation in contractual enforcement. The estimates in column (4), which incrementally incorporate lender fixed effects, indicate that lenders do not vary systematically in their enforcement technology.

Column (5) incrementally incorporates borrower fixed effects to estimate lender enforcement behavior using variation in *Violation* and *Slack* for the same borrower over time, and column (6) adds lender-borrower pair fixed effects to eliminate any characteristics, including

endogenous ones, that lead lenders and borrowers to initially match in the loan market. Estimates in columns (5) and (6) are quantitatively similar to each other, but economically smaller than those in the first four columns, indicating that fixed borrower characteristics explain variation in enforcement. This might arise if lenders forbear from enforcement for a subset of borrowers that are frequently in breach of contract. The estimates in columns (5) and (6) are both approximately 6% and statistically different from both zero and one.

3.1 Specification Robustness

We complement the regression discontinuity design estimates from Table 2 with a battery of robustness tests to illustrate that our findings are not sensitive to functional forms or bandwidth restrictions (Van der Klaauw 2008; Lee and Lemieux 2010). In columns (1) and (2), we vary the order of the polynomials *f()* and *g()*. In column (1), we estimate a 10.5% enforcement rate with no polynomial controls for *Slack*, whereas in column (2) we estimate a 9.1% enforcement rate with quadratic forms. In columns (3) and (4), we restrict the bandwidth to within two and five standardized units of *Slack* and estimate enforcement rates of 7.1% and 8.5%, respectively. Columns (5) and (6) add linear polynomial control functions to the specifications in columns (3) and (4) with bandwidth restrictions, and these estimate enforcement rates of 4.2% and 5.3%, respectively. In all cases, these estimates are statistically larger than zero and small than one.

3.2 Measurement Robustness

In this subsection, we discuss and explicitly address the potential for measurement error in our main variables of interest; *Violation*, *NegativeSlack*, and *Slack*. We first note that we are interested in both whether enforcement rates are bounded away from zero and from one. These correspond to bias induced by measurement error that pushes our coefficient estimates away from zero and toward zero, respectively. To cause our estimates to be biased relative to their true values, the source of measurement error must be systematically correlated with both the disclosure of a material covenant violation in SEC filings as well as the underlying financial ratios and amounts we calculate using Compustat. Because we have used a restrictive set of fixed effects to isolate variation within the lender-borrower pair and within the borrower's industry in each year, such a systematic correlation cannot be an empirical artifact of the behavior of one lender, borrower, or lending relationships or the time-varying economic conditions of the borrower's industry. Therefore, our primary concerns about measurement error have to do with unobserved lender actions (i.e., cases in which the lender uses control rights without a corresponding disclosure of a material covenant violation), and unobserved contract-specific modifications to covenant definitions (i.e., *Slack* reveals a breach, but the modified definition would not).

One such concern is the possibility of renegotiation to expunge breaches before they would have to be disclosed (Denis and Wang 2014). As discussed earlier, the SEC's disclosure rules require covenant violations to be reported even in cases in which it has been waived, as long as it was accompanied by any material consequences for the borrower, including fees paid or terms

amended. Cases in which a renegotiation pre-empts a material covenant violation reflect forbearance by lenders because if lenders had used control rights to extract any material benefits, then these benefits would be required to be disclosed. Nevertheless, we explicitly investigate the effect of renegotiations on our estimates of enforcement rates in supplemental tests discussed below.

Measurement error may arise due to three features of loan contracting and covenant definitions that vary over time at the loan level. These features include contract-specific modified covenant definitions, loan renegotiations, and dynamic thresholds. In Table 4, we estimate four specifications that explicitly address these potential sources of error.

Columns (1) and (2) focus on measurement error stemming from our calculation of *Slack* using standard covenant definitions. Not all covenants have universally standard definitions, and the lack of data and loan-specific references to covenant ratios and amounts makes interpreting modifications a challenge (Dichev and Skinner 2002; Zhang 2008; Demerjian and Owens 2016). This means that our calculation of financial ratios and amounts governed by covenants using Compustat may generate measurement error in covenant slack *at initiation*.

Fortunately, to deal with this source of measurement error, we are aided by the existence of four covenant types that have standard definitions; quick ratio, current ratio, net worth, and tangible net worth (Chava and Roberts 2008; Demiroglu and James 2010).[7] In column (1), we

[7] 10,576 of 31,927 breaches are for no modification covenants.

re-define *NegativeSlack* as an indicator that identifies observations that have negative *Slack* only when one of these covenant types without modifications is breached and zero otherwise. This ensures that our estimates of enforcement rates depend only on breaches that we measure without error. When we eliminate this source of measurement error in this specification, we estimate an enforcement rate of 10.39%. Similarly, in column (2), we estimate enforcement rates using only the subsample of loans which have covenants without modifications. This decreases our sample size by over 95%, and therefore the statistical power of our tests, but we continue to estimate a statistically significant enforcement rate of 13.21%. The results in columns (1) and (2) are both economically larger than our preferred specification in Table 2, suggesting that, as expected, measurement error from covenant modifications is attenuating our estimates of enforcement rates.

Our measures based on covenant slack (i.e., *NegativeSlack* and *Slack*) may also suffer from measurement error *over time* because covenant thresholds may vary over time due to dynamic threshold terms or loan renegotiations. Column (3) of Table 4 provides similar estimates of lenders' enforcement rates for a sample that consists only of loans without renegotiations (i.e., those whose covenants have not been amended). This sample minimizes the potential misclassification of borrowers into breach and not-breach groups because some renegotiated their loan contracts in anticipation of a violation. In column (4), we similarly eliminate all loan packages with covenants with dynamic threshold terms. Our enforcement rate estimates in

columns (3) and (4) are in the 10–11% range, demonstrating that these time-varying sources of measurement error do not impact our inferences.

Finally, we note that, although resolving these three sources of measurement error does increase the magnitude of our coefficient estimates, the quantitative implications of our estimates are unchanged. Importantly, in no cases are our enforcement rate estimates statistically close to the upper bound of 100% or the lower bound of 0%. This implies that lenders use discretion in ex post enforcement, and is consistent with Figure 1, which shows that enforcement rates fail to exceed 25% even for severe breaches. It also raises questions about how and when lenders select to enforce contractual breaches.

3.3 Selection of Enforcement

To quantify lenders' use of ex post discretion, we explore the relationship between breach severity and enforcement. We measure breach severity using *Slack*, the standardized distance to covenant threshold, a salient and observable measure of borrower quality. In addition to being standardized, it has the benefit that it is based on financial ratios and amounts that are negotiated by the lender and borrower ex ante and specific to each loan contract. Our baseline regression model is as follows:

$$Slack_{it} = a + b_1 Violation_{it} + e_{ijt} \qquad (4)$$

We present estimates of the above model in Table 5. As in the previous sections, the estimates in the columns of Table 5 correspond to an increasingly restrictive set of fixed effects.

These fixed effects are meant to isolate and eliminate various confounding explanations for the baseline results. Column (1) presents the baseline estimates, which include no fixed effects. The coefficient estimate suggests that lenders enforce breaches that are, on average, 0.26 standard deviations more severe. The coefficient in column (6), which has the most restrictive set of fixed effects, suggests that lenders select to enforce material covenant violations for breaches that are 0.13 standard deviations more severe than average breaches.

As more fixed effects are included in the regressions, moving from column (2) through column (6), we find quantitatively consistent results; lenders enforce more severe breaches. The results in columns (2) and (3) include industry and year-quarter and industry by year-quarter paired fixed effects, respectively. These results indicate that trends within the borrower's industry cannot explain lender enforcement. Such trends might even include variation in the likelihood of breaching covenant thresholds, meaning that lender behavior is breach-specific. The results in columns (4)-(6) also include lender, borrower, and lender-borrower pair fixed effects. That we find similar estimates in these columns means that our behavioral model of lender enforcement holds within and across lenders, borrowers, and pairs (i.e., endogenous matching does not affect enforcement selection). Overall, the results in Table 5 are consistent with the visual evidence in Figure 1 and suggest that lenders enforce severe contractual breaches at higher rates than mild breaches.

4 Credit Conditions

Credit cycles have important macroeconomic effects on output and asset prices (Bernanke and Gertler 1989; Kiyotaki and Moore 1997). The apparent procyclicality of credit supply impacts firm-level financing and investment policies (Ivashina and Scharfstein 2010; Becker and Ivashina 2014). Moreover, access to long-term debt insulates borrowers from transient shocks to credit supply (Almeida, Campello, Laranjeira, and Weisbenner 2012). However, the frequency of contractual breaches and corresponding ability of lenders to exert control may expose long-term debt issuers to credit cyclicality and the corresponding effects on financing and investment choices. If enforcement rates increase when credit is scarce, then lenders' ex post discretion exacerbates the effects of credit cycles. But if enforcement rates decrease when credit is scarce, then lenders' ex post discretion mitigates credit cycle risk for existing borrowers.

We test this relation using four measures of credit conditions. First, we use data from a Federal Reserve survey to measure *CreditTightening(std.)*, the standardized net proportion of senior loan officers that report tightening credit standards. Second, we use *Recession*, an indicator variable that identifies year-quarters during NBER recession. Third, we construct *PortfolioNegativeSlack(%)*, the contemporaneous fraction of loans in the lead arranger's portfolio that are in breach of at least one covenant threshold. Fourth, we construct *IndustryNegativeSlack(%)*,the contemporaneous fraction of loans in the borrower's industry that are in breach of at least one covenant threshold. Although our objective is not to decompose demand and supply channels, we associate our findings with *CreditTightening(std.)* and

PortfolioNegativeSlack(%) with supply channels and *IndustryNegativeSlack(%)* with demand channels. The Federal Reserve's survey asks respondents about credit standards, which implies funding decisions conditional on borrower demand, and the proportion of each lender's loan portfolio in breach is lender-specific. However, industry downturns should cause industry trends in covenant breaches.

Table 6 presents results that demonstrate credit conditions' heterogeneity in enforcement rates, which we estimate using the same regression discontinuity design as implemented in previous sections. In each column, we interact *NegativeSlack* with one of our measures of credit conditions. The coefficient of interest is on the interaction term and can be interpreted as the incremental amount of enforcement associated with variation in credit conditions. Column (1) interacts *CreditTightening(std.)* with *NegativeSlack* and the *Slack* polynomial control functions. The estimate of 3.96% suggests that a one standard deviation increase in the percentage of loan officers reporting tightening credit standards is associated with a 3.96 percentage point increase in the rate of enforcement, meaning that if lenders tighten their credit standards through increased enforcement of covenant breach. Similarly, column (2) suggests that enforcement rates are 6.63 percentage points higher during NBER recessions. The estimate in column (3) suggests that a one percentage point increase in the proportion of the lead arranger's loan portfolio in breach increases enforcement by 0.09 percentage points. Similarly, column (4) suggests that a one percentage point increase in the proportion of loans in the borrower's industry in breach increases enforcement by 0.10 percentage points. In all cases, the coefficient on *NegativeSlack* is

between 6.7% and 10.9%, suggesting that while enforcement rates vary significantly with credit conditions, they remain statistically different from both zero and one at peaks and troughs of credit cycles.

5 Coordination

In this section, we investigate cross-sectional enforcement heterogeneity based on syndicate characteristics commonly associated with ex ante monitoring intensity, coordination costs, and disagreement. The difficulty in coordination across multiple lenders is an important friction potentially hindering efficient renegotiation, particularly in the case of default (Gertner and Scharfstein 1991; Bolton and Scharfstein 1996). Whether the loan is syndicated or sole led changes the average level of asymmetric information between borrowers and lenders, and so should affect the propensity of the lending syndicate to enforce contractual breaches. This may arise if syndicate participants are at an informational disadvantage in technical default resolution. We capture coordination costs using syndicate size and concentration. In fact, this sort of subgame play is important to understanding equilibrium syndicate structure (Lee and Mullineaux 2004; Sufi 2007).

Finally, dispersion in beliefs, or disagreement, among creditors is likely increasing in the number of lenders (van den Steen 2010; Billett, Elkamhi, Popov, and Pungaliya 2016). A salient measure of the cost of coordination captures is, therefore, the minimum number of lenders required to pass a vote to resolve a covenant breach, which we measure using ex ante loan shares and the required lenders voting convention. This required lenders voting convention is

pre-set by the syndicate and typically takes majority or supermajority forms. We also investigate the role of institutional investors because previous literature has documented their recent rise in syndicate participation and influence on loan contracting (Becker and Ivashina 2016).

Table 7 presents results which document the importance of enforcement heterogeneity according to lender monitoring incentives, coordination costs, and the likelihood of disagreement. Again, we estimate this heterogeneity using the regression discontinuity design as implemented in previous sections. In each column, we interact *NegativeSlack* with one of our measures of monitoring incentives, coordination, or disagreement. The coefficient of interest is on the interaction term and can be interpreted as the incremental amount of enforcement associated with this source of heterogeneity. Column (1) interacts *Syndication* with *NegativeSlack* and the *Slack* polynomial control functions. The estimate of -3.11% suggests that contractual breaches for syndicated loans are 3.11 percentage points less likely to be enforced than those for sole lead loans. Columns (2) and (3) present estimates consistent with coordination costs reducing enforcement. The estimate in column (2) indicates that, on average, a one lender increase in the size of the syndicate reduces the likelihood of enforcement by 0.30 percentage points. The estimate in column (3) suggests that a ten percentage point increase in syndicate concentration (i.e., HHI of the ex ante loan shares) is associated with a 1.1 percentage point increase in the likelihood of enforcement. These results are all consistent with the

theoretical literature on coordination (e.g. Gertner and Scharfstein 1991), wherein coordination is less likely the greater is the number of pivotal agents.

We measure information asymmetries between the borrower and lenders using the lead arranger's retained share of the loan (Sufi 2007). The estimate in column (4) suggests that a one percentage point increase in the lead arranger's retained share is associated with a 0.11 percentage point increase in enforcement rates. Column (5) estimates that increasing the number of institutional investors in the syndicate is associated with a 3.33 percentage point increase in enforcement rates, consistent with the prior evidence that institutional investors prioritize immediate earnings (Bushee 2001). Lastly, we find that, on average, increasing the minimum number of lenders to pass an enforcement vote reduces enforcement rates, further suggesting that coordination costs constrain the ability to enforce contractual breaches.

6 Bargaining and Lender Hold-up

In this section, we investigate the role of bargaining power and loan market competition in determining lender enforcement rates. Informational frictions can increase the cost of finding a new lender, leading to a form of hold-up in which the relationship lender increases spreads (Greenbaum, Kanatas, and Venezia 1989; Sharpe 1990; Rajan 1992). Furthermore, the intensity of this friction depends on the amount of soft information collected by the existing lender as well as the borrower's access to alternative funding sources, either in the loan market, bond market, or otherwise (Schenone 2009). We construct five measures that capture these notions of bargaining power and hold-up: *Relationship* is an indicator that equals one if the borrower and

lender have transacted in the past and zero otherwise, *MultipleLeads* is an indicator that equals one if the borrower has contemporaneously borrowed from multiple lead arrangers and zero otherwise, *BondAccess* is an indicator that equals one if the borrower has public bonds outstanding and zero otherwise, *Whited-Wu(std.)* is the standardized Whited-Wu (2006) index of financial constraints, and *Size(std.)* is the standardized total assets of the borrower.

The estimate in column (1) suggest that relationship borrowers face 6.03 percentage points higher enforcement rates than transactional borrowers, consistent with lender hold-up. The estimates in columns (2) and (3) indicate that borrowers with cheap alternative funding sources in the private loan market and public bond market face 2.13 and 9.16 percentage points lower enforcement rates, respectively. This is consistent with theoretical arguments in Diamond (1991) and Rajan (1992)—borrowers have more bargaining power with their lenders when they have strong outside options, in the form of cheap access to alternative financing opportunities. Column (4)'s estimate suggests that borrowers with one standard deviation higher financial constraints are 6.19 percentage points more likely to face enforcement. This is in line with the results from Table 5. Enforcement is more likely for worse borrowers, as measured either by covenant slack or financial constraints. Lastly, the estimates in column (5) suggest that a one standard deviation increase in size is associated with 8.77 percentage points lower enforcement rates, on average. Across each of these measures, we consistently find that enforcement rates are increasing in information frictions and decreasing in the borrower's ability to access alternative funding sources reduces enforcement. In this sense, our results are consistent with those of

Schenone (2009). Borrowers benefit from better outside options not just ex ante, in the explicit terms of the loan, but also throughout the course of the loan, through more lenient enforcement by lenders in the case of covenant breaches.

7 Implicit Contracting and Reputation

Are implicit and explicit contracting substitutes or complements? Restrictive covenants provide an ideal setting to investigate this question in the private loan market because contractual thresholds are explicitly set ex ante, but lenders have implicit discretion to enforce contractual breaches ex post. In Table 9, we investigate cross-sectional enforcement heterogeneity based on ex ante explicit contracting. In particular, we focus on the ex ante strictness of covenant sets, which we measure three ways at the beginning of each loan: *InitialSlack*, which is the loan package's minimum standardized distance to covenant threshold, *InitialStrictness*, a calibrated measure of the probability of technical default as in Murfin (2012), and *InitialPViol*, a similarly calibrated measure of the probability of technical default that incorporates modified covenant definitions as in Demerjian and Owens (2016).

If implicit and explicit contracting are used as substitutes, we expect higher enforcement rates when initial contract strictness is low. Across all three measures, this is exactly what we find. In column (1), we find that a one standard deviation increase in *InitialSlack* is associated with 0.42 percentage points higher enforcement rates. In columns (2) and (3), we find that a one percentage point increase in ex ante strictness is associated with 0.07 and 0.11 percentage points higher enforcement rates, respectively. These findings are particularly striking because selection

on unobservable borrower quality should bias our results toward finding that implicit and explicit contracting are complements. This is because low quality borrowers that are likely to subsequently face higher enforcement rates should only be able to negotiate contracts that are strict ex ante. In fact, our selection model results from Table 5 suggest that low quality borrowers indeed face higher enforcement rates. While we do find that implicit and explicit contracting are substitutes, the theoretical literature on implicit contracting suggests that implicit contracting is infeasible in a one shot game in the absence of commitment. However, it appears lenders are able to solve this commitment problem to some degree through some repeated games mechanism, such as reputation (Klein and Leffler 1981; Sharpe 1990).

We next investigate the role lender reputation may play in the use of implicit contracting. In Table 10, we use four measures of lender reputation based on market-wide and industry-specific league table rankings to investigate cross-sectional enforcement heterogeneity with reputation. These league tables are based on annual deal volume and anecdotally have sizable effects on lender choice and bargaining.[8] As in our previous tables, we estimate this heterogeneity using the same regression discontinuity design as implemented in previous sections. Column (1) interacts *NegativeSlack* with *Top10Lender*, an indicator that equals one if the lead arranger is in the top ten of market-wide league tables ranks and zero otherwise. Column (2) also uses market-wide league table ranks, but instead measures a continuous function of rank, ln*LenderRank*. Our estimates using each of these measures suggest that high

[8] The dominant provider of loan information for market participants, Loan Pricing Corporation, suggests that its primary role is to construct league tables: https://www.loanpricing.com/products/loanconnectordealscan/.

reputation lenders have lower enforcement rates; top ranked lenders enforce 2.42 percentage points less frequently and, similarly, a 1% increase in rank (decrease in reputation) is associated with a 1.23 percentage point increase in enforcement rates.

Columns (3) and (4) use analogous measures of lender reputation at the industry level. Since lead arrangers may specialize in lending to particular industries, we construct our own league tables for each two digit SIC industry. *IndustryTop5Lender* is an indicator that equals one if the lead arranger is in the top five ranked lenders to the borrower's industry and zero otherwise, and ln*IndustryLenderRank* is the natural log of the lead arranger's industry league table rank. The estimates in columns (3) and (4) are consistent with our market-wide reputation findings. Top lenders within an industry are 7.81 percentage points less likely to enforce violations, and a 1% increase in industry rank (decrease in industry reputation) is associated with a 5.74 percentage point increase in enforcement rates. Overall, our results in Tables 9 and 10 are consistent with theories of implicit contracting. We find that implicit and explicit contracting are substitutes in the private loan market, and that well-reputed lenders enforce contractual breaches at lower rates.

8 Conclusion

In this paper, we study the contractual enforcement of restrictive financial covenants and find that lenders exercise significant ex post discretion. Despite the fact that breaching these covenants gives the lenders substantial power, including the right to accelerate the loan or extract benefits, in the form of fees or improved terms, from the borrower, our baseline finding

is that lenders choose to enforce contractual breaches only 11% of the time. This result suggests that lender forbearance is an economically significant feature of loan contracting. We provide several novel findings concerning variation in this behavior over time and across borrowers and lenders and that show how this novel contracting margin interacts with explicit contractual terms. Enforcement is more likely when credit conditions are otherwise tight and when coordination costs among lenders are high, but less likely when lenders have strong reputations and when borrowers have better external financing options.

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Appendix A: Variable Definitions

Variable Name	Definition
Violation	One for material violation that the borrower discloses in an SEC filing.
Slack	Distance to covenant threshold divided by trailing volatility of the covenant variable. Minimum of these values is used for loans with multiple covenants.
Negative slack	Indicator that equals one if *Slack*, zero otherwise.
Strictness	Measure of the probability of technical default as in Murfin (2012).
PViol	Measure of the probability of technical default that incorporates modified covenant definitions as in Demerjian and Owens (2016).
Spread (bps)	Weighted average spread.
Amount ($mm)	Loan package amount.
Maturity (mos.)	Weighted average maturity.
Secured	Indicator that equals one for collateral.
CreditTightening (std.)	Standardized net % loan officers reporting a tightening of credit standards.
Recession	Indicator that equals one during an NBER recession and zero otherwise.
PortfolioNegativeSlack(%)	Loans in the lead arranger's portfolio that are in breach of a covenant.
IndustryNegativeSlack(%)	Loans in the borrower's industry that are in breach of a covenant.
Syndication	Indicator that equals one if the distribution method is syndication.
#Lenders	Index of syndicate size based on the number of lenders in the syndicate.
LenderHHI	Sum of squared loan shares among syndicate participants.
RetainedShare	Fraction of the loan retained by the lead arranger.
#Institutions	Number of institutional investors in the lending syndicate.
LenderstoPass	The smallest number of lenders required to vote for a covenant waiver based on initial loan shares and contractual voting rules.
Relationship	Indicator that equals one if the lead arranger has initiated at least one loan with the borrower previously.
MultipleLeads	Indicator that equals one if the borrower has outstanding loans with at least two distinct lead arrangers simultaneously.
BondAccess	Indicator that equals one if the borrower has an S&P credit rating.
Whited-Wu Index	Standardized Whited-Wu index, for which higher values correspond to a higher cost of external financing.
Size ($mm)	Standardized total assets of the borrower.
InitialSlack	Minimum standardized distance to covenant thresholds across covenant types in the initial loan package.
InitialStrictness	Measure of initial contract strictness from Murfin (2012).
InitialPViol	Measure of initial covenant tightness from Demerjian and Owens (2016).
Top10Lender	Indicator that equals one if the lead arranger is among the top ten ranked underwriters by deal volume in the quarter.
LenderRank	Log of the lead arranger's rank by deal volume in the quarter.
IndustryTop5Lender	Indicator that equals one if the lead arranger is among the top five underwriters by deal volume in the borrower's industry in the quarter.
IndustryLenderRank	Log of the lead arranger's rank by deal volume in the borrower's industry in the quarter.

Appendix B: Covenant Calculations

Covenant Name	Calculation (Compustat codes)
Debt-to-EBITDA	(Dlcq + Dlttq) / Rolling EBITDA
Debt-to-Equity	(Dlcq + Dlttq) / Seqq
Debt-to-Tangible NW	(Dlcq + Dlttq) / (Atq – Intanq – Ltq)
Leverage	(Dlcq + Dlttq) / Atq
Current ratio	Actq/Lctq
Quick ratio	(Rectq + Cheq) / Lctq
Cash interest coverage	Rolling EBITDA/Rolling interest paid
Interest coverage	Rolling EBITDA/Rolling interest expense
Debt service coverage	Rolling EBITDA/(Rolling interest expense and principal payment)
Fixed charge coverage	Rolling EBITDA/(Rolling interest expense, principal payment, and rent payment)
Net worth	Atq – Ltq
Tangible net worth	Atq – Intanq – Ltq
EBITDA	Rolling EBITDA

Rolling EBITDA, interest expense, interest paid, and *principal paid* are calculated using the sum of the firm's past four quarters.

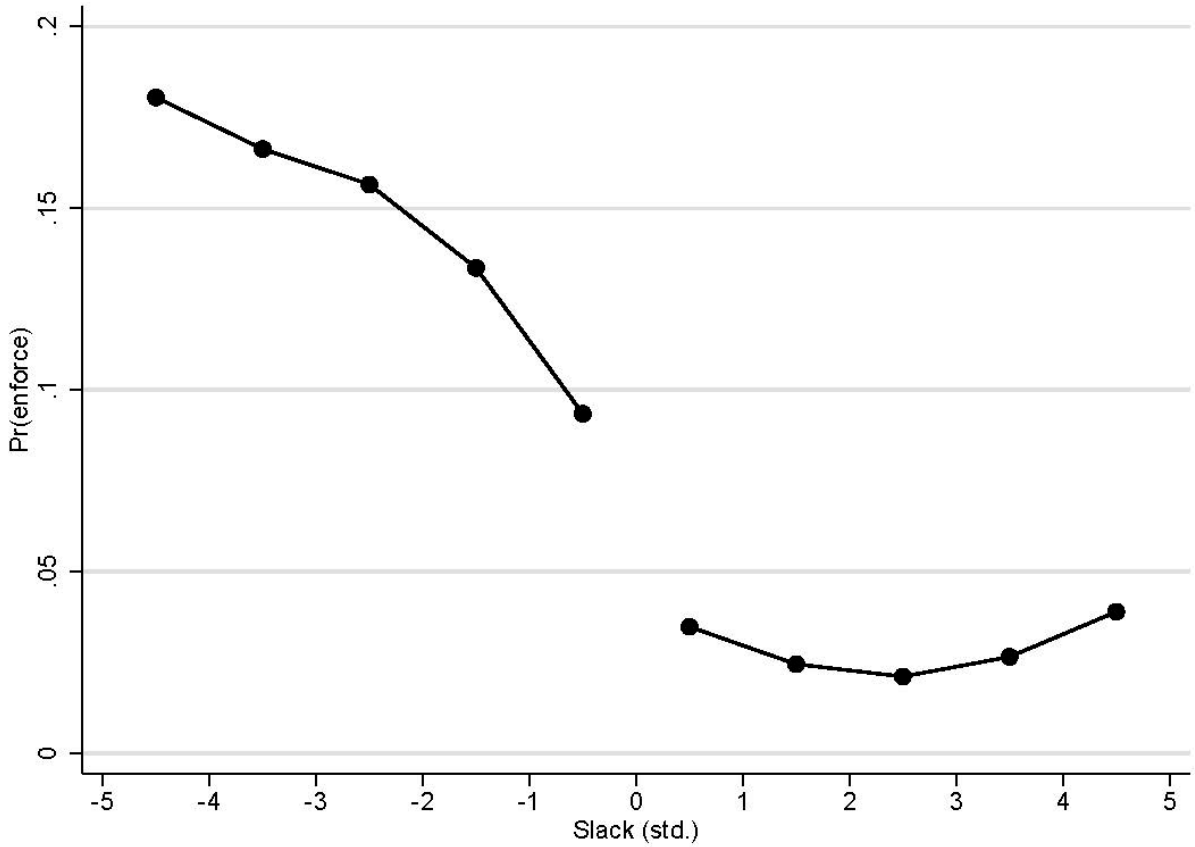

Figure 1. Lender Forbearance around Covenant Thresholds

This figure plots the average contractual enforcement rate of covenant violations for five bins of *Slack*, the standardized distance to covenant threshold, on each side of the covenant threshold. Negative values correspond to a covenant breach.

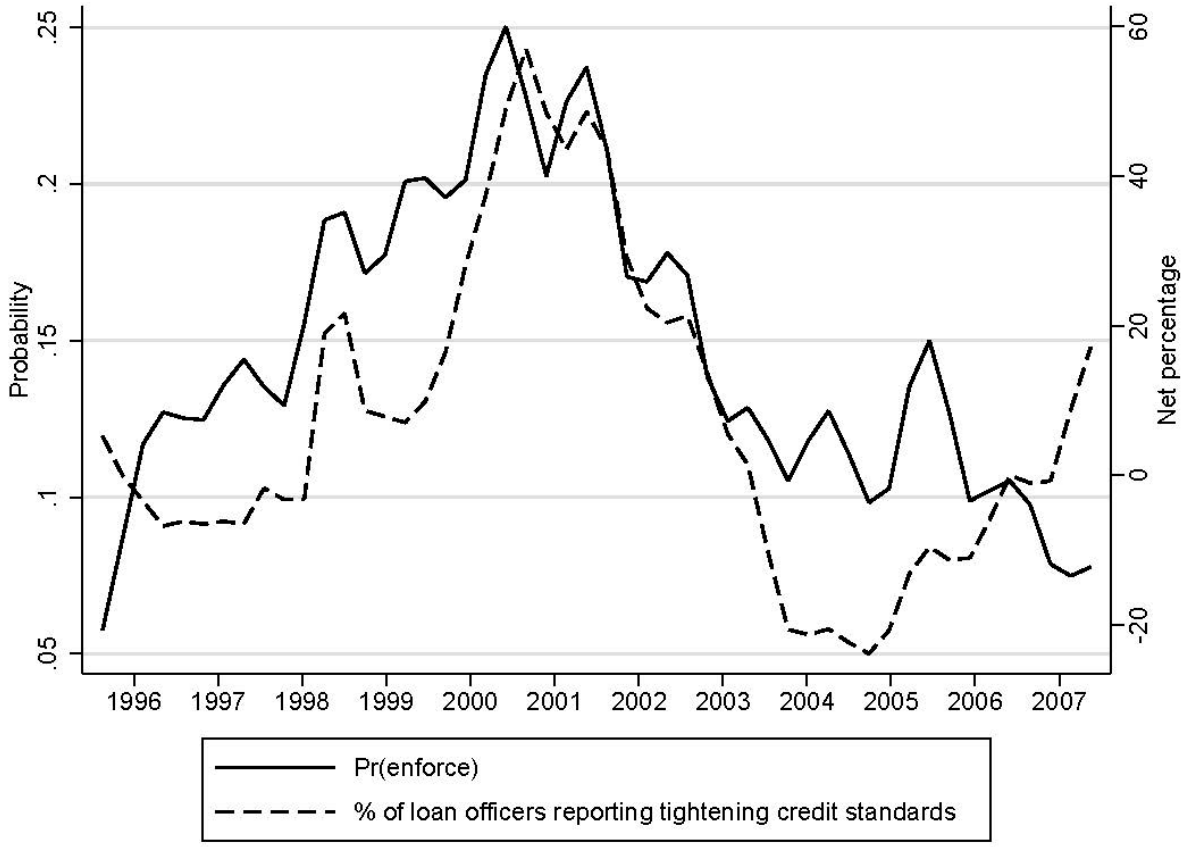

Figure 2. Lender Forbearance and Credit Tightening over time

This figure shows the quarterly time series variation in the probability that a lender enforces a breach of contract (solid line) and the net percentage of loan officers that report tightening credit standards from the Federal Reserve's survey of senior loan officers (dashed line).

Table 1. Summary Statistics

This table presents summary statistics for the regression variables of interest. Variable definitions are in Appendix A.

	Mean	SD	P25	Median	P75
Violation	6.39%				
NegativeSlack	31.11%				
Slack	1.28	12.36	-0.41	0.40	1.64
Strictness	85.37%	12.22%	81.20%	89.20%	93.96%
PViol	39.57%	41.39%	2.4%	15.7%	91.9%
Spread (bps)	168	113	75	150	250
Amount ($mm)	465	944	71.4	200	500
Maturity (mos.)	51.53	18.41	36	57	60
Secured	59.46%				
CreditTightening	10.97	25.07	-7	5.4	25
Recession	31.15%				
PortfolioNegativeSlack(%)	30.77%	22.61%	16.67%	27.31%	39.29%
IndustryNegativeSlack(%)	32.73%	13.51%	23.33%	32.47%	41.06%
Top10Lender	11.23%				
LenderRank	60.09	45.54	23	50	89
IndustryTop5Lender	10.05%				
IndustryLenderRank	17.57	9.18	10	18	24
Syndication	53.93%				
#Lenders	6.31	6.44	2	4	8
LenderHHI	0.27	0.34	0.05	0.10	0.33
RetainedShare	59.89%	39.18%	18.33%	55%	100%
#Institutions	0.04	0.29	0	0	0
LenderstoPass	4.91	3.47	2	4	7
Relationship	82.99%				
MultipleLeads	55.32%				
BondAccess	51.55%				
Whited-Wu Index	-0.32	0.09	-0.39	-0.32	-0.25
Size ($mm)	3,440	10,000	153	665	2,450

Table 2. Lender Forbearance

This table presents borrower-(loan)package-quarter level regression discontinuity design estimates of *Violation*, an indicator that equals one if the borrower discloses a material covenant violation in an SEC filing and zero otherwise, on *NegativeSlack*, an indicator that equals one if the borrower is in breach of at least one covenant threshold and zero otherwise, and control variables. Heteroskedasticity-robust standard errors are clustered by borrower, and presented in parentheses. ***, **, and * denote results significant at the 1%, 5%, and 10% levels.

Dependent variable: *Violation*						
	(1)	(2)	(3)	(4)	(5)	(6)
NegativeSlack	10.654***	10.030***	9.894***	9.091***	5.754***	5.869***
	(0.813)	(0.745)	(0.728)	(0.679)	(0.636)	(0.700)
Slack control:						
Polynomial order	Linear	Linear	Linear	Linear	Linear	Linear
Bandwidth	Global	Global	Global	Global	Global	Global
Fixed Effects:						
Industry	No	Yes	Yes	Yes	Yes	Yes
Year-quarter	No	Yes	Yes	Yes	Yes	Yes
Industry × *Year-quarter*	No	No	Yes	Yes	Yes	Yes
Lender	No	No	No	Yes	Yes	Yes
Borrower	No	No	No	No	Yes	Yes
Lender × *Borrower*	No	No	No	No	No	Yes
R^2	0.0474	0.0715	0.1471	0.1849	0.3593	0.3761
Obs.	99,636					

Table 3. Lender Forbearance: Specification Robustness

This table presents borrower-(loan)package-quarter level regression discontinuity design estimates of *Violation*, an indicator that equals one if the borrower discloses a material covenant violation in an SEC filing and zero otherwise, on *NegativeSlack*, an indicator that equals one if the borrower is in breach of at least one covenant threshold and zero otherwise, and control variables. Column (1) replicates the baseline specification in Column (3) of Table 2, but omits the linear control for the distance to covenant thresholds. Column (2) replicates the baseline specification in Column (3) of Table 2, but replaces the linear control for the distance to covenant thresholds with a quadratic control function. Columns (3) and (4) omit the polynomial control functions, but limit the estimation window to observations in which the borrower is within two and five standard deviations of breaching a covenant threshold, respectively. Columns (5) and (6) implement the same bandwidth restriction as in Columns (3) and (4), but also include a linear control function for the distance to covenant thresholds. Heteroskedasticity-robust standard errors are clustered by borrower and lender, and presented in parentheses. ***, **, and * denote results significant at the 1%, 5%, and 10% levels.

Dependent variable: *Violation*						
	(1)	(2)	(3)	(4)	(5)	(6)
NegativeSlack	10.534***	9.124***	7.051***	8.499***	4.167***	5.341***
	(0.741)	(0.761)	(0.709)	(0.753)	(0.703)	(0.703)
Slack control:						
Polynomial order	None	Quadratic	None	None	Linear	Linear
Bandwidth	Global	Global	2	5	2	5
Fixed Effects:						
Industry × *Year-quarter*	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.1459	0.1494	0.1461	0.1430	0.1481	0.1467
Obs.	99,636	99,636	65,063	81,273	65,063	81,273

Table 4. Lender Forbearance: Measurement Robustness

This table presents borrower-(loan)package-quarter level regression discontinuity design estimates of *Violation*, an indicator that equals one if the borrower discloses a material covenant violation in an SEC filing and zero otherwise, on *NegativeSlack*, an indicator that equals one if the borrower is in breach of at least one covenant threshold and zero otherwise, and control variables. Column (1) replicates the baseline specification in Column (3) of Table 2, but defines *NegativeSlack* based only on breaches of covenant thresholds for covenants without modifications (i.e., Quick Ratio, Current Ratio, Net Worth, Tangible Net Worth). Column (2) replicates the baseline specification in Column (3) of Table 2, but now analyzes the subsample of loans that only use covenants not subject to modifications (i.e., Quick Ratio, Current Ratio, Net Worth, Tangible Net Worth). Column (3) replicates the baseline specification in Column (3) of Table 2, but only for the subset of loans that are not renegotiated before maturity. Column (4) replicates the baseline specification in Column (3) of Table 2, but only for the subset of loans with covenants without dynamic thresholds. Heteroskedasticity-robust standard errors are clustered by borrower and lender, and presented in parentheses. ***, **, and * denote results significant at the 1%, 5%, and 10% levels.

Dependent variable: *Violation*				
	Breach No Modification Covenant	*Only No Modification Covenants*	*Only No Loan Renegotiations*	*Only No Dynamic Thresholds*
	(1)	(2)	(3)	(4)
NegativeSlack	10.387***	13.206***	11.423***	9.896***
	(1.015)	(3.455)	(1.007)	(0.859)
Slack control:				
Polynomial order	Linear	Linear	Linear	Linear
Bandwidth	Global	Global	Global	Global
Fixed Effects:				
Industry × *Year-quarter*	Yes	Yes	Yes	Yes
R^2	0.1419	0.4273	0.2135	0.1615
Obs.	99,636	4,107	24,373	57,893

Table 5. Lender Forbearance and Selection

This table presents borrower-(loan)package-quarter level regression estimates of *Slack*, a standardized measure of the distance to covenant thresholds, on *Violation*, an indicator that equals one if the borrower discloses a material covenant violation in an SEC filing and zero otherwise, and control variables for observations in which the borrower is in breach of at least one covenant threshold. Heteroskedasticity-robust standard errors are clustered by borrower, and presented in parentheses. ***, **, and * denote results significant at the 1%, 5%, and 10% levels.

Dependent variable: *Slack*						
	(1)	(2)	(3)	(4)	(5)	(6)
Violation	-0.264***	-0.319***	-0.302***	-0.285***	-0.133***	-0.133***
	(0.044)	(0.040)	(0.044)	(0.042)	(0.029)	(0.028)
Fixed Effects:						
Industry	No	Yes	Yes	Yes	Yes	Yes
Year-quarter	No	Yes	Yes	Yes	Yes	Yes
Industry × *Year-quarter*	No	No	Yes	Yes	Yes	Yes
Lender	No	No	No	Yes	Yes	Yes
Borrower	No	No	No	No	Yes	Yes
Lender × *Borrower*	No	No	No	No	No	Yes
R^2	0.0082	0.1480	0.2845	0.3745	0.7115	0.7353
Obs.	30,576					

Table 6. Lender Forbearance and Credit Conditions

This table presents borrower-(loan)package-quarter level regression discontinuity design estimates of *Violation*, an indicator that equals one if the borrower discloses a material covenant violation in an SEC filing and zero otherwise, on *NegativeSlack*, an indicator that equals one if the borrower is in breach of at least one covenant threshold and zero otherwise, interacted with credit cycle proxies and control variables. Observations from 1995 and 2008 are eliminated due to cross-sectional data limitations. Column (1) interacts *NegativeSlack* with *CreditTightening(std.)*, the standardized net percentage of loan officers reporting a tightening of credit standards as per the Federal Reserve survey of senior loan officers. Column (2) interacts *NegativeSlack* with *Recession*, an indicator that equals one during an NBER recession and zero otherwise. Column (3) interacts *NegativeSlack* with *PortfolioNegativeSlack(%)*, the percentage of outstanding loans in the lead arranger's loan portfolio that are in breach of a covenant threshold. Column (4) interacts *NegativeSlack* with *IndustryNegativeSlack(%)*, the percentage of outstanding loans in the borrower's industry that are in in breach of a covenant threshold. Heteroskedasticity-robust standard errors are clustered by borrower and lender, and presented in parentheses. ***, **, and * denote results significant at the 1%, 5%, and 10% levels.

Dependent variable: *Violation*				
	(1)	(2)	(3)	(4)
NegativeSlack	10.899***	8.656***	6.693***	7.068***
	(0.748)	(0.809)	(1.196)	(2.003)
CreditTightening(std.)	3.959***			
× *NegativeSlack*	(0.673)			
Recession		6.629***		
× *NegativeSlack*		(1.228)		
PortfolioNegativeSlack(%)			8.509***	
× *NegativeSlack*			(2.603)	
IndustryNegativeSlack(%)				9.904*
× *NegativeSlack*				(5.326)
Slack control:				
Polynomial order	Linear	Linear	Linear	Linear
Bandwidth	Global	Global	Global	Global
Fixed Effects:				
Industry × *Year-quarter*	Yes	Yes	Yes	Yes
R^2	0.1484	0.1475	0.1467	0.1459
Obs.	90,668			

Table 7. Lender Forbearance and Coordination Costs

This table presents borrower-(loan)package-quarter level regression discontinuity design estimates of *Violation*, an indicator that equals one if the borrower discloses a material covenant violation in an SEC filing and zero otherwise, on *NegativeSlack*, an indicator that equals one if the borrower is in breach of at least one covenant threshold and zero otherwise, interacted with proxies for the cost of coordination among the lending syndicate and control variables. Column (1) interacts *NegativeSlack* with *Syndication*, an indicator that equals one if the distribution method is through syndication and zero otherwise, and produces estimates for the full sample. Columns (2)-(5) estimate the effects of *#Lenders*, an index of syndicate size based on the number of lenders in the syndicate, *LenderHHI*, the sum of squared loan shares among syndicate participants, *RetainedShare*, the fraction of the loan retained by the lead arranger, *#Institutions*, the number of institutional investors in the lending syndicate, respectively, for the sample of syndicated loans. Column (6) estimates the effect of *LenderstoPass*, which is the smallest number of lenders required to vote for a covenant waiver based on initial loan shares and contractual voting rules. Heteroskedasticity-robust standard errors are clustered by borrower and lender, and presented in parentheses. ***, **, and * denote results significant at the 1%, 5%, and 10% levels.

Dependent variable: *Violation*						
	(1)	(2)	(3)	(4)	(5)	(6)
NegativeSlack	11.439***	10.395***	5.948***	4.949***	8.285***	11.292***
	(0.828)	(1.026)	(1.035)	(1.306)	(0.917)	(1.445)
Syndication × *NegativeSlack*	-3.111***					
	(1.138)					
#Lenders × *NegativeSlack*		-0.304***				
		(0.090)				
LenderHHI × *NegativeSlack*			11.169***			
			(3.915)			
RetainedShare × *NegativeSlack*				0.105***		
				(0.038)		
#Institutions × *NegativeSlack*					3.330*	
					(1.770)	
LenderstoPass × *NegativeSlack*						-0.621***
						(0.224)
Slack control:						
Polynomial order	Linear	Linear	Linear	Linear	Linear	Linear
Bandwidth	Global	Global	Global	Global	Global	Global
Fixed Effects:						
Industry × *Year-quarter*	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.1492	0.1906	0.1906	0.1917	0.1870	0.2067
Obs.	99,636	53,735	53,735	53,735	53,735	39,592

Table 8. Lender Forbearance, Hold-up, and External Financing

This table presents borrower-(loan)package-quarter level regression discontinuity design estimates of *Violation*, an indicator that equals one if the borrower discloses a material covenant violation in an SEC filing and zero otherwise, on *NegativeSlack*, an indicator that equals one if the borrower is in breach of at least one covenant threshold and zero otherwise, interacted with proxies for bank competition and control variables. Column (1) interacts *NegativeSlack* with *Relationship*, an indicator that equals one if the lead arranger has initiated at least one loan with the borrower previously and zero otherwise. Column (2) interacts *NegativeSlack* with *MultipleLeads*, an indicator that equals one if the borrower has outstanding loans with at least two distinct lead arrangers simultaneously and zero otherwise. Column (3) interacts *NegativeSlack* with *BondAccess*, an indicator that equals one if the borrower has an S&P credit rating and zero otherwise. Column (4) interacts *NegativeSlack* with *Whited-Wu(std.)*, the standardized Whited-Wu index, for which higher values correspond to a higher cost of external financing. Column (5) interacts *NegativeSlack* with *Size(std.)*, the standardized total assets of the borrower. Heteroskedasticity-robust standard errors are clustered by borrower and lender, and presented in parentheses. ***, **, and * denote results significant at the 1%, 5%, and 10% levels.

Dependent variable: *Violation*					
	(1)	(2)	(3)	(4)	(5)
NegativeSlack	4.310***	11.137***	14.342***	7.580***	9.693***
	(1.110)	(0.692)	(0.923)	(0.529)	(0.689)
Relationship × *NegativeSlack*	6.028***				
	(1.203)				
MultipleLeads × *NegativeSlack*		-2.126***			
		(0.623)			
BondAccess × *NegativeSlack*			-9.158***		
			(1.311)		
Whited-Wu(std.) × *NegativeSlack*				6.188***	
				(0.612)	
Size(std.) × *NegativeSlack*					-8.770***
					(1.874)
Slack control:					
Polynomial order	Linear	Linear	Linear	Linear	Linear
Bandwidth	Global	Global	Global	Global	Global
Fixed Effects:					
Industry × *Year-quarter*	Yes	Yes	Yes	Yes	Yes
R^2	0.1575	0.1565	0.1677	0.1947	0.1774
Obs.	99,636				

Table 9. Lender Forbearance and Ex Ante Explicit Contracting

This table presents borrower-(loan)package-quarter level regression discontinuity design estimates of *Violation*, an indicator that equals one if the borrower discloses a material covenant violation in an SEC filing and zero otherwise, on *NegativeSlack*, an indicator that equals one if the borrower is in breach of at least one covenant threshold and zero otherwise, interacted with measures of initial covenant threshold strictness and control variables. Column (1) interacts *NegativeSlack* with *InitialSlack*, the minimum standardized distance to covenant thresholds across covenant types in the initial loan package, and produces estimates for the full sample. Columns (2) and (3) interact *NegativeSlack* with *InitialStrictness*, the measure of initial contract strictness from Murfin (2012), and *InitialPViol*, the measure of initial covenant tightness from Demerjian and Owens (2016), and produce estimates for the sample of loans with more than two covenants. In columns (2) and (3), the sample size is restricted due to missing data and computational requirements. Heteroskedasticity-robust standard errors are clustered by borrower and lender, and presented in parentheses. ***, **, and * denote results significant at the 1%, 5%, and 10% levels.

Dependent variable: *Violation*			
	(1)	(2)	(3)
NegativeSlack	8.913***	13.444***	25.815***
	(1.306)	(2.215)	(4.569)
InitialSlack × *NegativeSlack*	0.418**		
	(0.197)		
InitialStrictness × *NegativeSlack*		-0.067**	
		(0.027)	
InitialPViol × *NegativeSlack*			-0.113**
			(0.055)
Slack control:			
Polynomial order	Linear	Linear	Linear
Bandwidth	Global	Global	Global
Fixed Effects:			
Industry × *Year-quarter*	Yes	Yes	Yes
R^2	0.1559	0.2090	0.2360
Obs.	99,636	56,337	47,747

Table 10. Lender Forbearance and Reputation

This table presents borrower-package-quarter level regression discontinuity design estimates of *Violation*, an indicator that equals one if the borrower discloses a material covenant violation in an SEC filing and zero otherwise, on *NegativeSlack*, an indicator that equals one if the borrower is in breach of at least one covenant threshold and zero otherwise, interacted with proxies for lead arranger reputation and control variables. Column (1) interacts *NegativeSlack* with *Top10Lender*, an indicator that equals one if the lead arranger is among the top ten ranked underwriters by deal volume in the quarter and zero otherwise. Column (2) interacts *NegativeSlack* with ln*LenderRank*, the natural log of the lead arranger's rank by deal volume in the quarter. Column (3) interacts *NegativeSlack* with *IndustryTop5Lender*, an indicator that equals one if the lead arranger is among the top five ranked underwriters by deal volume in the borrower's industry in the quarter and zero otherwise. Column (4) interacts *NegativeSlack* with ln*IndustryLenderRank*, the natural log of the lead arranger's rank by deal volume in the borrower's industry in the quarter. Heteroskedasticity-robust standard errors are clustered by borrower and lender, and presented in parentheses. ***, **, and * denote results significant at the 1%, 5%, and 10% levels.

Dependent variable: *Violation*				
	(1)	(2)	(3)	(4)
NegativeSlack	10.668***	5.988***	17.543***	0.433
	(0.865)	(1.232)	(1.629)	(5.820)
Top10Lender × *NegativeSlack*	-2.424**			
	(1.155)			
ln*LenderRank* × *NegativeSlack*		1.229***		
		(0.433)		
IndustryTop5Lender × *NegativeSlack*			-7.807***	
			(3.933)	
ln*IndustryLenderRank* × *NegativeSlack*				5.735***
				(1.985)
Slack control:				
Polynomial order	Linear	Linear	Linear	Linear
Bandwidth	Global	Global	Global	Global
Fixed Effects:				
Industry × *Year-quarter*	Yes	Yes	Yes	Yes
R^2	0.1571	0.1574	0.1604	0.1609
Obs.	99,636			