Losing Control:

The 20-Year Decline in Loan Covenant Restrictions*

Tom Griffin, Greg Nini, and David Smith**

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Abstract

Over the last twenty years, financial covenants in syndicated loan agreements have steadily become looser. The result is that the fraction of U.S. public companies reporting a violation of a loan covenant during a given year decreased from over 12% in 1997 to less than 5% in 2016. Although the decline accelerates in recent years, the trend is present prior to the recent financial crisis. The trend cannot be explained by changes in the composition of public firms, a decrease in the usage of debt, or a long series of positive ex-post outcomes for firms. Nor does the rise in institutional lenders or an increased supply of credit entirely explain the decline. The loosening of covenants is widespread among all types of borrowers and loans and accompanies an increase in loan spreads over the period, suggesting that the trend reflects fundamental changes in the costs and benefits of tight covenants.

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** Griffin (tpg43@drexel.edu) is from the LeBow College of Business, Drexel University; Nini (gpn26@drexel.edu) is from LeBow College of Business, Drexel University; and Smith (dcs8f@virginia.edu) is from the McIntire School of Commerce, University of Virginia.

1 Introduction

A growing literature has shown that creditors can play an active role in the governance of companies by restricting their behavior through financial covenants and other contractual constraints in loan agreements.[1] Using data from the mid-1990s through most of the first decade of the 2000s, these studies find that binding constraints in loan agreements, and the increases in creditor control associated with violations of those constraints, are common and appear to cause borrowers to alter their behavior by reducing investment, trimming costs, and curtailing risk-taking. The studies also find that companies constrained by loan covenants experience relatively quick turnarounds and improvements to operating efficiency following a performance decline (Nini, Smith, Sufi, 2009, 2012; Ersahin, Irani, Le, 2018), but may also reduce employment and amplify economic downturns (Falato and Liang, 2016).

Because the data used in these studies cover a relatively short sample period, they overlook a startling trend in the design of syndicated loan agreements. Namely, the contractual constraints in loan agreements, and the violations associated with the constraints, have declined steadily and precipitously since the late 1990s. Using newly collected data updated through 2016, we document this decline and explore potential explanations for its cause.

Figures 1 and 2 illustrate the phenomenon. Figure 1 plots both the annual mean number of financial covenants, as tracked by the Thompson Reuters *DealScan* database, and the annual mean distance to violation for the tightest covenant (in standard deviations from the corresponding financial ratio) at contract origination for syndicated loans between 1997 and 2016. The figure shows that covenant constraints in loan agreements have become substantially less restrictive

[1] See, e.g., Chava and Roberts (2008), Roberts and Sufi (2009), Nini, Smith, and Sufi (2009, 2012), Murfin (2012), Fallato and Liang (2016), Chava, Nanda, and Xiao (2017), Freudenberg, Imbierowicz, Saunders, and Steffen (2017), Gu, Mao, and Tian (2017), and Ersahin, Irani, and Le (2018).

over this period. At the beginning of our sample, the typical loan had about three financial covenants and covenant levels set with about one-half of a standard deviation of headroom. By the end of our sample, the typical loan had fewer than two financial covenants and roughly one full standard deviation of headroom. Figure 2 plots the annual frequency of public firms reporting loan covenant violations, as reported in SEC filings, over the same period, and shows that looser covenants have resulted in violations becoming much less frequent. The proportion of public firms reporting a covenant violation in 2016 sat around 5%, which was one-quarter of the frequency of violations reported in the peak year of 20% in 2001, which followed the dot-com crash and related recession. After 2001, covenant violations decreased markedly into the mid-2000's and then again following the financial crisis. Perhaps most notable is that violations increased only slightly in 2008 and 2009 and reached only about one-half of the peak during the prior recession.[2]

Our paper explores some of the potential causes of these sharp changes. We first consider the possibility that the observed declines are due to measurement error, changes in the composition of public firms raising loan financing, or improvements in overall credit quality of public firms. Our tests indicate that none of these possibilities explains the decline in contract restrictiveness and violations. The loosening of covenants is apparent in several alternative measures of covenants tightness and violations, present in various subsamples of firms, and robust to accounting for realized changes in credit quality. We conclude that the decline in covenant restrictiveness

[2] A recent phenomenon related to the declining restrictiveness of financial covenants involves "baskets" or "carveouts" to non-financial covenants that allow the borrower to transfer value away from creditors, including through investments in subsidiaries that are not parties to the loan and by allowable transfers up to a parent entity. Recent examples of such asset transfers include transactions by Caesars Entertainment, J. Crew, iHeart, and Petsmart. See, e.g., "Companies Are Using Covenants to Restructure Their Capital Structure and Prime Existing Debt — What Lenders and Debt Investors Need to Know," *Chapman and Cutler Client Alert* March 2017, and "PetSmart Moves Part of Chewy.com Out of Creditors' Reach," *Bloomberg News* June 4, 2018.

documented in Figures 1 and 2 reflects a fundamental change in the equilibrium level of financial covenants.

We next consider how changes in the market for large corporate loans may have altered the nature of covenants we observe in our data. During our sample period, the investor base in corporate loans has shifted away from just commercial banks, with participation by non-bank institutions increasing from 8% of outstanding loans in 2001 to 23% by 2016.[3] This shift has been accompanied by the rise of covenant-lite loans, which Berlin, Nini, and Yu (2018) show involve institutional term loan lenders ceding control rights to revolving lenders. However, we present evidence that the decline in contract restrictiveness extends beyond institutional loans to tranches held primarily by banks, indicating that increased institutional participation cannot wholly explain the phenomenon.[4]

Finally, we ask whether the credit cycle or longer-lived changes in investor risk aversion might impact debt contract terms. The last decade has witnessed a sustained credit boom that has, by some measures, outpaced the credit highs reached prior to the 2007-09 Global Financial Crisis.[5] Meanwhile, real interest rates have fallen substantially since the 1980s, and a number of academic studies have documented potential distortions caused by low interest rates and overheated credit markets.[6] To help address whether these developments have bled into reducing

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[3] Statistics based on data from the Federal Reserve's Shared National Credit (SNC) program; see https://www.federalreserve.gov/supervisionreg/snc.htm. In 2001, the first year that the SNC review reported data separately for non-banks, only 8% of total loan commitments were funded by nonbank investors. By the 2015 SNC review, nonbanks accounted for 23% of total loan commitments.

[4] Becker and Ivashina (2018) study the rise of "covenant-lite" contracts and argue that the popularity of these contracts are tied directly to the rise in institutional (non-bank) participation in syndicated loan markets.

[5] For example, see "Credit Markets Boom as Risk Appetite Keeps Trade Fears at Bay," *Bloomberg Markets*, August 1, 2018 (https://www.bloomberg.com/news/articles/2018-08-01/hunt-for-yield-is-recharging-the-global-credit-super-cycle) and "U.S. Credit Boom: Red Flag or Investable Asset?," *Financial Times*, May 8, 2018, (https://www.ft.com/content/7c1aa6d4-5225-11e8-b24e-cad6aa67e23e).

[6] These studies have examined the impact of low interest rates on lending standards (Acharya and Richardson, 2010; Maddaloni and Peydro, 2011; Dell'Ariccia, et al. 2012; and Ruckes, 2014), inflation in asset prices (Axelson, et al., 2013; [more here]), limitations on monetary policy (Bernanke and Reinhart, 2004), excessive ue of leverage (need

the restrictiveness of contract terms in loan agreements, we examine the evolution of other terms in loan contracts. Our evidence indicates that an increased supply of credit is unlikely to explain the decline in contract restrictiveness. We find that credit spreads have widened over the most recent period even as contracts have become less restrictive, suggesting that factors other than supply are at work. Further, the weakening in contract terms – and resulting decline in covenant violations – date at least back to 2001, prior to the period of extremely low interest rates witnessed after financial crisis.

The collection of evidence suggests that the optimal loan agreement has slowly evolved to include looser financial covenants and a higher spread, suggesting that lenders are trading control rights for higher yield. In section 2, we provide some theoretical background on the role of covenants and why they might tighten or loosen over time. Section 3 describes our data, and sections 4 and 5 explore the changes in covenant strictness and realized violations. Section 6 examines the trend in other loan terms, and sections 7 concludes by speculating on some possible factors that could explain the evolution of contract restrictiveness.

2 Background on Debt Covenants

Covenants have long been recognized as an important component of lending arrangements. The current study material for the chartered financial analyst exams includes covenants as one of the four "Cs" of credit analysis.[7] Smith and Warner (1979) first emphasize that covenants are designed to minimize conflicts of interest between lenders and their borrowers' owners and managers. Whether these conflicts arise due to differences in preferences, differences in the

cite), and the propensity to overinvest in risky assets as a "reach for yield" (Rajan, 2006; Stein, 2013; Becker and Ivashina, 2015). For a nice overview examining the impact of low interest rates, see Bean, et al. (2015).

[7] The four Cs are capacity, collateral, covenants, and character, according to Fundamentals of Credit Analysis, Christopher L. Gootkind (CFA).

structure of payoffs, or differences in access to relevant information, covenants help ensure that firms do not take actions that are detrimental to lenders. Of course, minimizing conflicts of interest expands the ex-ante supply of credit and allows firms access to more credit and/or lower interest rates.

2.1 Theoretical Background

In the incomplete contracting paradigm of Grossman-Hart-Moore, control rights can be allocated to mitigate two financing frictions: moral hazard and information asymmetry. Aghion and Bolton (1992) show that managerial moral hazard can be minimized via state-contingent control rights. By assigning additional control rights to investors when private benefits are likely to lead to smaller financial returns, state-contingent control can increase the amount of income that can be pledged to support borrowing. This feature resembles a standard bank loan, which contains covenants written on financial ratios and transfers control rights to lenders if performance falls below the contractual thresholds.

Garleanu and Zwiebel (2009) show that financial covenants facilitate financing even if the manager's propensity to pursue private benefits is private information. Assuming asymmetric information over future wealth transfers from creditors, the optimal contract allocates strong decision rights to creditors ex-ante to overcome the adverse selection problem and reallocates control rights via ex-post renegotiation. Covenants thus serve two crucial roles: i) to define the circumstances when creditors receive the right to intervene in management, and ii) to prevent managers from taking privately beneficial actions that may reduce the value of lenders' claims (Tirole, 2010).

2.2 Financial Covenants

The typical credit agreement contains affirmative, negative, and financial covenants. Affirmative and negative covenants minimize incentive conflicts by contracting directly on certain events, such as the purchase of insurance or the distribution of dividends. While these covenants are ubiquitous in public and private debt contracts, their scope is limited by an inability to contract on all possible contingencies (Smith and Warner, 1979). Financial covenants enable creditors to overcome this hurdle by assigning decision rights based on a verifiable signal. Indeed, financial covenants are often referred to as "tripwires" because they transfer control rights to lenders only when financial ratios drop below contractual thresholds (Smith, 1993; Dichev and Skinner, 2002). Due to high monitoring and renegotiation costs, these covenants are typically only found in private debt contracts.

Roberts and Sufi (2009) show that more than 95 percent of private loan agreements contain at least one financial covenant. These covenants are tailored to each borrower and do not appear to be set in a boiler-plate fashion. Freudenberg, Imbierowicz, Saunders, and Steffen (2017) find more than 80 unique financial covenant descriptions in a sample of nearly 5,000 credit agreements. Although highly tailored, many covenants share a similar structure. The most common financial covenants place limits on the borrowing company's leverage (typically measured as debt-to-EBITDA), coverage (fixed charge or interest), liquidity (current or quick ratio), and net worth. Historically, these covenants have been set tightly, with the average covenant threshold set fairly close to the actual accounting ratio (Chava and Roberts, 2009).

2.3 Covenant Violations

The breach of a financial covenant constitutes an event of default and grants lenders the right to immediately sever all lending commitments, recall outstanding debt, and proceed to foreclose on collateral. In practice, lenders typically do not initiate default rights upon a covenant violation, preferring instead to use their bargaining power to influence firm policies and

renegotiate terms of the loan contract. A growing body of empirical literature shows that this renegotiation process leads to more conservative investment and financial policies. Specifically, covenant violations are associated with a decline in debt issuance (Roberts and Sufi, 2009), capital investment (Chava and Roberts, 2008), R&D expenditure and patent quantity (Chava, Nanda, and Xiao, 2017; Gu, Mao, Tian 2017), employment (Falato and Liang, 2017), and shareholder payouts (Nini, Smith, and Sufi, 2012).

Creditors impose these changes via behind-the-scenes negotiation and contractual tightening. Ferreira, Ferreira, and Mariano (2017) provide evidence of behind-the-scenes negotiation by showing that most new independent directors added after a violation have links to creditors. Becher, Griffin, and Nini (2018) provide empirical support for the contractual channel by showing that creditors tighten acquisition restrictions after a violation.

Policies imposed after a violation may be driven by creditors' desire to prevent wealth transfers by shareholders or to prevent wealth destruction by managers. Becher et al. (2018) use acquisitions as a setting to show that creditors use control rights to limit activity motivated by managerial agency conflicts rather than to prevent risky, but possibly productive, investments. This evidence is consistent with Nini et al. (2012), who find that long-term operating and stock price performance improves following a covenant violation. Together, these papers conclude that actions taken by creditors increase the value of violating firms and provide spillover benefits to equity holders.

3 Sample selection and summary statistics

We construct two datasets for the following analysis. First, we form a loan-level dataset to study the evolution of debt contracts over the sample period. Second, we assemble a firm-year dataset to analyze the frequency of covenant violations between 1997 and 2016 by extending the

data in Nini, Smith, and Sufi (2012) on covenant violation reported in SEC filings. The following sections describe the construction of these datasets and provide summary statistics.

3.1 Loan sample

We begin with all nonfinancial U.S. firm-quarter observations in Compustat that can be matched to a corresponding 10-Q or 10-K SEC filing in EDGAR.[8] To facilitate this match and ensure consistency with Nini, Smith, and Sufi (2012), we employ the same filters as Nini, Smith, and Sufi (2012). Specifically, we require non-missing total assets, total sales, common shares outstanding, closing share price, and calendar quarter of the observation, and drop firms with average book assets of less than $10 million in real 2000 dollars. These filters yield a sample of 288,390 firm-quarter observations that we use to construct the variables described in Appendix 1.

To construct the loan sample, we begin with our filtered sample of 288,390 firm-quarter observations and merge in all loan packages from Dealscan using the Chava and Roberts (2008) link file. Since this file ends in 2012, we use a fuzzy name match and extensive hand-checking to update the link table through 2016. For each package, we use accounting data from the most recent quarter-end after origination, requiring the fiscal quarter-end date to be less than 100 days after the loan origination date. This matching process leaves us with a sample of 20,189 loan packages originated between 1997 and 2016. We then remove packages without a senior bank loan that is syndicated in the U.S. and denominated in dollars. After dropping packages without completed status, we are left with a sample of 18,131 loans from 4,771 firms between 1997 and 2016.

[8] We begin with this sample to ensure consistency with the covenant violation sample.

Dealscan provides loan information at both the package and facility level. Packages (deals) contain one or more facilities (tranches) that are governed by the same credit agreement. Our unit of analysis is the loan package because covenants are typically set at the package level and apply to all facilities in the loan agreement. However, pricing, maturity, and other loan characteristics are only available at the facility level. We aggregate these variables to the deal level by using the mean spread, maximum maturity, and constructing indicators that equal one if at least one of the underlying facilities are secured or have performance pricing. Panel A of Table 1 provides descriptive statistics for the loan sample. Overall, our summary statistics are similar to those reported in the prior literature.

3.2 Covenant violation data

To construct a comprehensive sample of covenant violations by U.S. public corporations, we rely on information reported in quarterly financial statements. Regulation S-X requires "any breach of covenant …, which … existed at the date of the most recent balance sheet being filed and which has not been subsequently cured, [to] be stated in the notes to the financial statements" (CFR § 210.4-08). Further, "[i]f a default or breach exists but … has been waived for a stated period of time beyond the date of the most recent balance sheet being filed, …" Regulation S-X requires the firm to "… state the amount of the obligation and the period of the waiver" (CFR § 210.4-08). Due to this regulation, we can identify all covenant violations regardless of whether they are outstanding or were cured by a waiver.

Nini, Smith, and Sufi (2012) collect reported violations from nearly the universe of 10-K/10-Q filings on EDGAR from 1996 to 2008 using a text-search algorithm and manual inspection.[9]

[9] The Securities and Exchange Commission (SEC) did not require electronic filing for all firms until the second quarter of 1996.

This dataset, provided online by the authors, indicates whether a firm reports a violation in the SEC filing associated with each fiscal quarter.[10] We extend this dataset through 2016 using the same text-search algorithm and manual coding procedure.

In order to minimize problems from seasonality and measurement error, we aggregate the quarterly data to the firm-year level.[11] We create an annual violation indicator for each firm-year that denotes whether the firm reported a violation during the any of the four quarters of the year. We use the fourth calendar quarter of each firm-year, so that each firm-year observation is measured at the same point in time. We also aggregate the quarterly Compustat variables and drop some observations with missing firm variables. The resulting sample consists of 66,589 firm-year observations from 8,499 firms between 1997 and 2016. Panel B of Table 1 provides descriptive statistics for the firm-year sample. Overall, our summary statistics are similar to those reported in the prior literature.

Column 3 of Table 1 displays the number of firms that reported a covenant violation during each calendar year of our sample. The number of violators falls dramatically from a peak of 758 in 2001 to only 122 in 2016.

To ensure that the downward trend shown in Column 1 is not due to biases in our data, we consider two alternative measures of violations. First, we examine the Roberts and Sufi (2009) covenant violation dataset provided online by Michael Roberts. The Roberts and Sufi (2009) text-search algorithm examines a larger set of SEC filings but uses a smaller set of search terms. On net, the procedure identifies fewer violations. Column (2) displays an even stronger

[10] See the data appendix in Nini et al. (2012) for details on the sample selection and text-search algorithm.

[11] As reported in Nini, Sufi, and Smith (2012), firms report violations more frequently in 10-Ks relative to 10-Qs because firms often summarize the experience of the entire year in annual reports. Moreover, aggregating to the firm-year minimizes the likelihood that our coding procedure fails to identify a violation, since we would have to miss for four consecutive quarters.

downward trend through 2011, which is when the dataset ends. The similarity between columns (1) and (2) confirm that the trend is not unique to our hand-collection procedure. However, since both measures use violations reported in financial statements, it could be the case that the trend is due to changes in reporting behavior rather than changes in violation frequency.

To rule out this alternative explanation, we use the methodology of Chava and Roberts (2008) to impute violations from observed accounting ratios and covenant thresholds. For each firm-quarter with a loan outstanding in Dealscan, we determine violation status by observing whether the current ratio, total net worth, or tangible net worth observed in Compustat falls below the contractual threshold in Dealscan.[12] The trend in column (3) confirms that the decline in covenant violations is not driven by changes in reporting. In fact, the number of firms that violate one of the three covenants examined by Chava and Roberts (2008) drops to single digits in the latter part of the sample.[13]

Figure 2 plots the annual percent of firms that violate a financial covenant according to each methodology. All three measures show a similar trend, with violations falling fairly steadily throughout the sample period. Since our hand-collected sample yields the broadest set of covenant violations, we focus our attention on this measure for the remainder of the analysis.

4 Decomposing the time trend in reported violations

[12] Following Chava and Roberts (2008), we linearly interpolate dynamic covenant thresholds, drop loans that appear to be in violation at origination, and, in the case of overlapping loans, define the relevant package to be the tighter of the two unless the latter deal corresponds to a refinancing.

[13] In percentage terms, the decline in violations is larger in columns (2) and (3) than in column (1). Comparing total violations in 2001 and 2002 with the total in 2010 and 2011, the drop is 74% in column (1) and 86% in column (2). Comparing total violations in 2001 and 2002 with the total in 2015 and 2016, the drop is 81% in column (1) and 92% in column (3).

In this section we ask whether the downward trend in realized violations could reflect benign changes in the composition of public U.S. firms and/or positive credit quality realizations.

4.1 The role of realized outcomes

We begin by asking whether the downward trend in violations could reflect positive realizations of the variable that lenders monitor in their covenants. That is, we are first interested in addressing whether covenant violations have declined simply because firms have performed better. To do this, we estimate statistical models that relate the occurrence of a covenant violation to the observable realizations of financial ratios upon which covenants are actually written.

Demerjian and Owens (2016) examine the definitions of financial covenants in a large sample of credit agreements and provide a guide for using Compustat data to approximate the underlying values for the 15 covenants provided in DealScan. The covenants are related to borrowing firms' profitability, leverage, liquidity, and ability to service their debt. We summarize these variables using four ratios: return on assets (EBITDA / assets), market leverage (total debt / market value of assets), interest expense (interest expense / assets), and current ratio (current assets / current liabilities). We use the contemporaneous values of these variables (denoted *CovenantControls*) as explanatory variables in the following model

$$\Pr\left(Violation_{i,t}\right) = f\left(CovenantControls_{i,t}\right) \qquad (1)$$

where *i* denotes a firm, *t* denotes a year, and $Violation_{i,t}$ is an indicator of a reported violation. Throughout the analysis, we assume that the probability in (1) is given by a logistic function of the vector of *CovenantControls.*

We begin by estimating the parameters in (1) using only data through 2003, which is about the first one-third of our sample, and eliminating the year dummies. We then use the estimated parameters to forecast realized violations for the full sample period. Under this approach,

borrowed from Fama and French (2001), the forecasts of realized violations in the later years of the sample are based on the realizations of the *CovenantControls* during those years, holding the model parameters fixed at their values estimated from the early part of the sample. If the model parameters are stable across time, the forecasts of realized violations should closely match actual realized violations.

The results are summarized in Figure 4, which reports actual violations and the sample average predicted probability of a violation based on the model (1) and the estimated parameters from column (2) in Table 2. The figure shows that the model fits quite well during the estimation period, capturing the increase in violations around the recession in the early 2000s, despite no year indicators in the model. Subsequent to the estimation period, however, predicted violations remain close to 15% per year and rise and fall around the time of financial crisis. Yet realized violations begin a steady decline after the estimation period, declining to close to 5% by 2016. The dramatic difference between predicted violations and realized violations suggests that the fall in realized violations is not due to trend in the *CovenantControls* but rather a change in the model parameters that relate firm outcomes to realized violations.

We confirm this interpretation in Figures 5 and the remaining columns of Table 2. Figure 5 summarizes the time series trend of the distributions of the variables used as *CovenantControls*. The median values of ROA, leverage, interest expense, and current ratio show no discernable pattern over time. More importantly, the tails of the distributions, which are more likely to affect covenant violations, show cyclical variation but no long-term trend that could explain the fall in realized violations. Instead, the fall in realized violations is best explained by a change in the model that relates firm outcomes to violations. Columns (2) and (3) in Table 4 reported estimated marginal effects of a violation based on (1) for the sample during years 2004-2010 and 2011-2016, which are the latter two-thirds of the full period. For each of the variables, the estimated marginal effects move closer to zero, in some cases dramatically so. The most notable change is

for interest expense, which has a statistically insignificant relationship with violations during the last part of our sample.

Column (1) of Table 2 presents estimates of model (1) that include a full set of year dummy variables, in addition to *CovenantControls*. The estimated parameters, along with confidence intervals, are plotted in Figure 6. The pattern mimics the pattern of reported violations in Figure 2, again suggesting that the fall in realized violations cannot be explained by changes in firm outcomes.

A final inference based on Table 2 is that the trend downward in violations seems to happen prior to the years 2011-2016. During the last third of our sample, we cannot reject the hypothesis that the year dummy variables are equal, as reported in the bottom row of Table 2. Whatever the underlying cause for the change in the model, it did not persist *during* the years 2011-2016.

4.2 Changes in Sample Composition

We next ask whether the downward trend in realized violations could be due to changes in the composition of firms in our sample. Doidge, Kahle, Karolyi, and Stulz (2018) document a large decline in the number of public U.S. companies during our sample period. The remaining public firms are older and larger and perhaps less likely to face tight covenants than the set of public firms around in the earlier part of the sample period.

We examine four firm characteristics that have been shown to be correlated with realized covenant violations: firm size, measured by total assets; firm age, measured by the number of annual observations in Compustat; a measure of market valuation, proxied by the market-to-book ratio; and the credit rating of the borrower. We term these variables *FirmCharacteristics*. Figure 7 plots the annual quartiles of the sample distributions of these variables. Firm size and age show clear evidence of a trend; the sample of public firms has become significantly larger and older

during our sample period. There has also been a trend upward in the number of firms with a credit rating, although the increase has been primarily in firms with a speculative-grade rating. Market-to-book ratios show know obvious trend.

To provide an initial sense of whether changes in firm characteristics might explain the trend in violations, Figure 8 plots realized violations for each of the four quartiles of the distribution of each variable in *FirmCharacteristics*.[14] The figure shows that each of the variables is correlated with realized violations; larger firms, older firms, high valuation firms, and investment-grade firms have fewer violations. However, the trend downward over time is evident within each of the subsets, so it seems unlikely that changes in sample composition could explain all of the trend in the full sample.

We confirm this result by estimating model (1) separately on the subset of firms in the first and fourth quartiles of each variable in *FirmCharacteristics*. We include a dummy variable to indicate years 1997-2003 and 2011-2016, so the omitted category includes years 2004-2010. This approach allows us to compare the estimated probability of violation, conditional on realized firm outcomes, for firm-years at the beginning of the sample versus firm-years at the end of the sample. Since we estimate the model separately for different sets of firms, we can examine the trend conditional on different *FirmCharacteristics*.

The results of this exercise are presented in Table 3, which reports estimated marginal effects based on model (1). The relevant coefficients are the dummy variables "1997 – 2003" and "2011 – 2016". In each of the nine samples, the dummy indicating the latter period is smaller than the dummy for the earlier period. We summarize the trend in the row labelled "Relative change," which reports the estimated decrease in violation probability as a percentage of the average

[14] Here we use quartiles estimated over the entire sample period, so the fraction of firms in each group changes over time.

violation frequency during the years 1997 – 2003, labelled "1997 – 2003 avg." This standardization permits an easier comparison across groups with very different unconditional violation probabilities. The estimated fall in reported violations varies from 28% for very small firms to 72% for firms with the lowest market-to-book ratio. However, the declines cluster in the neighborhood of 60% and are large for each group. If any pattern emerges, it seems that the percentage decline is largest for safer firms – larger firms relative to small firms and investment-grade firms rather than unrated firms. Based on this analysis, we conclude that the trend in reported violations is not due to changes in the composition of the sample of public firms.

To quantify how much of the trend in reported violations can be explained by firm-level outcomes and changes in the sample, we amend model (1) to add *FirmCharacteristics* . We continue to include dummy variables to indicate the first and last thirds of the sample. Table 4 reports a specification with no control variables, a specification including only *CovenantControls,* and a specification including *CovenantControls* and *FirmCharacteristics.* The results suggest that the combination of positive realizations and changing composition can explain about one-half of the decrease in reported violations. Nevertheless, even after controlling for these factors, the evidence suggests that reported violations decreased by about 6 percentage points between the late 1990s and the post-2011 period.

5 The time trend in covenant strictness

Given the strong downward trend in reported violations that cannot be explained by ex-post realizations, we next examine the trend in ex-ante covenant strictness. We begin by defining how we measure covenant strictness and then examine trends in strictness for various subsamples of loans.

5.1 Measuring covenant strictness

For loan contracts with a covenant written on verifiable accounting ratio r and violation threshold $\bar{r}$, ex-ante strictness is defined $\Pr(\tilde{r} > \bar{r})$ where $\tilde{r}$ is a random variable reflecting uncertainty about the realization of r at horizons denoted in the contract. The likelihood that a borrower violates a loan contract, therefore, is a function of i) the number of covenants included in the contract, ii) the initial tightness of these covenants (i.e., the distance between the contractual threshold and the corresponding accounting metric at origination), iii) the variance of the corresponding accounting metrics, and iv) the covariance of these accounting metrics. To account for these features, we measure contract strictness using the approach of Murfin (2012) and Demerjian and Owens (2016).

The strictness measures of Murfin (2012) and Demerjian and Owens (2016) follow the logic that the probability of violation increases with the number and tightness of covenants included in a loan agreement, adjusted for the variance and covariance of the corresponding accounting ratios. Therefore, we begin by computing the number and tightness of covenants using package-level information from Dealscan and quarterly accounting data from Compustat. Over the full sample, the average loan contains 2.5 covenants with the tightest threshold 0.60 standard deviations away from the corresponding accounting ratio at origination.

Murfin (2012) and Demerjian and Owens (2016) differ in how they combine information about the number and tightness of covenants into a package-level measure that captures the probability of violation. Murfin (2012) derives his measure using a multivariate normal cumulative distribution function with mean zero and covariance matrix associated with quarterly changes in logged accounting ratios. Demerjian and Owens (2016) provide a non-parametric alternative. For each loan contract, the authors simulate one-quarter-ahead values of covenant accounting ratios using 1,000 draws of realized data from size-profitability matched firms and compute the probability of violation as the proportion of these simulations in which a violation would have occurred. We construct these measures by closely following the instructions in

Murfin (2012) and Demerjian and Owens (2016).[15] However, since the two approaches produce similar estimates, we focus our analysis on the Demerjian and Owens (2016) measure because the non-parametric estimation is calculable for a larger sample of loans.

5.2 Trends in Covenant Strictness

Using the full sample of DealScan loans merged with Compustat, Figure 9 plots the annual average probability of violation as-of the quarter after loan origination. The figure shows a strong trend of covenant loosening, particularly between the late 1990s and the mid-2000s. While there is an uptick in strictness during the financial crisis, the trend quickly reverts in recent years.

The estimated average strictness reported in Figure 9 reflects the two trends evident in Figure 2. The number of financial covenants has trended steadily down over time and the level of the remaining covenants has loosened. We find that these trends led to a lower ex-ante probability of violation, and as shown above, fewer realized violations.

We confirm the downward trend by estimating regressions to control for potential changes in the credit quality of firms (using *CovenantControls*) and the types of firms in the syndicated loan market (using *FirmCharacteristics*). We estimate regressions of the form

$$\mathrm{Ln}\left(PrViolation_{i,t}\right) = f\left(CovenantControls_{i,t}, FirmCharacteristics_{i,t}\right) \quad (2)$$

where $PrViolation_{i,t}$ is the estimated probability of violation based on the Demerjian and Owens (2016) approach.[16] We look for evidence of a trend by including the dummy variables separating the years into three periods.

[15] We thank Justin Murfin and Edward Owens for sharing their code.

[16] We obtain nearly identical results using the approach of Murfin (2012)

The results, reported in Table 5, show that controlling for firm credit quality and other characteristics provides only a partial explanation for the decline in covenant strictness. With no controls, the probability of violation falls by an estimated 70%, but adding controls only reduces the estimated drop to 44%.

5.3 Trends across loan types

We are not the first to note the recent deterioration of lender protection in the corporate loan market. However, much of this attention has focused on one particular market segment: leveraged loans. Becker and Ivashina (2016), for example, show that 70 percent of leveraged loans issued in 2015 lacked traditional financial covenants and argue that the rise of these covenant light, or "cov-lite", loans is driven by the influx of non-traditional lenders with high renegotiation costs, such as CLOs and mutual funds. Policymakers and the business press alike have highlighted the potential danger of such loans. Indeed, the Federal Reserve issued supervisory guidance in March 2013 on highly-leveraged loans and Bloomberg recently speculated that weak protections in these loans might lead to the next crisis.[17]

In Figure 10, we plot trends in covenant strictness across loan types to examine whether our results merely emphasize the rise of cov-lite leveraged loans or if they identify a broader change in the corporate loan market. The figure shows that the decline in ex-ante covenant strictness is pervasive across deal types. We find no evidence that leveraged loans, loans marketed to institutional investors, or deals backed by private equity sponsors drive our results. In fact, we find that that the trend is equally strong among revolver-only packages. This evidence is striking because Berlin, Nini, and Yu (2018) show that, despite the rise of cov-lite term loans, lenders are almost

[17] See https://www.federalreserve.gov/supervisionreg/srletters/sr1303a1.pdf and https://www.bloomberg.com/opinion/articles/2018-09-17/subprime-corporate-loans-could-spark-the-next-financial-crisis

always protected by traditional financial covenants in the revolver. We provide novel evidence that these protections have weakened. Moreover, since revolver-only packages do not face high renegotiation costs like institutional term loans, our results cast doubt that increasing renegotiation costs can explain the recent decline in creditor control rights.

6 Changes in other loan terms

One potential explanation for the loosening of covenant strictness is that it reflects a secular increase in the supply of credit. To the extent that borrowers value looser covenants, an increase in credit supply may result in looser covenants, as lenders willing to accept lower expected returns due to smaller less covenant protection. Of course, an increase in supply would likely result in lower interest rates, as borrowers also value cheaper credit. We examine the evolution of credit spreads to shed some light on whether an increase in credit supply can explain the loosening of covenants.

An alternative explanation is that lenders have become willing to take more risk in exchange for higher interest rates. Low nominal interest rates since the financial crisis may have increased lenders' preference for yield rather than covenant protection, in which case the decline in covenant strictness would be accompanied by an increase in loan spreads. Additionally, under such a hypothesis, we would also expect other loan terms to change to create a riskier but high-yielding loan. We examine the maturity of the loan and the usage of collateral as two obvious loan terms that could change to create higher yield. Since credit risk typically increases with maturity and longer maturity loans tend to carry higher spreads, we would expect a trend toward longer maturity loans. Similarly, since collateral reduces risk and spreads, we would expect a trend towards less usage of collateral.

Figure 11 explores the evolution of loan spreads, maturity, and collateral in our sample of loans. Although loan spreads fell sharply from their peak during the crisis, they have remained relatively high in recent years. Particularly compared to the credit boom prior to the financial crisis, average loan spreads do not seem low relative to historical standards. To the extent that a large shift in the supply of credit would result in lower loan spreads, we do not see supporting evidence that the decrease in covenant restrictions is due to an increase in credit supply. Conversely, the increase in credit spreads is more consistent with lenders trading covenant protection for higher yield.

The trends in average maturity and covenant usage also suggest that loans have been made riskier over time. In recent years, the shortest maturity facility in a deal has been about 5 months, on average. This is only slightly longer than the typical maturity in 2005-2007 but much longer than the typical maturity during the earlier part of the sample. There is also a notable trend away from loans being secured, which appears to have accelerated after the crisis.

Table 6 examines whether these changes in loan terms remain evident after controlling for changes in borrowers' credit risk and other firm characteristics. We estimate regressions of the form in equation (2) using the natural log of the spread on the loan, the natural log of the loans maturity, and an indicator that the loan is secured by collateral. Other than the use of collateral, the inference from the regressions is similar to those from Figure 11. Compared with the beginning of the sample period, loan spreads are significantly larger at the end of the sample, and the average loan maturity is substantially longer. The likelihood of a loan being secured seems to increase after controlling for borrower characteristics.

7 Conclusion

After documenting a steady 20-year weakening of covenant protections that is not due to changes in the types of borrower or lenders participating in the syndicated loan market, we are left with a puzzle as to why loan contracts have evolved to include fewer control rights and higher interest rates.

A first step in helping to solve the puzzle would be to assess the economic consequences arising from less restrictive loan contracts. With fewer contingent “tripwires” and associated changes in firm behavior, do companies experience more prolonged performance declines and higher associated losses to value? Or does lower restrictiveness simply remove the need for costly renegotiations that provide little benefit? Exploring the consequences of looser covenants seems a fruitful area for future research to shed some light on the tradeoffs involved in loan contract design.

8 References

Acharya, Viral and Matthew Richardson. “Causes of the Financial Crisis.” *Critical Review* 21 (2009): 195-210.

Aghion, Philippe, and Patrick Bolton. “An incomplete contracts approach to financial contracting.” *The Review of Economic Studies* 59.3 (1992): 473-494.

Axelson, Ulf, Tim Jenkinson, Per Strömberg, and Michael Weisbach. “Borrow Cheap, Buy High? The Determinants of Leverage and Pricing in Buyouts.” *Journal of Finance* 68 (2013): 2223-2267.

Bean, Charles, Christian Broda, Takatoshi Ito, and Randal Kroszner, “Low for Long? Causes and Consequences of Persistently Low Interest Rates.” *Geneva Reports on the World Economy* 17 (2015). Available at https://www.cimb.ch/uploads/1/1/5/4/115414161/geneva_report17_2.pdf.

Becher, David A., Thomas Griffin, and Greg Nini. “Congruence in Governance: Evidence from Creditor Monitoring of Corporate Acquisitions.” Available at SSRN 3046910 (2018).

Becker, Bo, and Victoria Ivashina. “Reaching for Yield in the Bond Market.” *Journal of Finance* 70 (2015): 1863-1902.

Becker, Bo, and Victoria Ivashina. “Covenant-light contracts and creditor coordination.” Available at SSRN 2871887 (2017).

Berlin, Mitchell, Greg Nini, and Edison Yu. “Concentration of control rights in leveraged loan syndicates.” Available at SSRN 2960757 (2018).

Bernanke, Ben S., and Vincent Reinhart. “Conducting Monetary Policy at Very Low Short-Term Interest Rates.” *American Economic Review* 94 (2004): 85-90.

Chava, Sudheer, Vikram Nanda, and Steven Chong Xiao. “Lending to innovative firms.” *The Review of Corporate Finance Studies* 6.2 (2017): 234-289.

Dell’Ariccia, Giovanni, Deniz Igan, and Luc Laeven. “Credit booms and lending standards: Evidence from the subprime mortgage market.” *Journal of Money, Credit, and Banking* 44 (2012): 367-384.

Demerjian, Peter R., and Edward L. Owens. “Measuring the probability of financial covenant violation in private debt contracts.” *Journal of Accounting and Economics* 61.2-3 (2016): 433-447.

Dichev, Ilia D., and Douglas J. Skinner. “Large–sample evidence on the debt covenant hypothesis.” *Journal of Accounting Research* 40.4 (2002): 1091-1123.

Doidge, C., Kahle, K. M., Karolyi, G. A., & Stulz, R. M. “Eclipse of the public corporation or eclipse of the public markets?” *Journal of Applied Corporate Finance* 30.1 (2018): 8-16.

Ersahin, Nuri, Rustom M. Irani, and Hanh Le. “Creditor control rights and resource allocation within firms.” Available at SSRN 2689866 (2018).

Falato, Antonio, and Nellie Liang. “Do creditor rights increase employment risk? Evidence from loan covenants.” *The Journal of Finance* 71.6 (2016): 2545-2590.

Fama, Eugene F., and Kenneth R. French. “Disappearing dividends: changing firm characteristics or lower propensity to pay?” *Journal of Financial Economics* 60.1 (2001): 3-43.

Ferreira, Daniel, Miguel A. Ferreira, and Beatriz Mariano. "Creditor control rights and board independence." The Journal of Finance 73.5 (2017): 2385-2423.

Freudenberg, Felix, Björn Imbierowicz, Anthony Saunders, and Sascha Steffen, “Covenant violations and dynamic loan contracting.” *Journal of Corporate Finance* 45 (2017): 540-565.

Garleanu, Nicolae, and Jeffrey Zwiebel. “Design and renegotiation of debt covenants.” *The Review of Financial Studies* 22.2 (2008): 749-781.

Gu, Yuqi, Connie X. Mao, and Xuan Tian. “Banks’ Interventions and Firms’ Innovation: Evidence from Debt Covenant Violations.” *The Journal of Law and Economics* 60.4 (2017): 637-671.

Maddaloni, Angela, and José-Luis Peydró. “Bank Risk-taking, Securitization, Supervision, and Low Interest Rates: Evidence from the Euro-area and the U.S. Lending Standards.” *Review of Financial Studies* 24.6 (2011): 2121-2165.

Murfin, Justin. “The supply-side determinants of loan contract strictness.” *The Journal of Finance* 67.5 (2012): 1565-1601.

Nini, Greg, David C. Smith, and Amir Sufi. “Creditor control rights and firm investment policy.” *Journal of Financial Economics* 92.3 (2009): 400-420.

Nini, Greg, David C. Smith, and Amir Sufi. “Creditor control rights, corporate governance, and firm value.” *The Review of Financial Studies* 25.6 (2012): 1713-1761.

Rajan, Raghuram G. “Has Finance Made the World Risker?” *European Financial Management* 12 (2006): 499-533.

Roberts, Michael R., and Amir Sufi. “Control rights and capital structure: An empirical investigation.” *The Journal of Finance* 64.4 (2009): 1657-1695.

Ruckes, Martin. “Bank Competition and Credit Standards.” *Review of Financial Studies* 17 (2004): 1073-1102.

Smith, Clifford. “A perspective on violations of accounting based debt covenants.” *Accounting Review* 68.2 (1993): 289-303.

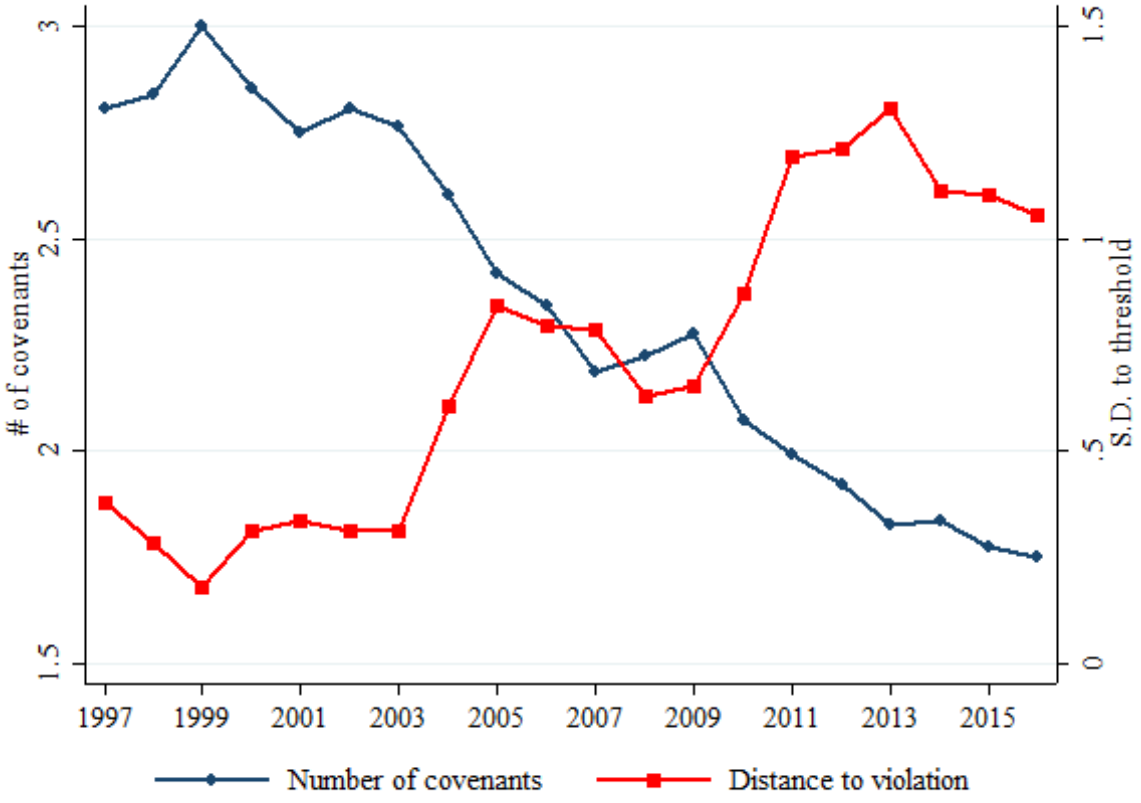
Smith Jr, Clifford W., and Jerold B. Warner. “On financial contracting: An analysis of bond covenants.” *Journal of Financial Economics* 7.2 (1979): 117-161.

Stein, Jeremy C. “Overheating in Credit Markets: Origins, Measurement, and Policy Responses.” Federal Reserve Board Speech (2013). Available at https://www.federalreserve.gov/newsevents/speech/stein20130207a.htm.

Tirole, Jean. *The Theory of Corporate Finance*. Princeton University Press (2010).

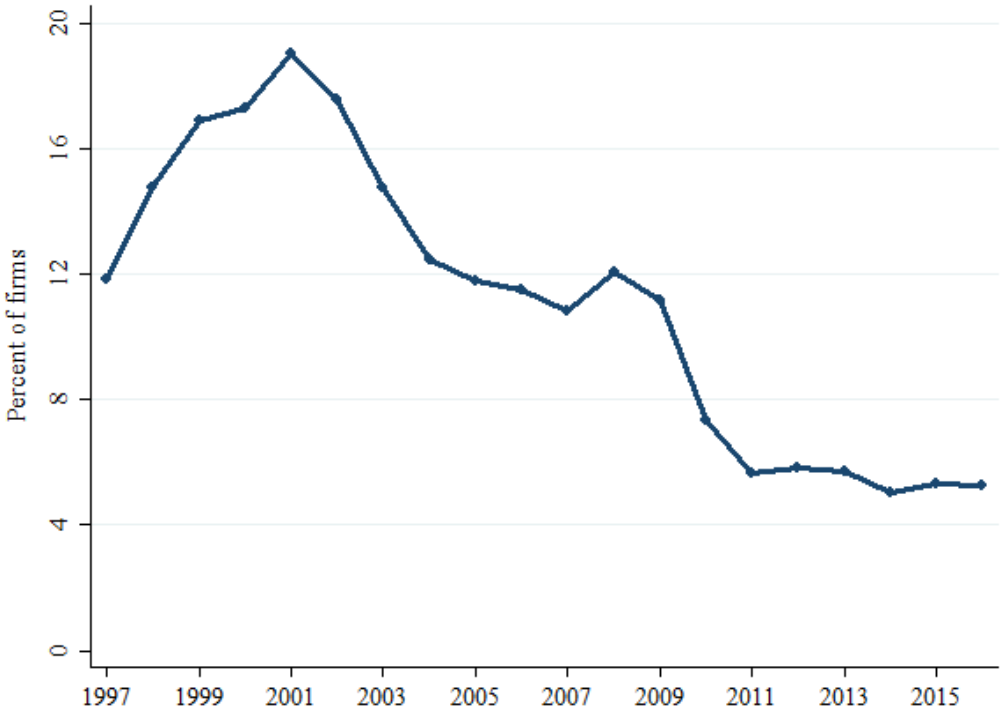
9 Figures and Tables

Figure 1. Measures of Covenant Strictness in Loan Agreements



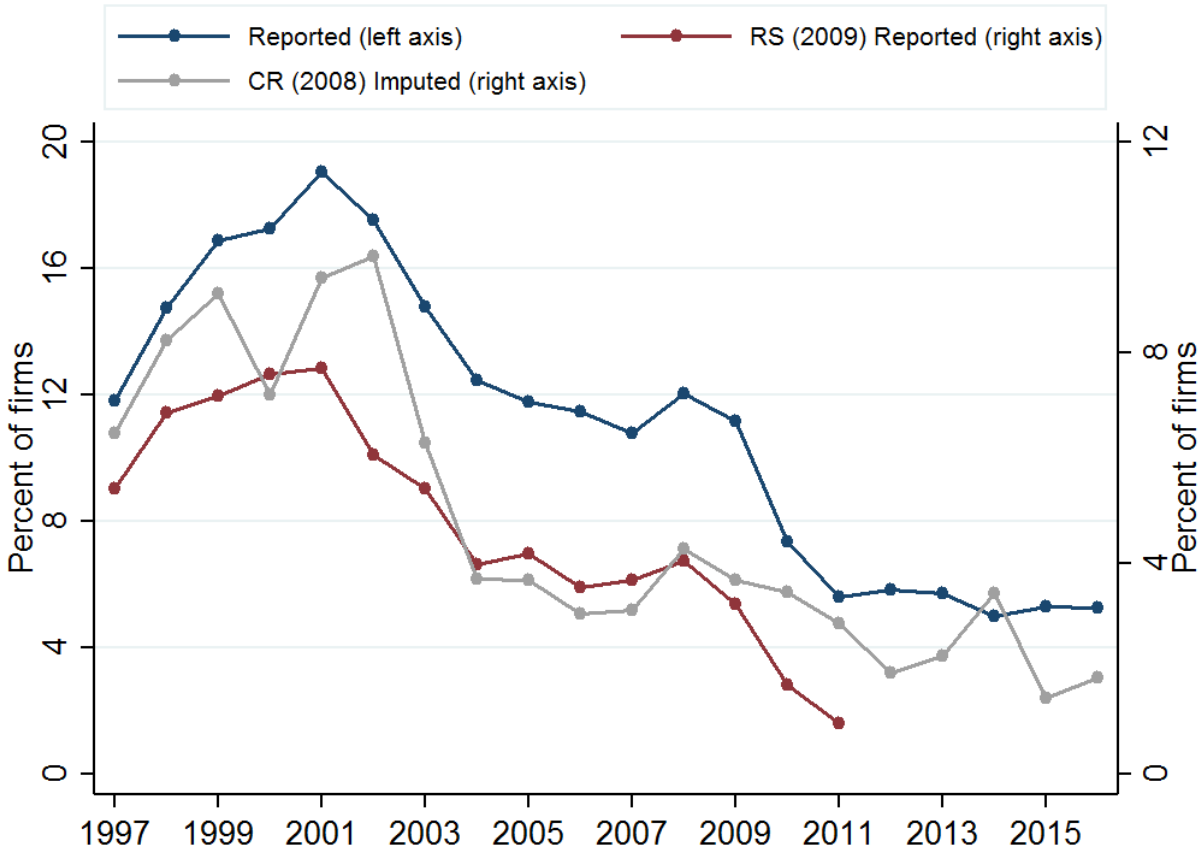
Note: The figure plots the annual mean number of covenants (blue line, measured on left axis) and the annual mean number of standard deviations to violation for the tightest covenant (red line, measured on right axis) at contract origination. The sample is a large set of loans in DealScan.

Figure 2: Reported Covenant Violations



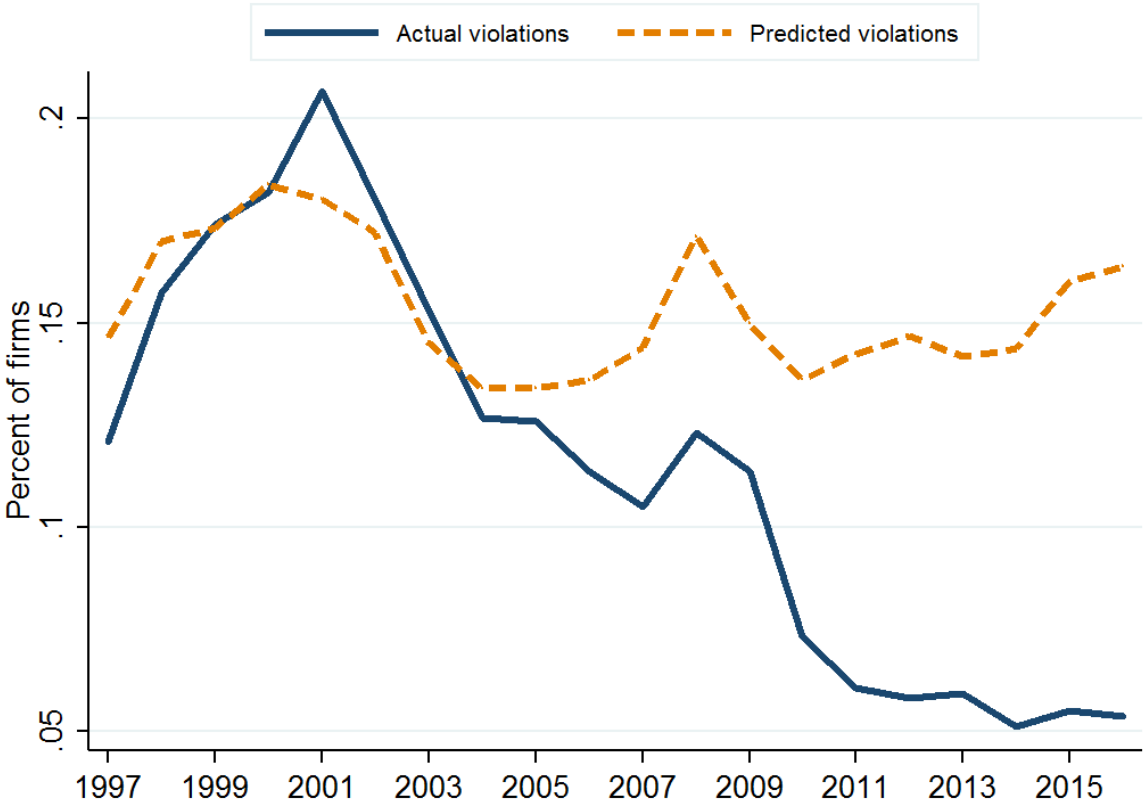
Note: This figure displays the annual percent of firms that report a financial covenant violation in a 10-K or 10-Q filing between 1997 and 2016. The sample consists of 66,589 firm-year observations from 8,499 U.S. nonfinancial firms that can be matched to EDGAR and have data available in Compustat.

Figure 3. Different Measures of Covenant Violations



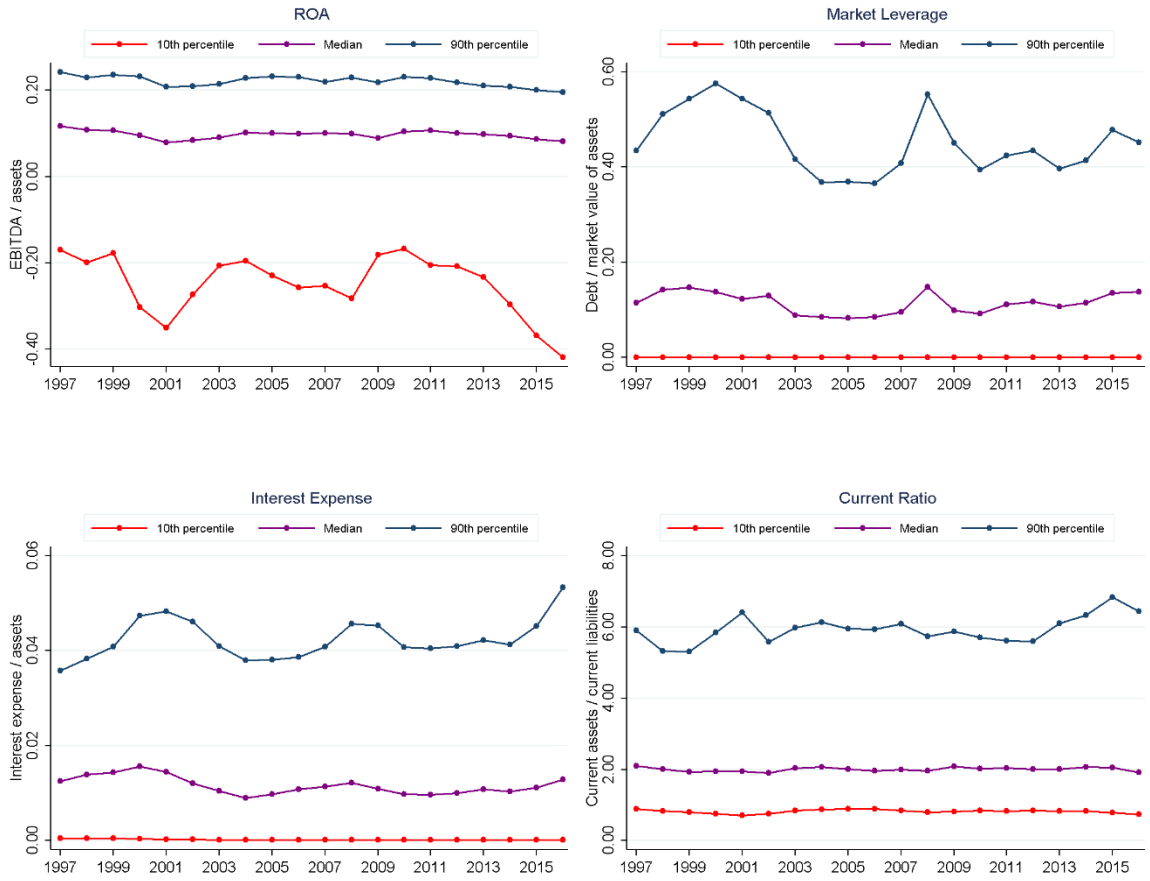
Note: The figure plots the annual percent of firms reporting a covenant violation from three different sources. The blue line labeled "Reported" is based on reported violations in a 10-K or 10-Q filing during the year. The red line labeled "Reported (RS 2009)" is based on reported violations in any SEC filing during the year as produced by Roberts and Sufi (2009). The gray line labeled "Imputed (CR 2008)" is based on violations imputed from financial covenants and realized accounting ratios using the methodology of Chava and Roberts (2008).

Figure 4. Predicted and Actual Violations



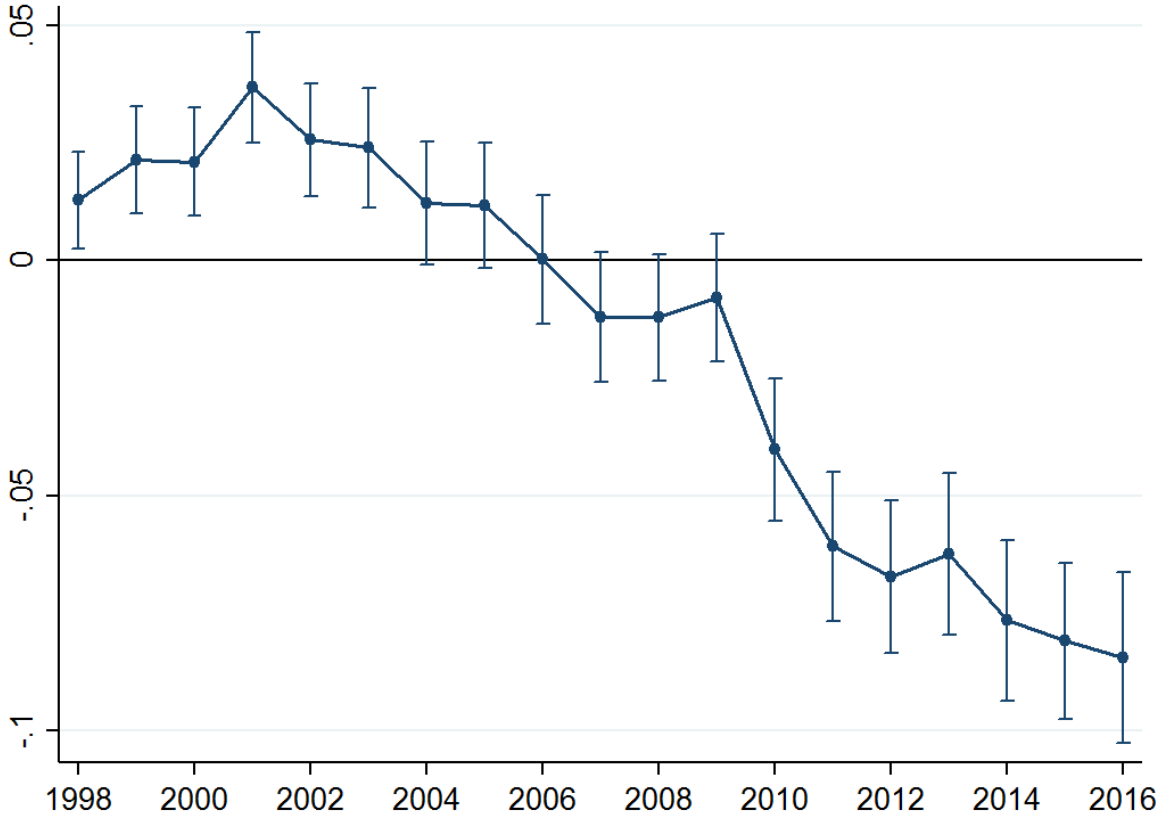
Note: The figure plots the annual percent of firms reporting a covenant violation (blue, solid line) and the predicted percent (yellow, dashed line) based on a logistic regression estimated using data from 1997-2003. The predicted violations are estimated using the coefficients from the logistic regression reported in column (2) of Table 2, which relates the likelihood of a reported covenant violation to covenant control variables.

Figure 5. Trends in Covenant Controls



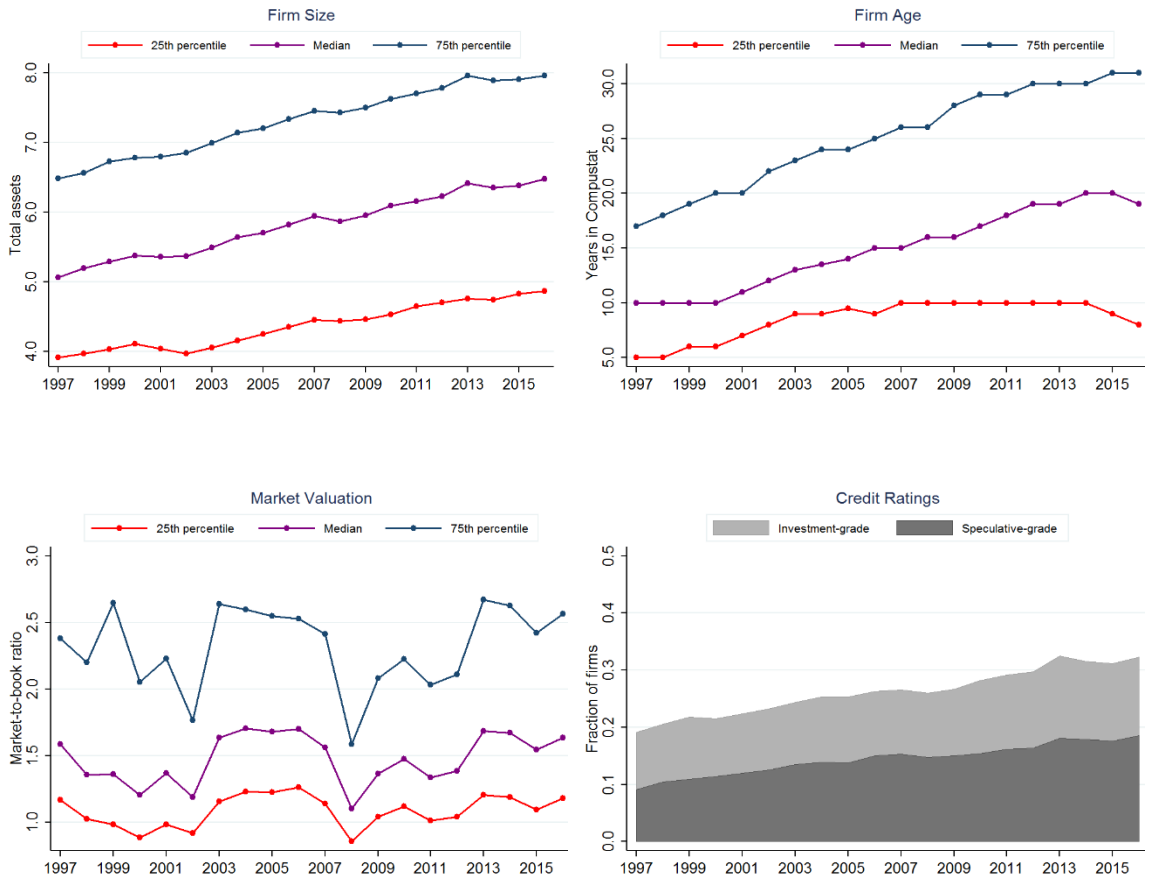
Note: The figures plots sample statistics of the annual distribution of the variables used as *CovenantControls.*

Figure 6. Trend in Violations after Accounting for Realized Outcomes



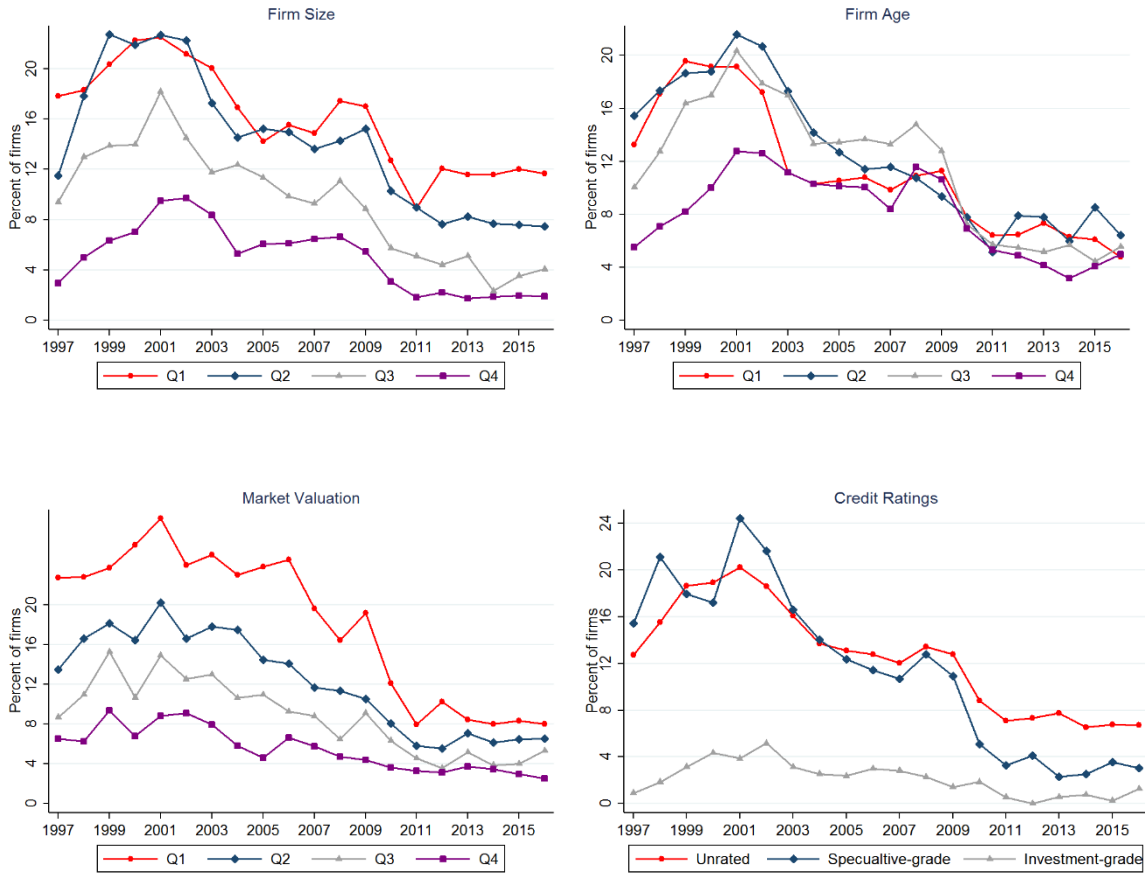
Note: The figure plots the estimated year fixed effects from the logistic regression reported in column (1) of Table 2, which relates the likelihood of a reported covenant violation to covenant control variables. The vertical lines indicate 95% confidence intervals around the point estimates.

Figure 7. Trends in Firm Characteristics



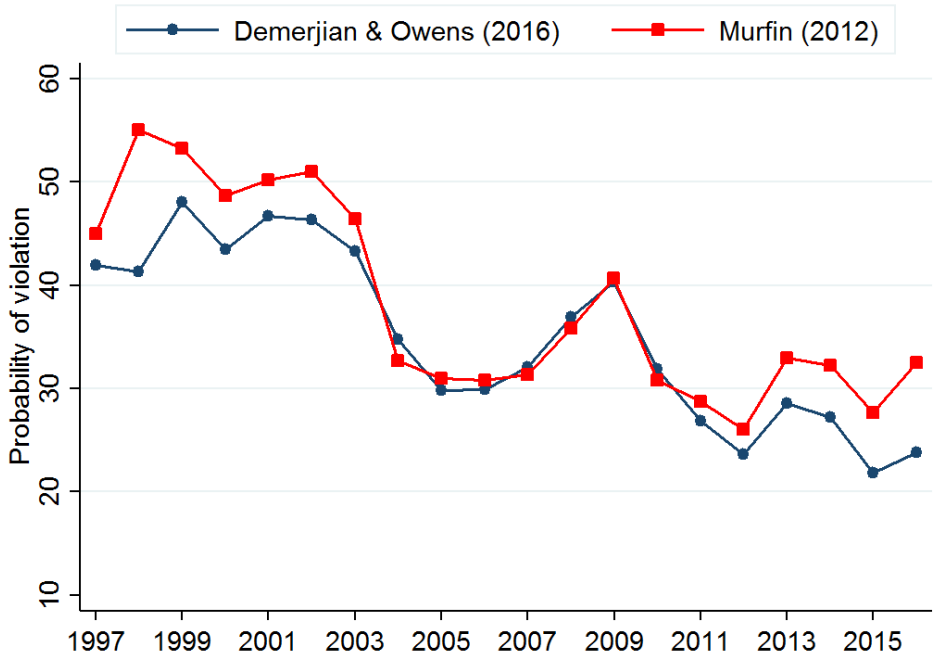
Note: The figures plots the annual distribution of the variables used as *FirmCharacteristics*.

Figure 8. Trends in Violations across Firm Characteristics



Note: The figures plots the annual frequency of firms reporting a covenant violation split by the full-sample quartiles of the variables used as *FirmCharacteristics*. For credit ratings, firms are grouped into unrated firms, firms with a speculative-grade rating, and firms with an investment-grade rating.

Figure 9. Trends in Covenant Strictness

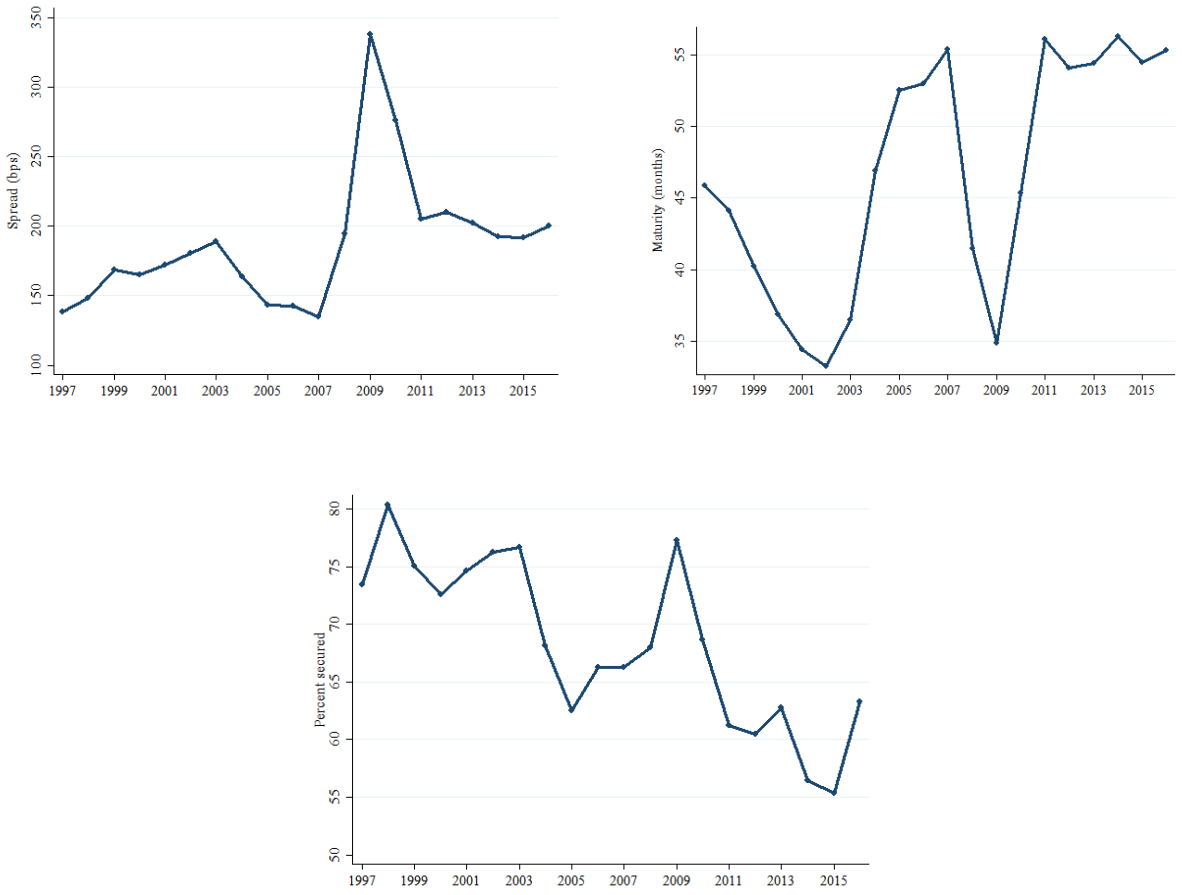


Note: The figure plots the sample mean estimated ex-ante probability of covenant violation based on the approach of Demerjian and Owens (2016), shown in blue, and the approach of Murfin (2012), shown in red.

Figure 10. Trends in Covenant Strictness Across Loan Types

Note: The figure plots the mean estimated ex-ante probability of covenant violation based on the approach of Demerjian and Owens (2016), split by loan characteristics. We classify deals as Leveraged, Institutional, or Sponsored if Dealscan indicates that at least one facility in the package meets that criteria. We classify a deal as Revolver only if the package contains only one facility and Dealscan indicates that it is a revolver.

Figure 11. Trends in Additional Loan Features



Note: The figures plot the sample mean of the loan spread, the sample mean of the loan maturity, and the sample frequency of loans secured by collateral in the sample of DealScan loans.

Table 1: Sample Description

This table provides summary statistics for our sample of syndicated loans to Compustat firms from 1997 through 2016 (panel A), our sample of firm-years from 1997 through 2016 drawn from Compustat (panel B), and annual counts of covenant violations (panel C). RS (2009) refers to reported violations as produced by Roberts and Sufi (2009), and CR (2008) is based on violations imputed from financial covenants and realized accounting ratios using the methodology of Chava and Roberts (2008).

Panel A: Loan sample summary statistics

	Mean	S.D.	P25	Median	P75	Obs
Prob. of violation	36.90	41.62	1.10	11.15	90.60	10206
Tightest covenant	0.60	1.77	-0.02	0.13	0.76	11396
Number of covenants	2.50	1.14	2.00	2.00	3.00	12069
Deal amount	692.44	1623.72	75.68	256.88	692.57	18131
Spread (bps)	179.12	123.75	87.50	150.00	250.00	15790
Maturity (months)	45.66	23.58	28.00	48.00	60.00	18096
Secured (0/1)	0.70	0.46	0.00	1.00	1.00	13408
Performance pricing (0/1)	0.48	0.50	0.00	0.00	1.00	18131
Number of facilities	1.42	0.79	1.00	1.00	2.00	18131
Inst. term loan (0/1)	0.11	0.31	0.00	0.00	0.00	17560
Revolver only package (0/1)	0.60	0.49	0.00	1.00	1.00	18131

Panel B: Firm-year sample summary statistics

	Mean	S.D.	P25	Median	P75	Obs
Financial covenant violation	0.12	0.32	0.00	0.00	0.00	66589
Operating cash flow / assets	0.03	0.28	0.01	0.10	0.16	61623
Leverage ratio	0.24	0.25	0.02	0.19	0.37	65300
Interest expense / assets	0.02	0.03	0.00	0.01	0.03	54971
Net worth / assets	0.47	0.33	0.32	0.51	0.70	66544
Current ratio	2.95	3.14	1.26	2.00	3.32	65278
Market-to-book ratio	2.09	1.87	1.06	1.46	2.31	66544
Assets ($M)	3517.01	19558.14	70.73	302.32	1426.49	66589
Age	16.66	10.84	8.00	14.00	24.00	66589
Cash / assets	0.21	0.24	0.03	0.11	0.31	66547
Cash flow volatility	0.07	0.11	0.02	0.03	0.07	59060
Investment grade (0/1)	0.12	0.32	0.00	0.00	0.00	66589
Speculative grade (0/1)	0.14	0.35	0.00	0.00	0.00	66589
Unrated (0/1)	0.74	0.44	0.00	1.00	1.00	66589
Rating (0=D ... 21=AAA)	11.09	3.52	8.00	11.00	14.00	16985

Panel C: Covenant violations

Year	Reported violations	RS (2009) Reported violations	CR (2008) Imputed violations
1997	519	238	65
1998	635	296	105
1999	695	296	115
2000	711	313	87
2001	758	307	112
2002	665	230	116
2003	525	193	73
2004	428	137	41
2005	387	138	39
2006	374	116	32
2007	342	117	32
2008	377	127	45
2009	339	98	38
2010	216	50	34
2011	160	25	26
2012	164	.	15
2013	138	.	13
2014	144	.	22
2015	153	.	9
2016	122	.	9

Table 2: Violations and Realized Outcomes

This table presents estimates of the marginal effects from logistic regressions that relate the likelihood of a reported covenant violation to covenant control variables. The dependent variable is an indicator that the firm reports a violation during any quarter of the year, and the covenant controls are measured over the contemporaneous year. Specification (1) is estimated over the full sample period, and specifications (2)-(4) over sub-periods. The bottom row reports the p-value from a Wald test that the coefficients on the year fixed effects from 2011-2016 are equal. Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

	(1) 1997-2016	(2) 1997-2003	(3) 2004-2010	(4) 2011-2016
ROA	-0.127***	-0.220***	-0.085***	-0.088***
	(0.009)	(0.016)	(0.013)	(0.010)
Market leverage	0.177***	0.306***	0.139***	0.072***
	(0.012)	(0.021)	(0.020)	(0.014)
Interest expense	0.667***	1.227***	0.793***	0.108
	(0.112)	(0.218)	(0.196)	(0.138)
Current ratio	-0.019***	-0.026***	-0.021***	-0.012***
	(0.001)	(0.002)	(0.002)	(0.001)
Observations	49,922	19,061	17,339	13,522
Year FE	Yes	No	No	No
Pseudo R-squared	0.115	0.113	0.0671	0.0644
2011=...=2016	0.130			

Table 3: Violations and Realized Outcomes for Different Firm Characteristics

This table presents estimates of the marginal effects from logistic regressions that relate the likelihood of a reported covenant violation to covenant control variables. The dependent variable is an indicator that the firm reports a violation during any quarter of the year, and the covenant controls are measured over the contemporaneous year. “1997 – 2003” and “2011 – 2016” are dummy variables indicating observations from those periods. “1997 – 2003 avg.” reports the unconditional average frequency of reported violations during those years, and “Relative change” reports the ratio of the difference between the “1997 – 2003” and “2011 – 2016” estimated marginal effects to the 1997 – 2003 average. The regression samples are restricted to firms in the first quartile (Q1) or fourth quartile (Q4) of the distribution of firm size (based on total assets), firm age (based on years in Compustat), and firm valuation (based on market-to-book ratio). The last three columns restrict the sample based on the credit rating of the firm. Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Violations and Realized Outcomes for Different Firm Characteristics (continued)

	Firm Size		Firm Age		Firm Valuation		Credit Rating		
	Q1	Q4	Q1	Q4	Q1	Q4	I-grade	S-grade	Unrated
ROA	0.062***	-0.142***	-0.084***	-0.215***	-0.394***	-0.012*	-0.058**	-0.270***	-0.077***
	(0.016)	(0.018)	(0.012)	(0.021)	(0.027)	(0.007)	(0.023)	(0.028)	(0.010)
Market leverage	0.345***	0.042***	0.193***	0.129***	0.125***	0.042**	0.043***	0.091***	0.240***
	(0.028)	(0.015)	(0.018)	(0.022)	(0.031)	(0.017)	(0.014)	(0.027)	(0.014)
Interest expense	-0.166	0.835***	0.536***	0.585**	2.297***	0.560***	0.151	1.305***	0.517***
	(0.230)	(0.151)	(0.177)	(0.252)	(0.340)	(0.122)	(0.241)	(0.238)	(0.135)
Current ratio	-0.037***	-0.006***	-0.028***	-0.003*	-0.030***	-0.010***	-0.003	-0.019***	-0.026***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)	(0.003)	(0.001)
1997 - 2003	0.015	0.007**	0.052***	-0.005	0.048***	0.014***	0.003	0.035***	0.020***
	(0.009)	(0.003)	(0.007)	(0.006)	(0.009)	(0.004)	(0.003)	(0.007)	(0.004)
2011 - 2016	-0.041***	-0.034***	-0.047***	-0.051***	-0.131***	-0.021***	-0.019***	-0.099***	-0.061***
	(0.012)	(0.004)	(0.010)	(0.006)	(0.013)	(0.005)	(0.005)	(0.010)	(0.006)
1997 – 2003 avg.	0.202	0.071	0.169	0.094	0.249	0.078	0.032	0.193	0.172
Relative change	-28%	-58%	-58%	-49%	-72%	-45%	-69%	-69%	-47%
Observations	11,585	14,155	13,414	13,020	12,776	11,501	6,719	8,138	35,065
Pseudo R-squared	0.138	0.125	0.135	0.104	0.0939	0.0969	0.0900	0.144	0.128

Table 4: Explaining Violations

This table presents estimates of the marginal effects from logistic regressions that relate the likelihood of a reported covenant violation to covenant control variables and firm characteristics. The dependent variable is an indicator that the firm reports a violation during any quarter of the year, and the covenant controls are measured over the contemporaneous year. "1997 – 2003" and "2011 – 2016" are dummy variables indicating observations from those periods. "1997 – 2003 avg." reports the unconditional average frequency of reported violations during those years, and "Relative change" reports the ratio of the difference between the "1997 – 2003" and "2011 – 2016" coefficients to the 1997 – 2003 average. Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)
	No controls	Covenants Controls	Full Controls
Covenant Controls	No	Yes	Yes
Firm Characteristics	No	No	Yes
1997 - 2003	0.046***	0.026***	0.014***
	(0.004)	(0.003)	(0.003)
2011 - 2016	-0.073***	-0.067***	-0.046***
	(0.005)	(0.005)	(0.004)
1997-2003 avg.	0.160	0.160	0.160
Relative change	-75%	-59%	-38%
Observations	49,922	49,922	66,589
Pseudo R-squared	0.0248	0.0277	0.184

Table 5: Explaining Covenant Strictness

This table presents estimates from OLS regressions that relate covenant strictness to covenant control variables and firm characteristics. The dependent variable is the natural log of the estimated probability of violation as-of the quarter following the loan initiation, and the covenant controls are measured as-of the contemporaneous quarter. "1997 – 2003" and "2011 – 2016" are dummy variables indicating observations from those periods. "1997 – 2003 avg." reports the unconditional average probability of violation during those years, and "Relative change" reports the ratio of the difference between the marginal effects of the "1997 – 2003" and "2011 – 2016" coefficients to the 1997 – 2003 average. Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)
	No controls	Full Controls
Covenant Controls	No	Yes
Firm Characteristics	No	Yes
1997 - 2003	0.583***	0.255***
	(0.052)	(0.051)
2011 - 2016	-0.529***	-0.296***
	(0.083)	(0.072)
1997-2003 avg.	0.443	0.443
Relative change	-70%	-44%
Observations	8,720	7,406

Table 6: Changes in Other Loan Terms

This table presents estimates from OLS regressions that relate loan terms to covenant control variables and firm characteristics. The dependent variables are the natural log of the shortest maturity facility in a deal, the natural log of the average spread on all tranches in a deal, and an indicator that the deal was secured by collateral. All control variables are measured as-of the contemporaneous quarter. "1997 – 2003" and "2011 – 2016" are dummy variables indicating observations from those periods. "1997 – 2003 avg." reports the unconditional average of the dependent variable during those years, and "Relative change" reports the ratio of the difference between the marginal effects of the "1997 – 2003" and "2011 – 2016" coefficients to the 1997 – 2003 average. Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

	Ln(Maturity)		Ln(Spread)		I(Secured)	
	No Controls	Full Controls	No Controls	Full Controls	No Controls	Full Controls
Covenant Controls	No	Yes	No	Yes	No	Yes
Firm Characteristics	No	Yes	No	Yes	No	Yes
1997 - 2003	-0.410***	-0.424***	-0.084***	-0.199***	0.083***	-0.045***
	(0.014)	(0.017)	(0.017)	(0.014)	(0.010)	(0.009)
2011 - 2016	0.202***	0.234***	0.275***	0.382***	-0.076***	0.023**
	(0.014)	(0.016)	(0.017)	(0.016)	(0.014)	(0.010)
1997-2003 avg.	39 months	39 months	166 bps	166 bps	76%	76%
Relative change	+76%	+82%	+39%	+64%	-21%	+9%
Observations	18,096	14,061	15,789	12,525	13,408	10,396

Appendix 1: Variable Definitions

This table lists variable definitions and data sources. COMP denotes the Compustat North America Fundamentals Annual File. DS denotes Thomson Reuters LPC DealScan. EDGAR indicates that the data was collected from SEC statements. MR is Michael Roberts' website.

Variable	Source	Description
Loan-level dataset		
Number of covenants	DS	Sum of covenants listed in Financial Covenant and Net Worth Covenant files
Distance to violation	DS&COMP	Distance between contractual threshold and corresponding accounting metric at origination
Prob. of Violation	DS&COMP	Probability that borrower will violate a financial covenant, estimated following Demerjian and Owens (2016)
Murfin (2012) strictness	DS&COMP	Probability that borrower will violate a financial covenant, estimated following Murfin (2012)
Deal amount	DS	Deal amount (in millions) listed in Package file
Spread (bps)	DS	Mean spread of facilities within package
Maturity (month)	DS	Maximum maturity of facilities within package
Secured (0/1)	DS	Indicator equal to one if at least one facility within package is secured
Performance pricing (0/1)	DS	Indicator equal to one if at least one facility within package has performance pricing
Number of facilities	DS	Number of facilities within package
Leveraged loan (0/1)	DS	Indicator equal to one if at least one facility within package is in the leveraged loan market segment
Institutional loan (0/1)	DS	Indicator equal to one if at least one facility within package is in the institutional loan market segment
Sponsored loan (0/1)	DS	Indicator equal to one if at least one facility within package is in the sponsored loan market segment
Revolver only package (0/1)	DS	Indicator equal to one if the package consists of only one facility and that facility is revolver loan-type
Firm-year dataset		
Reported violation	EDGAR	Indicator equal to one if firm reports violating a financial covenant in a quarterly financial statement, collected using the same hand-collection procedure as Nini, Smith, and Sufi (2012)
RS(2009) reported violation	MR	Indicator equal to one if the Roberts and Sufi (2009) dataset identifies a covenant violation
CR(2008) imputed violation	DS&COMP	Indicator equal to one if current ratio, total net worth, or tangible net worth observed in Compustat falls below the contractual threshold in Dealscan, imputed following Chava and Roberts (2008)
ROA	COMP	Rolling four quarter operating income before depreciation scaled by total assets
Leverage ratio	COMP	Long-term debt plus debt in current liabilities, divided by total assets
Interest expense	COMP	Rolling four quarter interest expense scaled by total assets
Current ratio	COMP	Total current assets divided by total current liabilities
Market to book	COMP	Ratio of market value to book value of total assets

10 Internet Appendix

Figure A1. Trend in Violations across Industries

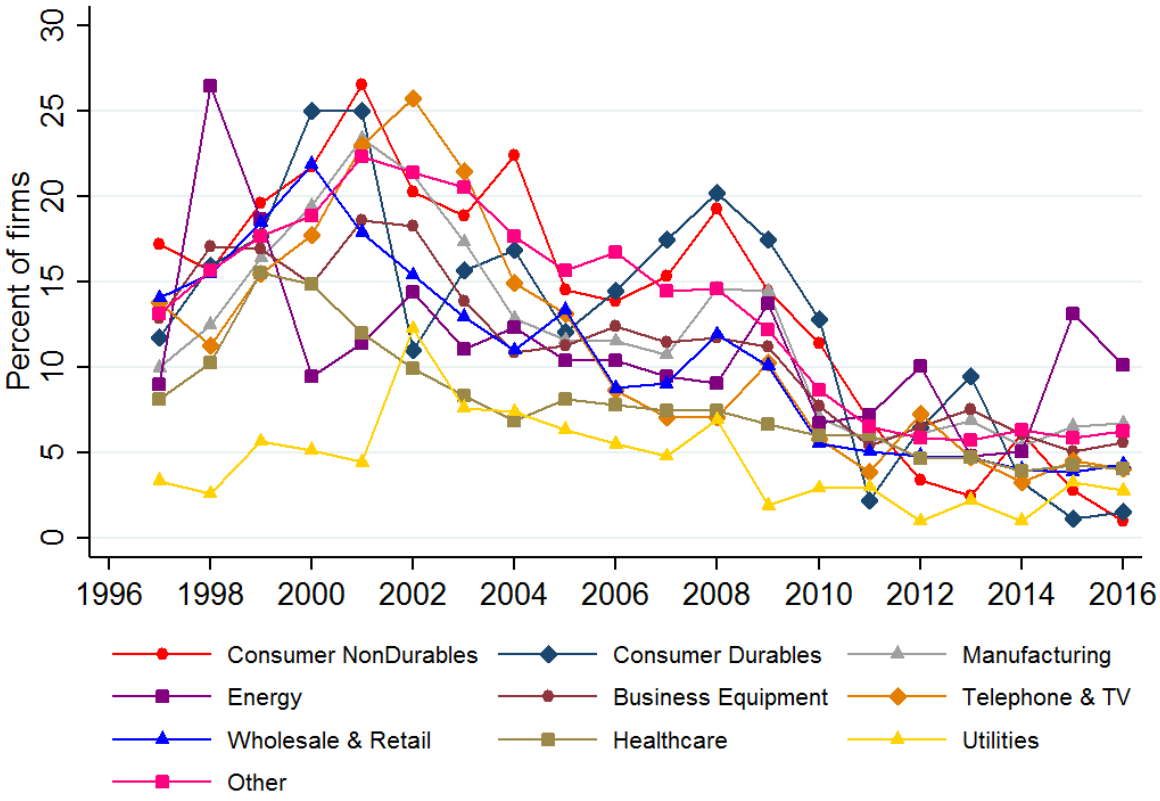


Table A1: Violations and Realized Outcomes for Different Firm Characteristics

This table presents estimates of the marginal effects from logistic regressions that related the likelihood of a reported covenant violation to covenant control variables. The dependent variable is an indicator that the firm reports a violation during any quarter of the year, and the covenant controls are measured over the contemporaneous year. “1997 – 2003” and “2011 – 2016” are dummy variables indicating observations from those periods. “1997 – 2003 avg.” reports the unconditional average frequency of reported violations during those years, and “Relative change” reports the ratio of the difference between the “1997 – 2003” and “2011 – 2016” coefficients to the 1997 – 2003 average. The regression samples are restricted to firms in different industries based on the Fama-French classification of SIC codes into 10 broad industries.

Table 3: Accounting for Changes in Firm Characteristics (continued)

	Consumer NonDurables	Consumer Durables	Manufacturing	Energy	Business Equipment	Telephone & TV	Wholesale & Retail	Healthcare	Utilities	Other
ROA	-0.601***	-0.183***	-0.329***	-0.166***	-0.097***	-0.123***	-0.331***	0.018*	-0.194***	-0.185***
	(0.099)	(0.066)	(0.041)	(0.031)	(0.017)	(0.047)	(0.041)	(0.010)	(0.060)	(0.031)
Market leverage	0.253***	0.258***	0.249***	0.140***	0.263***	0.013	0.193***	0.109***	0.213***	0.199***
	(0.055)	(0.068)	(0.033)	(0.036)	(0.032)	(0.063)	(0.031)	(0.020)	(0.051)	(0.029)
Interest expense	1.269**	0.059	0.740**	1.158***	-0.025	1.835***	0.817**	-0.018	-0.645	1.088***
	(0.596)	(0.737)	(0.364)	(0.395)	(0.243)	(0.547)	(0.329)	(0.175)	(0.532)	(0.335)
Current ratio	-0.016***	-0.020**	-0.009**	-0.024***	-0.027***	-0.024**	-0.015***	-0.016***	-0.007	-0.022***
	(0.005)	(0.008)	(0.004)	(0.007)	(0.003)	(0.011)	(0.004)	(0.002)	(0.008)	(0.004)
1997 - 2003	0.007	0.014	0.017*	0.016	0.027***	0.059***	0.027***	0.022***	-0.005	0.025***
	(0.013)	(0.017)	(0.009)	(0.013)	(0.007)	(0.017)	(0.009)	(0.006)	(0.010)	(0.009)
2011 - 2016	-0.112***	-0.102***	-0.064***	-0.057***	-0.069***	-0.064**	-0.066***	-0.017**	-0.033**	-0.095***
	(0.020)	(0.027)	(0.012)	(0.015)	(0.010)	(0.030)	(0.013)	(0.007)	(0.014)	(0.013)
1997-2003 avg.	0.198	0.172	0.168	0.145	0.161	0.183	0.166	0.113	0.058	0.183
Relative change	-60%	-67%	-48%	-50%	-60%	-67%	-56%	-35%	-57%	-66%
Observations	2,928	1,542	7,937	3,175	9,913	1,983	5,675	7,467	1,977	7,325
Pseudo R-squared	0.246	0.127	0.137	0.120	0.135	0.102	0.152	0.152	0.070	0.112

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1