Monitoring with Small Stakes: Evidence from Leveraged Loans *

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Abstract

The growing participation of institutional investors in the risky segment of corporate lending, which requires effective creditor monitoring poses a challenge to the conventional wisdom that banks' retention of sufficiently large stakes in their originations is key to the provision of adequate monitoring incentives. We propose a new mechanism that provides an explanation behind the *monitoring with small stakes* puzzle and rationalizes the design of split control contracts in the leveraged loan market. We conceptualize two sources of incentive provision for creditors to conduct costly monitoring: skin in the game and rent extraction from renegotiation. As an alternative to skin in the game, the rent extraction-based mechanism plays a critical role in the provision of monitoring incentives and facilitating the participation of institutional investors in leveraged lending. We use the passage of a tax policy as a natural experiment that implies an exogenous reduction in renegotiation frictions to empirically identify the key channel of our theoretical framework. We find that a less frictional renegotiation environment leads to greater improvements in the performance of existing loans associated with the split control structure, and impacts the contractual features of newly issued loans that are arranged as split control deals relative to non-split control deals. Our analysis and findings provide important policy implications regarding the increasing participation of non-monitoring institutional investors in lending markets that require intensive creditors monitoring.

Keywords: contract theory, monitoring, institutional loans, cov-lite, covenants, fiscal policy, control rights, leveraged loans

JEL codes: G21, G23, G30

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1 Introduction

This paper addresses a puzzle in the financial contracting literature: how are banks' monitoring incentives maintained when lead banks' loan retention is low? Canonical contract theory models propose that moral hazard and adverse selection issues are mitigated if creditors retain a sufficiently large stake of their originations.[1] Indeed, when banks have larger skin in the game, they are more incentivized to diligently monitor borrowers to minimize borrowers' default risk. This enhanced incentive compatibility of creditors to conduct monitoring mitigates agency frictions between managers and creditors, which in turn increases borrowers' debt capacity.[2]

The past decade has witnessed unprecedented growth in the leveraged loan market – the riskier segment of syndicated lending featuring borrowers with greater agency frictions and for whom effective monitoring by creditors is particularly valuable. Strikingly, this market is distinguished by a high proportion of syndicate participation from institutional investors who lack monitoring capabilities. Mechanically, the rise of institutional investors in the leveraged loan market has been associated with less skin in the game of bank lenders, who perform the task of monitoring borrowers. As a result, loan contracts have evolved into split control deals—deals in which covenant-lite term loans are almost always paired with revolving credit containing covenants, held by banks (Berlin et al. (2020)).[3] However, it is puzzling and remains unanswered how such split control agreements enable effective monitoring and renegotiation given that covenant-lite term loans have equal priority to revolving credit, yet banks incur the majority of monitoring costs while only keeping a small portion of the originations.[4]

We propose a new mechanism that rationalizes the design of split control contracts and provides an explanation behind this *monitoring with small stakes* puzzle. In doing so, we first develop a theoretical framework that conceptualizes two sources of incentive provision for creditors to conduct costly monitoring on borrowers after loan origination. The first source is the canonical skin in the game channel by which creditors monitor to protect the value of their claims and the salvage value of borrowers' assets that are pledged as collateral. This channel is often implemented by requiring the lead lenders to take sufficiently large

[1] See, e.g., Gorton and Pennacchi (1995), Holmstrom and Tirole (1997), Parlour and Plantin (2008).

[2] That borrowers' debt capacity is crucially affected by creditors' incentive regarding conducting costly monitoring is well recognized in the financial contracting literature, see e.g., Diamond (1984), Diamond (1991), Rajan and Winton (1995), Park (2000).

[3] In practice, split control agreements delegate the exclusive right to monitor and renegotiate financial covenants to banks.

[4] **[Douglas's note:** write something describing where the current literature on split control and cov-lite loan is. we may then say that the monitoring issue has not been explicit addressed yet in the literature.]

stakes (e.g., Holmstrom and Tirole (1997); Gorton and Pennacchi (1995)). The second source of incentive provision, which is the focus of our analysis, hinges on creditors' ability of extracting rents in renegotiation with their borrowers. When creditors anticipate a higher payoff from the ex-post rent extraction via renegotiation channel, which is often triggered by their monitoring activities, creditors are more incentivized to incur the effort associated with monitoring their borrowers.

Thus, it is highlighted in our framework that renegotiation is an endogenous equilibrium outcome rather than an out-of-equilibrium phenomenon (Maskin and Moore (1999)). Conceptually, renegotiation has been largely viewed or modeled in previous literature as an exogenous game with ex post surplus available under unanticipated or noncontractable states of the world (Aghion and Bolton (1992), Hart and Moore (1998a)). Instead, mechanism proposed in our framework demonstrates that the occurrence of renegotiation is endogenously determined by incentives to monitor. In other words, renegotiation does not arise unless a creditor monitor the borrower.

We use this framework to investigate the contractual and real outcomes in situations where a nontrivial portion of loan deals is held by a group of creditors (e.g., *institutional investors*) with no monitoring capability. The central question is how monitoring creditors (e.g., *banks*) can credibly commit to monitoring borrowers while only holding a minority share of the deal, so that rational non-monitoring creditors can be persuaded to participate and take up a significant share of the loan.[5] We contend that the renegotiation-based mechanism, which serves as an alternative source and thus a potential substitute for the stake-based mechanism, is crucial for the provision of monitoring incentives and for facilitating the participation of non-monitoring creditors in the segment of the corporate lending businesses that demands intensive monitoring (e.g., *leverage loan markets*).

When the monitoring creditor holds a small stake, her incentives to monitor are ambiguous as her payoff from protecting the salvage value is limited. To credibly communicate with and convince the non-monitoring creditors of a low default risk—a consequence of her diligent monitoring (which is not verifiable by others)—it is crucial for the monitoring creditor to be able to generate sufficient payoff from rent extraction in renegotiation with the borrower. Following this logic, we demonstrate that banks' monitoring efforts are sensitive to frictions and bargaining positions in their renegotiation with borrower, and that this sensitivity becomes higher when banks' skin in the game is lower. In particular, we show that a reduction of renegotiation frictions or enhancing creditors' bargaining position can facilitate

[5]This "monitor the monitor" problem is made clear in Diamond (1984) by highlighting the incentive problem of bank who behave as a delegated monitor and demonstrating how debt contract can mitigate such incentive problem. This incentive problem is later examined in other context and with other types of solutions (e.g., Rajan and Winton (1995), Park (2000), Dang et al. (2017)).

the ex-ante underwriting of credit contracts in which banks only take small stakes (e.g., split control loans). This effect is especially pronounced for borrowers subject to severe agency conflicts.

We apply this conceptual framework to conduct our empirical analysis in the context of leveraged loan market, which features non-trivial participation of both monitoring lenders—traditional banks—and non-monitoring lenders—non-bank institutional investors. Notably, non-monitoring lenders' (institutional investor) participation in the leveraged loan market has substantially increased over the last two decades, while the participation of monitoring lenders (traditional banks) has been steadily declining.[6] Meanwhile, the leveraged segment experienced the most rapid growth within the syndicated loan market. From early 2000 to 2018, the size of the leveraged loan market grew from 15% of the syndicated loan market to 45%; the peak of the market reached around 60% of the syndicated loan market in 2007 (Goel (2018)). The growing quantitative importance of the leveraged loan market and the trend in its unique lender composition gives us a natural environment to study features of optimal loan contracts when lenders differ in their monitoring capabilities and skin-in-the-game.

We begin our empirical analysis by comparing characteristics of split control deals to non-split control deals. Split control design of loan deals often emerge as a contractual arrangement to facilitate the participation of non-bank institutional investors (Berlin et al. (2020)). These loan deals report a significantly lower share held by bank lenders than their non-split control counterparts—the average bank commitment share in split control deals is 22%, compared to 71% for non-split control deals. Regarding borrower characteristics, we find that split control borrowers are older, larger, more productive and profitable relative to non-split control borrowers. On loan contracting, we find that split control deals are more likely to be secured and are used towards private equity activity relative to non-split control deals. On lender properties, we find that well-capitalized, profitable banks with stronger lending relationships are more likely to participate in split control deals. Overall, our findings suggest that split control design of credit contracts are more likely to be applied to borrowers less prone to agency frictions or in situations where creditors stand at stronger bargaining positions.

While our examination of split-versus non-split control deals provides empirical evidence consistent with our theoretical framework, identifying the framework's key mechanism—that increased payoff from ex-post rent extraction better commits creditors to monitor, and thus allows for a smaller stake held by monitoring creditors—is not an easy task. To achieve this

[6] A report from S&P Global shows that from 1994 to 2012, institutional investors' share of leveraged loans increase from less than 30% to over 85%, while bank lenders' share declined from more than 60% to less than 20%.

goal, one would need to exploit shifters that affect creditors' ability to renegotiate or other factors determining their net payoff from renegotiation-based rent extraction. However, such shifters are often unlikely to be exogenous and hence make it difficult to identify the channel in a clean manner.

In the main part of our empirical analysis, we utilize the activation of TD9599 tax credit as a natural experiment, where the net cost to lenders associated with loan renegotiation was effectively lowered.[7] Under this experimental setting, we are able to identify how a reduction in renegotiation frictions, which implies a higher net payoff from the renegotiation-based rent extraction to creditors, impacts the ex-post outcomes of existing loan deals as well as the ex-ante contractual design of newly issued loans. Specifically, we conduct the analysis in a difference-in-differences (DiD) set-up, and study the credit market and real outcomes of associated firms before and after the tax policy activation. The focus of our analysis is to study how these policy impacts compare for treated versus non-treated firms. In the main part of our analysis, treated (non-treated) firms are defined as leveraged firms that (do not) report split-control deals on their balance sheet by the activation of TD9599.[8]

We begin our analysis of the tax policy's impact on credit contracting in the leveraged loan market by examining the inclusion and characteristics of covenants in loan deals—an important mechanism through which monitoring-induced renegotiation is triggered (Rajan and Winton (1995)). We find split control deal contracts overall include more covenants. In particular, after the tax policy split control deals are more likely to have debt-to-ebitda ratio, interest coverage ratio, fixed charge coverage ratio and debt issuance covenants, relative to non-split control deals. Split control deals also experience a larger increase in the likelihood of being renegotiated, amended and the rounds of renegotiation than non-split control deals, after the passage of the tax policy.

We further explore the potential heterogeneity in policy impact on other dimensions in contractual features of newly issued loan deals that are arranged under split or non-split control structures. We find that the tax policy reduces upfront fees and commitment fees of split control deals to a greater extent compared with non-split control deals. After the tax policy, split control deals experience larger declines in the likelihood of private equity sponsors, the likelihood the deal is used towards buyout activities, and the likelihood that the deal uses unitranche financing. Moreover, we find that after the tax policy, split control deals

[7] The impact of this tax policy on the renegotiation of corporate loans has been examined in other academic research including Campello et al. (2018), Ferracuti and Morris (2017).

[8] As documented and explained in Berlin et al. (2020), loan deals with non-trivial participation of non-bank institutional investors are often associated with a split-control arrangement in contract design. Leveraging on their findings, we use the split/non-split structure of credit contract to capture the presence of non-bank institutional investors (who do not monitor) in loan deals.

experience a larger increase in the likelihood that the loans are issued to speculative borrowers relative to that in non-split control deals. In addition, the average share of revolving credit declines by a larger margin for split control deals, compared to non-split control deals after the tax policy. Overall, these findings indicate that after the tax policy, banks rely more on ex post compensation rather than ex ante, rely less on the presence of private equity as an external monitor, and extend credit to marginal firms. These findings demonstrate that banks can better commit to monitor borrowers after the tax policy, even when they only hold small stakes in originated loans.

To supplement our analysis of the policy impact on the underwriting of newly issued loan deals, we also examine how the loan outcome and performance of borrowers vary before and after the policy event for loan deals that are existent and underwritten before the event. We find that firms with split-control deals on their balance sheet (split-control firms) experienced higher ROA and lower default probabilities after TD9599 activation when compared to other firms in the leveraged loan market (non-split control firms). In terms of balance sheet conditions, we find that post TD95999, split control firms sustainably lowered their debt-to-ebitda ratio, improved their retained earnings, decreased their net debt issuance and performed better in sales compared to non-split control firms.

These findings have important policy implications. Our results indicate that fiscal policy mitigating renegotiation frictions can facilitate the participation of institutional investors in the leveraged loan market, and can potentially push forward the boundary of the credit market. Though not fully explored in this paper, our analysis has important implications that may extend beyond the leveraged loan market. For instance, our findings on bank lenders' usage of revolving credit raises concerns that when renegotiation is highly frictional, bank lenders may rely heavily on the revolving facility as a contractual solution to commit themselves to monitor. This, in turn, may increase the banking sector's vulernabilities to demand-side driven liquidity shocks.

Related Literature

This paper contributes to three strands of the literature. First, we develop a theoretical model which provides an explanation behind the novel *monitoring with small stakes* puzzle. Second, we provide empirical evidence demonstrating how conditions in ex post renegotiation can affect borrower performance and loan outcomes, as well as ex ante contractual features. Third, we build on the extant literature on the split control structure of loan contracts.

An important function of financial intermediaries is to reduce agency frictions to facilitate the provision of credit. However, information asymmetries between lenders and investors

may lead to moral hazard issues that hinder credible communication. This credible communication issue between monitoring lenders (intermediaries) and non-monitoring investors (depositors) is first recognized in Diamond (1984) which analyses "delegation costs," associated with the incentive compatibility of the delegated monitor to conduct costly yet non-verifiable monitoring activities. Diamond (1984) studies how contracts should be designed to minimize such delegation costs.[9] Holmstrom and Tirole (1997), Gorton and Pennacchi (1995), among other theoretical analyses propose that lenders retain a sufficient share of their loan originations, i.e., skin in the game, to overcome such agency frictions, align incentives between investors and lenders, and increase borrowers' debt capacity. Sufi (2007), Gustafson et al. (2021), among other empirical studies document that banks retain a larger share of loans that require more monitoring to credibly commit to monitoring.[10] Yet, the recent rise of institutional lending raises a key concern that banks have less skin in the game (e.g., Wang and Xia (2014); Bord and Santos (2012)). Relatedly, Drucker and Puri (2009) show that 60% of loans are sold within one month of origination and nearly 90% within one year. Billett et al. (2016) demonstrates that when banks' skin-in-the-game is small enough, the conflict of interest between banks and institutional investors becomes so severe that the optimal contract grants institutional investors enforcement control, allowing institutional investors to entirely remove the covenants under certain conditions.

This phenomenon poses an important puzzle: how are banks' monitoring incentives preserved with low skin in the game in the presence of multiple creditor classes of equal priority? More broadly, are banks special in their capacity as credible monitors, or, are they arms-length? In providing answer to this *monitoring with small stakes* puzzle, this paper introduces an alternative mechanism to loan retention which can incentivize monitoring: rent extraction through renegotiation. We argue that banks' monitoring efforts are sensitive to renegotiation frictions (bargaining power), and this sensitivity is higher when banks' skin in the game is lower. This mechanism enlarges borrowers' debt capacity. Hence, this paper joins several papers in enhancing our understanding of how renegotiation affects optimal contract design and efficient monitoring incentives (e.g., Aghion and Bolton (1992); Diamond (1993); Dewatripont and Tirole (1994); Berglöf and Von Thadden (1994); Bolton

[9]Diamond (1984) shows that diversification with debt contracts can optimally alleviate the incentive problem, by making the delegated monitor's payoff most sensitive to her monitoring action. The analysis in our paper shares a similar insight – essentially, one needs either a large enough stake or sufficient ability to extract rents from monitoring-trigged renegotiations to make the delegated monitor's payoff sensitive to her monitoring action.

[10]Relatedly, recent work by Gryglewicz et al. (2022) develops a dynamic framework of syndicated loan where lenders costly screen and monitor the originated loan, and demonstrate that the optimal contract between loan originator and investor can be implemented by having the lender sell its stake in the loan over time.

and Scharfstein (1996); Hart and Moore (1998b); Rajan (1992); Rajan and Winton (1995); Repullo and Suarez (1998); Park (2000)).

The theoretical financial contracting literature underscores the importance of ex post renegotiation on ex ante contractual structure.[11] Empirically, Roberts and Sufi (2009) find that more than 90% of long-term loan contracts are renegotiated before maturity and renegotiation is rarely a consequence of distress or default. The authors find that ex ante contractual contingencies can influence the bargaining power of the contracting parties in renegotiation. However, the empirical literature on how ex post creditor control affects ex ante capital structure decisions is limited for two primary reasons. First, it is difficult to think of what variation to exploit to generate precise predictions from theory; variation in renegotiation outcomes is rarely exogenous. Second, it is difficult to measure renegotiation or proclivity to renegotiate.[12]

To overcome these obstacles and in providing one of the first pieces of empirical evidence on the impact of ex post renegotiation on ex ante credit contracting, we utilize the Internal Revenue Service's passage of TD9599 as an experimental setting. This regulatory policy passed in 2012 that redesignated syndicated loans as publicly traded debt allows us to study how ex ante contractual features are affected by changes in monitoring incentives induced by different renegotiation environments, after the implementation of TD9599. Related to our analysis but with difference focus in research questions, past studies have documented that TD9599 reduced renegotiation costs, increased the likelihood of covenant violation, and improved the incidence of distressed debt resolution (Campello et al. (2018); Ferracuti and Morris (2017)).

Finally, the empirical analysis of our paper is closest in context to Berlin et al. (2020), which documents that cov-lite loans are almost always paired with revolving lines of credit, retained by banks, which contain the traditional financial covenants. This credit arrangement is termed as *split control rights* which delegates the exclusive right to monitor and renegotiate covenants to banks which retain the revolving credit. Split control deals are concentrated among leveraged loan deals, characterized by the participation of institutional investors and bank-dependent borrowers.[13] Our analysis adds to this fast-growing literature by shedding light on how credit contracts are designed to guarantee monitoring incentives under the split

[11] See e.g., Bolton and Scharfstein (1996), Hart and Moore (1998b), Garleanu and Zwiebel (2009).

[12] Relatedly, Benmelech and Bergman (2008) and Benmelech et al. (2005) show that liquidation values affect renegotiation outcomes and debt contracting.

[13] See Berlin et al. (2020) and Becker and Ivashina (2016) for the increasing application of split control arrangement and cov-lite credit agreements in leveraged loan market. It is argued this particular contractual feature is designed to alleviate coordination problems with institutional investors. The blue line in Figure **??** shows that the dollar proportion of leveraged loans has been rising and reached about 50% of the total volume of the leveraged loans.

control arrangement, and, how a transition from non-split to split control rights implies different monitoring incentives.

The rest of the paper is organized as follows. In Section 2, we develop a conceptual framework to highlight a novel insight on the role played by rent extraction-based renegotiation in the provision of monitoring incentives. We then apply this framework to study credit contracting when monitoring creditors only retain a fraction of loan originations. We then bring the theory to the real world. Section 3 describes the data and sample construction. In Section 4, we narrow our focus to the leveraged loan market, which has experienced a substantial inflow of non-monitoring institutional investors over the past decades, and compare the characteristics of loan deals that are arranged under the split control structure to those arranged under the non-split control structure. In Section 5, we empirically identify this novel channel by conducting an event-based analysis in which we exploit an exogenous reduction in renegotiation frictions to study its impact on the contractual and real outcomes in the leveraged loan market. Section 6 6 concludes the paper.

2 A Conceptual Framework of Monitoring and Renegotiation

This section develops a framework of debt financing in which borrowers are subject to agency problems. In this model, creditors' ability and incentives to monitor play a key role in determining borrowers' debt capacity and funding costs.

Consider a setting where an entrepreneur has a project that needs to be financed externally. There are three relevant dates:

i On date 0, the entrepreneur needs to raise funding I to get the project initiated;

ii At some randomly arrived interim date 1, the entrepreneur gets the opportunity to engage in certain "asset diverting" behavior;

iii On date 2, the project pays off.

The main agency problem in this setting is captured by the entrepreneurs' option regarding project choice on date 1. Specifically, we assume that the project generates a payoff of X_H, which is fully pledgeable to creditors, if the entrepreneur is properly behaved. However, once the entrepreneur utilizes the opportunity to turn the project into a "bad" one, the project will only generate a total payoff of X_L, which is strictly lower than X_H and only a

$\gamma < 1$ fraction of these payoff are pledgeable and can be seized by the creditor. Under this specification, parameter γ essentially captures the severity of the agency problem.[14]

A. Benchmark framework with single creditor

Let us begin our analysis with the case where there is a single creditor who will solely conduct financing and potentially monitor the entrepreneur. We will show how this single creditor's incentives to monitor affect the entrepreneur's ability to borrow, and how these incentives are affected by renegotiation.

Contracting without monitoring To highlight the central role played by creditor monitoring in determining borrowers' debt capacity, we first consider credit contracts without creditor monitoring. Without creditor monitoring, once the entrepreneur gets the opportunity to divert the project, she will exercise this option and turn the project into a bad one if and only if

$$X_H - D \leq X_L - \gamma X_L$$

where D is the face value of debt payment the entrepreneur is obligated to make. As such, without monitoring the maximum payment that ensures the entrepreneur does not divert the project is

$$D^u = X_H - (1-\gamma)X_L$$

The project cannot be financed if the lender's cost of capital exceeds this maximum payment the entrepreneur can promise without diversion, i.e.,

$$D^u < rI$$

Contracting with monitoring Now suppose that the creditor can incur a cost $c(\theta)$ to monitor. The creditor is able to identify with probability θ, the instant that the entrepreneur gets the opportunity to convert the project by incurring a monitoring fee of $c(\theta)$.[15] When the detection fails, with probability $1-\theta$, the entrepreneur has the opportunity to decide whether or not she wants to divert the project.

[14]The notion that only a fraction of the entrepreneur's payoff is pledgeable as payments to the lender follows the previous literature in incomplete contracting such as Hart and Moore (1998b) and Berglöf and Von Thadden (1994).

[15]The notion that creditors can detect borrowers' opportunistic behavior through conducting costly monitoring is similar to that in Acharya et al. (2014), in which bank monitoring can generate noisy signals, revealing firms' project choice.

In the state where the creditor successfully detects the arrival of entrepreneur's asset diversion opportunity, two possible scenarios arise. In the first scenario, which occurs with probability p, the project diversion opportunity is automatically eliminated. When this occurs, the project remains in the good state and generates a fully pledgeable payoff of X_H. In the second scenario, which occurs with probability $1-p$, the project diversion opportunity cannot be eliminated unless the entrepreneur is willing to forgo it. In this case, renegotiation happens, as it strictly improves the total surplus between the creditor and the entrepreneur. This is because $X_H > X_L$.

For simplicity, let us assume that the renegotiation outcomes follow a Nash bargaining solution, in which the creditor is able to obtain a $\beta \in [0,1]$ fraction of the surplus gain. This parameter, β, can be thought of as a reflection of the relative bargaining power as well as other potential frictions in the negotiation process.[16] Under this specification, the payoff to the creditor after renegotiation is

$$V^C = \gamma X_L + \beta(X_H - X_L)$$

In determining the optimal monitoring effort θ, a creditor solves

$$\max_{\theta} \theta[pD + (1-p)V^C] + (1-\theta)\gamma X_L - c(\theta)$$

The first order condition implies

$$p \underbrace{D}_{\text{salvage value recovery}} + (1-p) \underbrace{V^C}_{\text{rent extraction}} - \gamma X_L = c'(\theta)$$

or

$$p(D - \gamma X_L) + (1-p)\beta(X_H - X_L) - c'(\theta) = 0$$

The above equation highlights the two sources that provide incentives for creditors to monitor. The first source comes from the recovery of the salvage value, which is obtained by creditors when their monitoring activities can immediately eliminate the borrowers' diversion opportunity. The second source of incentive provision is determined by the creditors' ability to extract rents from renegotiation, triggered by creditors' monitoring activities. This second source is relevant when the diversion opportunity cannot be eliminated. This second source of incentive provision for creditor monitoring, as will become clear later, is the focus

[16] The ex post renegotiation between creditors and borrowers is modeled as two parties bargain to split the surplus generated by renegotiation, similar to that in Bolton and Scharfstein (1996).

of our empirical analysis.

Denote the optimal screening as a function of the face value payment D, $\theta^* = \theta^S(D)$. It is easy to see that $\frac{\partial \theta^s}{\partial D} > 0$. That is, a higher face value payment provides more incentive for the creditor to conduct monitoring. As such, the ex ante choice of face value D is set such that creditor can break even at this optimal level of monitoring effort:

$$\theta^S(D)[pD + (1-p)V^C] + (1-\theta^S(D))\gamma X_L - c(\theta^S(D)) = rI$$

It is easy to show that the LHS of the above equation is strictly increasing in D. Since the face value D of the payment cannot exceed the project payoff in the good state X_H, we can thus determined the boundary of borrowers entering the credit market:

Proposition 1 *With a single creditor who can monitor, a borrower can be financed if and only if*

$$\theta^S(X_H)[pX_H + (1-p)V^C] + (1-\theta^S(X_H))\gamma X_L - c(\theta^S(X_H)) \geq rI$$

where $V^C = \gamma X_L + \beta(X_H - X_L)$.

In what follows, we assume there is another creditor who has a cheaper cost of capital but has no capacity to monitor (or verify others' monitoring activities). We study how the credit contract should be designed such that the project can be financed.

B. Multiple creditors with only one can monitor

The main focus of our analysis is on loan deals that involve the participation of creditors who never monitor. To this end, now suppose the creditor who is capable of monitoring only takes a fraction of total loan ownership and monitoring activity is not verifiable. We will call this creditor the *bank*. Specifically, let us assume that a loan contract specifies the fraction f^M of a loan that is contributed by the monitoring bank.

Importantly, while the bank only takes f^M fraction of the loan ownership, the renegotiation with borrowers is solely conducted by the bank. In this regard, we make the following assumption on the renegotiation between creditors and borrowers when the monitoring creditor is only holding $f^M < 1$ fraction of the loan.

Assumption 1. Renegotiation with fractional ownership
When the monitoring creditor is only holding f^M fraction of the loan, their ability of rent extraction in renegotiation with borrowers is independent of the share owned by herself.

This assumption is intended to capture the notion that while the salvage value recovered

and, hence, accrued to the bank via monitoring is proportional to the share owned by the bank, the payoff of rent extraction accrued to the bank in the renegotiation with the borrower is not as sensitive to the bank's share in loan ownership. Under this assumption, to simplify the analysis, in a renegotiation between the borrower and the monitoring creditor, we specify the value accrued to the bank as

$$V^M = f^M \gamma X_L + \beta(X_H - X_L)$$

where the rent extraction from renegotiation – captured by parameter β – is independent of the share owned by the bank.[17]

Equilibrium monitoring effort Now after the credit contract has been underwritten, the monitoring creditor's optimal decision on his monitoring effort θ is then determined by

$$\max_{\theta} \theta[pf^M D + (1-p)V^M] + (1-\theta)f^M \gamma X_L - c(\theta)$$

which implies

$$[pf^M D + (1-p)V^M - f^M \gamma X_L] - c'(\theta^M) = 0$$

or

$$p \underbrace{f^M(D - \gamma X_L)}_{\text{salvage value recovery}} + (1-p)\underbrace{\beta(X_H - X_L)}_{\text{rent extraction}} = c'(\theta^M)$$

Denote the optimal monitoring effort θ satisfying the above condition by $\theta^M \equiv \theta(f^M, D)$. In our later empirical analysis, we are interested in studying how a policy shock influencing frictions in the renegotiation process (change in β) affects both ex-post loan outcomes and ex-ante loan contracting, by affecting banks' monitoring incentives. We define the following elasticity

$$\epsilon_{\theta,\beta} \equiv \frac{d\theta}{d\beta} \cdot \frac{\beta}{\theta}$$

to capture the sensitivity of bank's monitoring effort to changes in renegotiation frictions. Importantly, we have the following proposition relating the heterogeneous impact of renegotiation frictions on monitoring effort to the share of loans owned by the bank lender.

Proposition 2 *The sensitivity of monitoring effort θ to the rent extraction parameter β is*

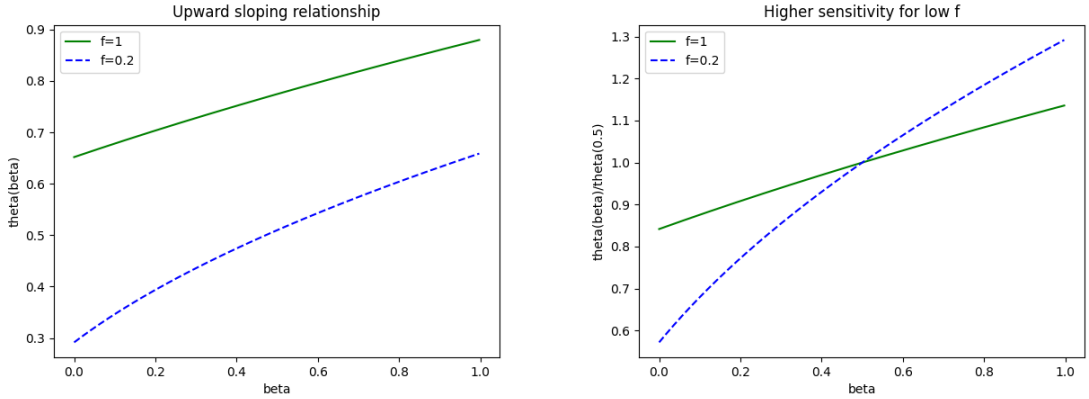
[17] In specifying the monitoring creditor's payoff from renegotiation with the borrower, it is assumed that the monitoring credit negotiates on behalf of the non-monitoring credits. Hence the total surplus gain from renegotiation is $X_H - X_L$, among which a β fraction is extracted by the monitoring creditor. Assumption 1 states that this fraction β is relatively insensitive to the share f^M owned by the monitoring creditor—in the extreme, β is independent of f^M.

higher when the monitoring creditor is holding a smaller share in loan ownership, i.e.

$$\frac{\partial \epsilon_{\theta,\beta}}{\partial f^M} < 0$$

Figure 1. Monitoring incentive and rent extraction in renegotiation

This figure illustrates how the equilibrium monitoring incentive of the bank is affected by the bank's rent extraction in renegotiation with borrowers. The left panel plots the monitoring effort θ as a function of bargaining parameter β, in which a upward sloping relationship is shown for both $f = 1$ and $f = 0.2$. The right panel plots the sensitivity of equilibrium monitoring effort to changes in bargaining parameter, which reveals a more sensitive relationship between the two when the share held by the bank is lower, i.e., $f = 0.2$.



Intuitively, when the monitoring creditor is only holding a small share of the loan, the rent extraction-based renegotiation plays a relatively larger role in providing sufficient monitoring incentive. As a result, changes in renegotiation frictions that affect banks' rent extraction will likely lead to a larger impact on the monitoring effort incurred by the bank in equilibrium.

Contract design We are now ready to characterize the participation decision of the non-monitoring creditors, whom we refer to as *institutional investors*. In particular, we are interested in characterizing the maximum share of the loan that can be held by institutional investors, who rationally recognize that the equilibrium monitoring effort incurred by the bank lender decreases as the share owned by the bank is smaller. As such, in what follows in the section, we set $D = X_H$ and study the properties of the share f^M of credit that needs to be contributed by the monitoring creditor.[18]

With $D = X_H$ held fixed, it is easy to see that $\frac{\partial \theta}{\partial f^M} > 0$. The break-even condition for

[18]The maximum payment the borrower can make, given a good project is selected, is X_H. By setting $D = X_H$, we are essentially solving a contract design problem with the objective of minimizing the share of the loan contributed by the bank lender, who performs the monitoring of the loan.

the non-monitoring creditor requires

$$\theta^M X_H + (1-\theta^M)\gamma X_L = r^N I$$

where r^N is the cost of capital for non-monitoring institutional investors. As such, define the minimum share f^M that monitoring creditor must hold as the solution to the following equation

$$\theta(f^M, X_H)X_H + [1-\theta(f^M, X_H)]\gamma X_L = r^N I$$

We have the following propositions.

Proposition 3 *The minimum share held by the monitoring creditor decreases when renegotiation becomes less frictional (β increases), i.e.,*

$$\frac{\partial f^M}{\partial \beta} < 0$$

The above result indicates that rent extraction-based renegotiation can effectively serve as a substitute to the traditional skin-in-the-game mechanism, in providing sufficient monitoring incentives to banks. When the bank is better able to extract rents from renegotiation with the borrower thanks to reduced frictions in renegotiation process (an increased in β), the bank can more easily and credibly convince the non-monitoring institutional investors that it will maintain sufficient monitoring effort even if its own stake is small.

Corollary 1 *The minimum share that needs to be held by the monitoring creditor is lower for borrowers with less severe agency problems (higher γ), i.e., $\frac{\partial f^M}{\partial \gamma} < 0$.*

Revolver as incentive device for monitoring To strengthen the monitoring creditor's incentives to incur higher monitoring costs, one solution is to increase the rent the bank can extract in the renegotiation process, triggered by their monitoring activities. The ability of extracting rents from renegotiation depends on the bank's ability to discipline the borrower when renegotiation breaks down. The monitoring creditor's threat credibility is enhanced by issuing revolving credit. Specifically, the monitoring creditor's ability to revoke a revolving claim before maturity grants the monitoring creditor greater credibility in monitoring.

To formally show this in our framework, let us assume that if the f^M fraction of the credit held by the monitoring creditor is issued in the form of revolver, the total payoff of the diverted project is $g(f^M)X_L$, where function $g(f^M) < 1$ and is decreasing in f^M. Intuitively, one can think of this lower payoff from the diverted project as a consequence of the borrower's precautionary motive to keep part of the revolver unused and the monitoring

creditor's ability to revoke the borrower's access to any unused part of the revolver. For instance, suppose at the time of renegotiation, the borrower keeps an $\alpha > 0$ fraction of revolver unused (due to insuring motives), then a concrete functional form for $g(f^M)$ may be

$$g(f^M) = 1 - (1-\alpha)f^M$$

since the borrower's access to the unused credit (the amount of which is $\alpha f^M \cdot I$) can be revoked by the monitoring creditor, which is a decreasing function of f^M.

As such, the equilibrium monitoring effort θ chosen by a monitoring creditor who issues a revolver is determined by

$$pf^M(D - \gamma X_L) + (1-p)\beta[X_H - g(f^M)X_L] = c'(\theta^M)$$

Compared to the equilibrium monitoring effort from issuing a term loan as characterized before, we have

$$\theta^M_{revolver}(f^M, \beta) > \theta^M_{term}(f^M, \beta)$$

for any (f^M, β).

Therefore, given a fixed value of β, the minimum share f^M held by a monitoring creditor who is issuing a revolving claim, is determined as the solution to

$$\theta_{revolver}(f^M, X_H)X_H + [1 - \theta_{revolver}(f^M, X_H)]g(f^M)\gamma X_L = r^N I$$

Comparing the contract design with a revolving facility to that associated with term loan facility, we have the following proposition.

Corollary 2 *By having the monitoring creditor issue a revolving facility, the credit contract can support a smaller stake f^M held by the monitoring creditor than that can be supported in credit contracts where she issues a term loan facility.*

C. Implications and Hypotheses for Testing

We apply this framework to the leveraged segment of the corporate loan market, in which institutional investors play an increasingly significant role. We use the leveraged loan market as a laboratory to empirically examine and test the implications derived from our theoretical framework. The split control arrangement is widely applied in contracts

associated with leveraged borrowers. These deals generally feature a lower skin-in-the-game compared to their non-split control counterparts.[19] Mapped into our theoretical framework, loan deals arranged with the split control structure can be regarded as credit contracts that are supported with a small stake held by the monitoring creditor. Following this logic, we posit the following hypotheses on the equilibrium design of credit contracts in the leveraged loan market.

Hypothesis 1. *In the leveraged loan market, loan deals arranged with the split control structure in which bank lenders retain a small stake, are more likely to be associated with borrowers who are less subject to agency problems, or in situations where bank lenders are better able to extracts rents in renegotiation from borrowers.*

Our next set of empirical tests concern the impact of a policy-induced shock on the renegotiation frictions between creditors and borrowers. In particular, we are interested in studying how a change in renegotiation frictions, which affect creditors' (net) payoffs from rent extraction-based renegotiation, impact the performance and outcomes of existing loan deals as well as the underwriting of new credit contracts.

Following a reduction in renegotiation frictions, banks' incentives to conduct monitoring increase as an immediate consequence of their enhanced ability to generate payoffs from renegotiation with borrowers. As a result, we expect improvements in borrower performance and loan outcomes when renegotiation becomes less frictional. Further, since such a rent extraction-based mechanism plays a more significant role in providing sufficient incentives for monitoring when the stake held by the bank lender is small, the impact on loan outcomes is likely to be pronounced for split control deals, as predicted by Proposition 2 in Section 2.

Accordingly, this discussion leads us to propose and test the following hypothesis.

Hypothesis 2. *A reduction in renegotiation frictions leads to a larger improvement in loan outcomes for deals in which banks hold smaller shares (split control deals) than those in which banks hold larger shares (non-split control deals).*

In addition to its impact on existing loans, policy-induced changes in renegotiation frictions also affect new issuance. We hypothesize that a reduction in renegotiation frictions affect the composition of borrowers as well as contractual features of loan contracts. That

[19] See Section 4.1.2, as is shown in the summary statistics, in the aggregate leveraged loan market, bank lender's share has declined from 80% to around 20%, the average banks' skin in a split control deal is around 22%.

is, following a reduction in the renegotiation frictions, we conjecture that there is an effect on the *extensive margin*, affecting the boundary of the leveraged loan market; and an effect on the *intensive margin*, affecting how credit contracts are designed and structured in the leveraged loan market.

To elaborate, with a less frictional renegotiation process, creditors' enhanced ability to extract rents from renegotiation improves their credibility in committing to monitor their borrowers. On the extensive margin, this improved commitment to monitor allows marginal borrowers who are subject to severe agency problems to enter the credit market and, hence, push the boundary of the leveraged loan market. On the intensive margin, enhanced rent extraction-based renegotiation serves as a substitute for the stake-based mechanism of providing sufficient monitoring incentives. This alternate mechanism allows bank lenders to hold smaller stakes in the loans they originate while still credibly committing to monitor their borrowers. In other words, a reduction in renegotiation frictions can support the underwriting of credit contracts in which bank lenders take a lower stake – in particular for loans associated with severe agency problems that require intensive monitoring.

We summarize the above discussion in the following hypothesis, which we formally test in Section 5.

Hypothesis 3. *A reduction in renegotiation frictions has an impact on both the boundary and the contractual design in the leveraged loan market. In particular, it increases the likelihood that borrowers with severe agency problems obtain split control loan deals. Furthermore, it reduces banks' usage of revolving credit (for monitoring incentive provision), especially for split control deals.*

3 Data and Sample Construction

Loan Contracts We collect data on loan contracts from Loan Pricing Corporation (LPC) DealScan. The DealScan database has extensive and reliable information on loan pricing, contractual terms, and conditions. DealScan provides deal and tranche level information, lender composition, and borrower information. We use this dataset to identify split control deals as leveraged loan deals consisting of cov-lite term loan tranches and a non-cov-lite revolving credit tranche. We restrict our sample between 2005 and 2018.

Bank Balance Sheet We obtain bank balance sheet and income statement information from the Reports of Condition and Income (Call Reports). This data is reported by the Federal Reserve Bank of Chicago and is regulated by the Federal Reserve System, Federal

Deposit Insurance Corporation (FDIC), and the Comptroller of the Currency. The data is reported at annual frequency, variables we are interested include a bank's Tier-1 capital, total assets size, interest income, non-interest income, ROA, equity ratio, and loan-to-deposit ratio. We merge this data with our deal-level data to study how lender characteristics affect bank participation in split control deals. The summary statistics of banks by split-control deals participation is reported in Table 5.

Covenants We extract data on loan covenants from Thomson Reuters SDC Platinum. SDC provides information on new issues, M&A, syndicated loans, private equity, project finance, and poison pills, among other financial transactions. We focus on data on syndicated loans and examine covenant features for the deals in our sample. The data is reported at annual frequency for new deals, the variable of interest include: whether the deal has a covenant, whether the deal was renegotiated, the rounds of renegotiation, whether the deal was amended, the details of covenants. For the details of covenants, we extract the text of financial covenants and categorize them into *Debt-to-Ebitda*, *Interest-coverage ratio*, *Fixed-charge coverage*, *Debt-Issuance*, and *Other*. We record the value of the financial covenants if it's recorded in the SDC database.[20] We merge this data with our deal-level data to compare covenant features in split control and non-split control deals, before and after the tax policy.

Firm Outcomes We track firm outcomes using Compustat data provided through S&P Global Market Intelligence. Compustat provides standardized financial statement and market data for publicly traded companies. This includes data on firm fundamentals from balance sheets, statements of cash flows, income statements, and supplemental data outcomes. We use the Compustat at annual frequency, the variables of interests include firms' sizes, age, profitability, sales, net debt issuance, R&D expenditures, capital expenditures, etc. We merge this data with our deal-level data to compare characteristics of split control borrowers to non-split control borrowers. Summary statistics of split control borrowers and non-split control borrower are reported in Table 2.

4 Corporate Lending with Non-Monitoring Creditors

This section describes the evolution of corporate lending as institutional investors' participation has increased. We begin by providing detailed context for the leveraged loan market

[20]SDC provides the details of financial covenant category incorporated, the value of each financial covenant, and whether a given financial covenant changed within the duration of the loan deal. Only if a financial covenant was modified, it will show up several times and each time will have a different value associated with it. We construct the rounds of renegotiation by counting the maximum number of times any financial covenant shows up multiple times in SDC.

and discussing how the increased participation of institutional investors in this market has been linked to the rise of cov-lite loans and split control deals. We then conduct a thorough empirical analysis, comparing the contractual design differences between split and non-split control deals, and relate these empirical patterns to our conceptual framework on creditor monitoring.

4.1 Institutional Investors' Engagement in Corporate Lending

4.1.1 Leveraged Loan Market

The extant literature on banking and contract theory has focused on lenders' incentives of conducting costly monitoring of their borrowers. Despite the crucial role and the high social value added by banks' monitoring activities, especially when borrowers face severe agency problems, lenders' incentives to conduct an optimal level of monitoring is uncertain when banks have smaller stakes in the loans they originate.[21] To this end, we aim to understand how banks' lower loan retention ("skin in the game") affects banks' equilibrium monitoring behavior, as well as their associated effects on ex ante features of loan contracts and ex post loan performance.

We investigate this research objective in the context of the leveraged loan market. While banks are typically viewed as lenders who intensively screen and monitor borrowers (Gustafson et al. (2021)), institutional investors are often viewed as passive lenders with limited screening and monitoring capabilities. The syndicated loan market, which traditionally involves active participation of both banks and institutional investors, provides us with an ideal laboratory to study the impact of the presence of non-monitoring creditors in corporate lending. Our focus is on the leveraged segment of the syndicated loan market.[22]

One of the most prominent features of the leveraged loan market is that non-bank institutional investors have significantly increased their participation in this particular segment of the lending market since 2000. These non-bank institutional investors include finance companies, insurance companies, hedge funds, distressed debt funds, loan mutual funds, and collateralized loan obligations (CLOs), among others. According to the Shared National

[21] This incentive problem of conducting costly yet socially valuable monitoring is similar to the widely debated and recognized concerns on loan originators' incentives to properly screen borrowers when loan originators later sell their originated loans through securitization (e.g., Drucker and Puri (2009); Benmelech et al. (2012); Blickle et al. (2020)).

[22] The leveraged loan market refers to a specific syndicated loan segment where loans are primarily made to relatively risky borrowers. Loan Pricing Corporation (LPC) defines a leveraged loan as a syndicated loan that is rated BB+ or lower or an unrated loan with an interest rate spread larger than 150 basis points. We follow the definition given by LPC. We refer readers to Kundu (2022) for more details on the classification of leveraged loans.

Credit (SNC) Program, the fraction of syndicated loans held by non-bank institutions increased from 8.4% in 2001 to 23% in 2015.[23] The increased participation of institutional lender is even more pronounced in the leveraged segment of the loan market – according to the IMF's calculations, the fraction of loans held by non-bank institutional investors in the leveraged loan market increased from around 30% in 2001 to more than 80% in 2018. Meanwhile, the fraction of loans held by banks declined from ∼50% in 2001 to less than 10% in 2018.[24] The growing participation of non-bank institutional investors in the leveraged loan market can be explained, in part, by reach for yield behavior when interest rates are low (e.g., Becker and Ivashina (2016), Goel (2018)), higher regulatory requirements (e.g., Loumioti (2019)), and stricter securitization standards faced by banks after the financial crisis (e.g., Irani et al. (2020), Kundu (2022)). Figure 2 shows the aggregate trends of institutional lenders' participation in the leveraged loan market and the time trend of split-control deals in the leveraged loan market.

4.1.2 Split Control Deals in the Leveraged Loan Market

The growing participation of institutional investors in the leveraged loan market, and the concomitant shrinking share held by bank lenders has resulted in structural changes in the design of loan contracts. Following the entry of institutional investors into the leveraged loan market, split control arrangements have evolved as a unique type of contractual design.

Becker and Ivashina (2016) document that the surge of cov-lite deals in the leveraged loan market has co-moved with the inflow of institutional investors into leveraged loan market. As renegotiation frictions increased due to the inflow of institutional investors, cov-lite loans emerged to accommodate the contractual flexibility required by institutional investors. Berlin et al. (2020) examine the growth of cov-lite loans and document that the cov-lite loans are almost always paired with revolving lines of credit, retained by banks, which contain the traditional financial covenants. The split structure gives revolving lenders the exclusive right and ability to monitor and renegotiate financial covenants. Banks typically retain the revolving lines of credit, while the cov-lite term loans are typically held by non-bank institutional investors. We follow Berlin et al. (2020) in our designation of split control deals. Specifically, we define a deal package in the leveraged loan market as a split control deal if this deal has cov-lite term loan tranches and a non-cov-lite revovling credit tranche. In other words, we refer to deals as split control deals if the financial covenants only apply to a subset of tranches so they can be waived or modified only by a subset of lenders.

Table 1 shows the characteristics of split control and non-split control deals. As exhibited

[23]The data available at the following link to Shared National Credit Report.
[24]The data is available at the 2019 Global Financial Stability Report.

by the table, split control deals have lower lead bank share (19%) compared with non-split control deals (35%), more lenders involved in the deal package (5.2 lenders) compared with non-split control deals (4.74 lenders), longer maturity (5.85 years) compared with non-split control deals (4.37 years), higher loan spread (406.67 bps) compared with non-split control deals (347.17 bps), and larger total loan volume ($621.99 million) compared with non-split control deals ($179.01). These comparisons are consistent with the findings of Berlin et al. (2020).

Further, we examine the within-bank retention of term loans and revolving lines of credit. We find that banks retain a significantly smaller share of their loan originations in split control deals compared to non-split control deals. The first row of Table 1 shows the comparison of banks' "skin-in-the-game" for split control and non-split control deals. The average bank commitment share in the split control deals is 22%, while for non-split control deals, the average bank commitment is 71%.

In summary, split control deals have emerged as a special form of a contractual design following the inflow of non-monitoring lenders in the leveraged loan market. The features of these types of deals are: (1) both monitoring lenders (banks) and non-monitoring lenders (non-bank institutional investors) are present; (2) monitoring lenders have lower "skin-in-the-game" compared with non-monitoring lenders, and the (3) allocation of control rights exclusively to monitoring lenders, thereby facilitating the participation of non-monitoring lenders. However, the simultaneous rise of split control deals and associated decline in monitoring lenders' skin-in-the-game raises questions of whether the incentives to monitor are still in place.

4.2 Borrowing with Split Control Deals

In this section, we conduct a comprehensive empirical study comparing the contractual features of split control and non-split control deals. We focus on dimensions related to creditors' incentives to conduct costly monitoring, as well as the value added by such monitoring activities, and relate them to the contractual arrangement and design of credit deals in the leveraged loan markets.

Borrowers' characteristics We begin by comparing characteristics of split control borrowers to non-split control borrowers. Table 2 presents the borrower characteristics when a deal becomes active. We find that split control borrowers are, on average, well-established firms. These firms are older and larger in size and employment than non-split control borrowers. The split control borrowers invest more as measured by CapEx, R&D, and acquisitions.

Moreover, split control borrowers exhibit higher financial ratios – leverage and debt/EBITDA ratios – and report higher liquidity, profits and sales, relative to non-split control borrowers. Overall, these findings suggest that split control deals are more likely to be contracted with borrowers who are less subject to agency problems. Within the conceptual framework of Section 2, one can interpret this as selection based on borrower characteristics. That is, it is less costly for creditors to monitor borrowers who are less likely to engage in inefficient project diversion.

Borrowers of split control deals differ from those of non-split control deals in their industry composition. Figure 7 presents the industry distribution of loans in split and non-split control deals.[25] The figure indicates that loans in split control deals are concentrated in the technology, financial services, business services, and healthcare industries, relative to non-split control deals. Overall, split control deals have significantly lower exposures to the oil and gas and general manufacturing industries, relative to non-split control deals. Appendix Figure A.2 documents that the asset-based lending is almost twice as common in non-split control deals compared to split control deals while Table 2 documents that split control borrowers report lower collateral than non-split control borrowers. Together, this finding suggests that split control borrowers are more likely to operate in industries with higher intangibles. This is consistent with our conceptual framework in which we posit that split control deals rely more on rent extraction through renegotiation rather than the recovery of salvage value which is more applicable to asset-based lending and is sensitive to banks' skin-in-the-game.

Further, split control borrowers report higher credit risk than non-split control borrowers. Figure 3 compares the distribution of Moody's Debt Ratings for loans in split and non-split control deals. The figure indicates that loans in non-split control deals have higher credit ratings than split control deals. The share of loans in non-split control deals with ratings Baa1 through Ba3 is substantially larger than the share of loans in split control deals with the same ratings. Conversely, the share of loans in split control deals with ratings B1 and below is substantially larger than the share of loans in non-split control deals with the same ratings. This finding suggests that there is segmentation in the types of split control and non-split control deals, and is consistent with the reach for yield behavior of institutional investors documented in Becker and Ivashina (2016).

Contract features Despite differences in the credit risk of split and non-split control deals, a greater share of split control deals are secured relative to non-split control deals. Figure 4 exhibits the percent of secured loans for non-split and split control deals. Panel a

[25] Appendix Figure A.3 shows that the headquarter locations of split control borrowers and non-split control borrowers are similarly geographically distributed.

of Figure 4 indicates that 64% of loans in non-split control deals are secured, while almost 95% of loans in split control deals are secured. Panel b of Figure 4 disaggregates split and non-split loans based on the type of the loan. The figure indicates that 56% of revolving credit facilities held in non-split control deals are secured, compared to 94% in split control deals. Moreover, 77% of term loans held in non-split loans are secured, compared to 99% in split control deals. Hence, loans in split control deals are more likely to be secured, relative to loans in non-split control deals.

In addition to the fraction of being secured, split control deals also exhibit a different structure in the *split* between revolving credit facilities and term loans from the non-split counterparts. We find that the 45% (55%) of non-split control deals are in the form of revolving credit facilities (term loans). This stands in stark contrast to 22% (78%) of split control deals that are in the form of revolving credit facilities (term loans). Further, as described in Section 4.1.1, the average bank commitment share in the split control deals is 22%, while for non-split control deals, the average bank commitment is 71%.This finding is consistent with a key corollary of our model in Section 2 which contends that the minimum share that needs to be held by monitoring creditors is lower for borrowers with less severe agency frictions.

Nature of loan purposes To further understand differences in loan characteristics, we examine the nature of loan purposes for split control and non-split control deals. Table 3 tabulates the percentage of loans in split and non-split control deals based on the purpose of loans. The table indicates that a substantially larger share of loans in split control deals are used towards sponsored and leveraged buyouts. While the percentage share of split control deals associated with leveraged buyouts is only modestly higher than that in the non-split control deals, the percentage share of sponsored buyouts is almost six times higher in split control (10.5%) than in non split control (1.8%) deals. These findings are corroborated in Figure 6 which documents that 44.33% of loans in non-split control deals report a private equity sponsor. In comparison, 78% of loans in split control deals report a private equity sponsor. The extant literature demonstrates that buyouts and private equity activities can reduce agency costs and increase firm value by disciplining managers and improving efficiency (e.g., Jensen and Meckling (1976); Jensen (1986); Lehn and Poulsen (1989); Kaplan (1989); Smith (1990); Innes (1990); Muscarella and Vetsuypens (1990); Cotter and Peck (2001)). Moreover, Badoer et al. (2021) argues that the reputational capital of private equity sponsors can serve as a substitute for maintenance covenants and mitigate agency costs. Our finding that split control deals are more likely used towards buyout purposes, especially privately sponsored, suggests that split control deals are more likely to be arranged for deals less prone to agency frictions.

Lender side factors Lastly, on the creditor's side, we examine whether characteristics of the bank lenders can explain selection into split control deals. Using a within-bank estimator, we study how the probability of a bank entering a split control deal relates to various bank characteristics. Table 5 presents these results. The right-hand side variables in this regression analysis include the tier 1 capital ratio, RoA, loan-to-deposits ratio, noninterest income to total income ratio, employment, financial leverage, size and an indicator for a previous bank-borrower relationship. We select these variables to study how measures of bank regulatory constraints, liquidity, profitability, leverage, size, and bank-borrower relationships are related to participation in split control deals. We account for macroeconomic shocks through year fixed effects, and include the deal maturity, spread and amount as additional controls. All independent variables are standardized for ease of interpretation.

Columns 1 through 5 indicate that that well-capitalized profitable banks are more likely to participate in split control deals. We find that there is a statistically significant and economically meaningful relationship between a bank's tier 1 capital ratio, RoA, size, financial leverage, and, the bank's participation in a split control deal. We further consider how the strength of lending relationships affects banks' participation in a split control deals. We use size as a proxy for external finance dependence in column 6 and an indicator for whether the bank has previously given a loan to the firm in column 7. These columns indicate that the strength of bank-borrower relationships are meaningful indicators of participation in split control deals.

Overall, our findings suggest that split control deals are less prone to agency frictions. On the borrowers' side, we find that split control borrowers are older, larger, more productive and profitable relative to non-split control borrowers. These borrowers are more likely to operate in the services industries. On the contract side, we find that split control deals are more likely to be secured, feature a smaller share of revolving credit, and are used towards private equity activity relative to non-split control deals. On the lenders' side, we find that well-capitalized, profitable banks with stronger lending relationships are more likely to participate in split control deals.

5 Impact of Renegotiation Friction: An Event-Based Analysis

While our findings in Section 4.2 provide us with empirical evidence that lends support to the conceptual framework developed in Section 2, we have yet to empirically identify the key channel highlighted in this paper – rent extraction-based renegotiation, which plays an

important role in providing incentives to monitor when the monitoring creditor is holding a small stake of the loan originations. The importance of ex post renegotiation on the ex ante contract design has been recognized and analyzed by many theoretical studies in the incomplete contracting literature.[26] However, the empirical evidence for this impact is limited in the previous literature. Hindrances in identification include the difficulty in thinking of what variation to exploit to generate precise predictions from theory and empirically measuring renegotiation or proclivity to renegotiate.

Our empirical design exploits the *asymmetric* effect of renegotiation frictions on split control and non-split control loans. This novel insight adds to the large literature on incomplete contracting which examines the effect of renegotiation on loan contracts. As highlighted in our analysis in Section 2, monitoring creditors' incentives to conduct costly monitoring is more sensitive to changes in renegotiation frictions when the share of loans retained by the monitoring creditors is smaller. Consequently, we hypothesize that a policy shock that affects renegotiation between creditors and borrowers will have heterogeneous effects on existing credit contracts, as well as the design of new split control and non-split control contracts.

In this section, we conduct an event-based analysis to empirically examine the impact of a policy-induced change in renegotiation frictions on both the ex ante contracting and the ex post loan outcomes in the leveraged loan market. This empirical design exploits the exogenous variation in creditors' renegotiation costs to test key propositions from our theoretical analysis in Section 2 and understand how banks' monitoring incentives as well as credit contracts in leveraged loan markets are causally affected when renegotiation costs are reduced.

5.1 Background of TD9599 and Empirical Design

When a debt instrument is significantly modified outside of a legal bankruptcy procedure, the restructuring is treated as a taxable exchange of the old debt instrument for the modified instrument by Internal Revenue Service (IRS). The IRS defines the circumstances in which property is traded on an established market – that is, publicly traded – for purposes of determining the issue price of a debt instrument. A significant modification can be a change in the issue's principal, maturity, timing of interest payments, yield, or recourse status.

[26]The impact of ex post renegotiation on ex ante contract design has been acknowledged since the earliest seminal works on the allocation of control rights in credit contracts, including Aghion and Bolton (1992), Dewatripont and Tirole (1994), and Berglöf and Von Thadden (1994). Later, theoretical work such as Bolton and Scharfstein (1996), Hart and Moore (1998b) and Garleanu and Zwiebel (2009) explicitly model the possibility of and friction in renegotiation between creditors and borrowers, and study their implications on the optimal design of credit contracts.

Debt holders are subject to tax obligations at the time of debt renegotiation. The treatment of tax obligations are different depending on whether the debt instrument held by a debt holder is publicly traded debt or privately traded debt. Under the regime of a debt instrument being classified as privately traded debt, taxes are based on the difference between the *par value* of the newly-renegotiated debt contract and the debt's original par value. When the debt holder retains and restructures the debt, they may experience a capital loss but will not receive tax credit for the loss. In contrast, for publicly-traded debt, the debt holder owes taxes on the difference between the *market value* of the renegotiated debt and the debt instrument's original par value. Hence, the debt holder benefits more from renegotiating or restructuring publicly traded debt compared to privately traded debt, as they receive a tax credit, if the renegotiation or restructuring is triggered by borrowers inability to fully repay the original loan amount.

Prior to TD9599, taxes were based on a 1994 regulation that classified debt as publicly traded if it satisfied one of three conditions: (i) The issue was exchange listed or market traded property; (ii) the issuance value appeared in a quotation medium; or (iii) the issuance value is quotable property in the 60-day period ending 30 days after the issue date of the debt instrument.

TD9599 subtly added to the above three conditions that the debt would also be classified as public if a "soft quote" could be obtained from one broker, dealer, or pricing service. Syndicated loans could easily satisfy this new condition. The industry immediately recognized the importance of this amendment and syndicated loans were reclassified en massage from private to public debt. At the time, Cleary Gottlieb, a leading international law firm, stated: "The final regulations are likely to cause most syndicated loans to be treated as publicly traded. Lenders to distressed borrowers will generally benefit [from TD9599]."[27]

Market participants were unlikely to be able to identify which contracts TD9599 would treat and when the modification will take effect. This is because the original initiation of the modification started from U.S. Treasury's suggestion to review the tax definition of public debt. The IRS took charge of crafting the change and released an initial proposal on January 6^{th}, 2011. The final approval and adoption decision were uncertain and the IRS did not provide timeline for the final adoption.[28]

TD9599 was announced on September 13, 2012 and took effect on November 13, 2012.

[27] See the link to Cleary Gottlieb's report. The report explains that lenders to distressed borrowers will generally benefit from the extension of "publicly traded" status to syndicated loans, since it causes the lender's potential loss on a debt restructuring to be measured by reference to the fair market value of the new or amended loan.

[28] Yackee and Yackee (2016) documented that the discard rate for IRS drafting is as high as 1/3 and IRS ranks the second highest among U.S. administrative agencies for the length of time spent on drafting new documents.

Since then, the IRS has treated renegotiated debt as public if either the original or modified issue meets the conditions outlined above. As such, a syndicated loan that was issued before TD9599, but restructured afterwards, was "formally reclassified as public debt" for tax purposes.[29] Notably, this feature of the tax change mitigates selection biases in our analysis as the tax treatment under TD9599 affected loans that were issued well before the regulation was discussed.[30]

The new designation of syndicated loans as publicly traded debt has been shown to dramatically reduce renegotiation frictions and increase lenders' willingness to renegotiate loans, according to previous studies. Campello et al. (2018) document the significant drop in CDSs among distressed firms relying on syndicated loan financing after the passage of TD9599. Ferracuti and Morris (2017) document that since the launch of TD9599, the maturities of syndicated loan contracts originated in the US have lengthened with fewer performance pricing provisions, indicating that lenders' willingness to renegotiate improved after TD9599.

We examine the effects of this plausibly exogenous change in the designation of publicly traded debt, which decreased the frictions lenders faced during renegotiation. We study the asymmetric effects of this change for split and non-split control loans in which banks' stakes in the contracts vary. In the subsections that follow, we explore: (1) the changes in measures of firms' performance post TD9599, for firms with **pre-existing** split and non-split control loans on their balance sheet; (2) the changes in contracting features of the **newly issued** loans for split and non-split control deals in the leveraged loan market before and after TD9599;

5.2 Impact on Loan Contracting

We begin our analysis by study how frictions in ex post renegotiation affect the ex ante design of credit contracts in leveraged loan market. To do so, we examine loan deals issued before and after the occurrence of the tax policy to identify the impact on the credit contracting of the policy-induced reduction in renegotiation costs.

5.2.1 Trend of Loan Contracting Features in Leveraged Loan Market

We begin our analysis by presenting a set of graphical illustrations of how the contracting features of deals vary over time in the leveraged loan market. In particular, we are interested

[29] See the official announcement of IRS.

[30] In May of 2013, OCC published the "Guidance on Leveraged Lending", the guidance facilitates banks to better prepare for their lending in the leveraged loan markets. The guidance complements TD9599 in banks' lending in the leveraged loan market.

in studying the changes that occur around the year that the tax policy is passed.

Figure 8 and Figure 9 present time-series plots of contract features in the leveraged loan market for split control loans and non-split control deals. Figure 8 presents the time trend of the average number of covenants in a deal and the average number of rounds of renegotiation after deal origination. We find that split control deals and non-split control deals exhibit virtually no differences in the number of covenants at loan origination before 2012. The difference in the number of covenants between split and non-split control deals was less than 0.1. Three years after TD9599 is passed, the number of covenants associated with split control deals increases dramatically from 0.2 to more than 1.1 in split control deals. In comparison, the number of covenants in non-split control deals increases from 0.2 to 0.5 over the same period. The difference between split and non-split control deals in the average number of covenants rose to 0.6 after TD9599. In terms of the average rounds of renegotiation, we find that before the activation of TD9599, both split control deals and non-split control deals experienced an average of 2.5 rounds of renegotiation. The difference in the number of rounds of renegotiation between split and non-split control deals was about 0.5 right after the TD9599 activation. Two years later, the average rounds of renegotiation rose sharply to 3.5 for split control deals, but remained at 2.5 for non-split control deals. Hence, split control deals experienced one additional round of renegotiation, on average, relative to non-split control deals after the activation of TD9599.

In Figure 9, we present the incidence of various types of covenants before and after the activation of TD9599, for split and non-split control deals. We find that before the tax policy change, the frequency of *Debt-to-Ebitda* covenant inclusion were similar for split and non-split control deals. That is, around 20% of both split and non-split control deals had at least one covenant restricting firms' Debt-to-Ebitda ratio. However, after the tax policy, 60% of the split control deals included a Debt-to-Ebitda covenant, while the proportion of non-split control deals with Debt-to-Ebitda covenant still remained at around 20%. Similar patterns of increased covenant inclusion for split control deals compared to non-split control deals appears for the *Fixed charge coverage ratio*, *Interest coverage ratio*, *Debt issuance*, and the *Other types of covenants*. [31]

5.2.2 Regression Analysis

An important insight of our theoretical framework is that the ability of creditors to extract rents during renegotiation is an alternative mechanism that can incentivize costly monitoring,

[31] "Other types of covenants" refers to all the other covenants that are not Debt-to-Ebitda, Interest coverage, Fixed charge coverage or Debt issuance. Some typical examples include extra collateral provision, restrictions on sales of assets, restrictions on changes in management team, etc.

in contrast to the conventional skin in the game channel which relies on credit retention by the monitoring creditor. We hypothesize that the passage of the tax policy reduces renegotiation frictions and enhances banks' ability to extract rents during renegotiation more for split control deals compared to non-split control deals. Consequently, the importance of the skin-in-the-game channel – the minimum share retained by banks – is attenuated. Further, we posit that an effective reduction in monitoring costs after the tax policy allows banks to contract split control deals with marginal firms.

This section investigates the impact of the tax policy on the contractual features of loan deals, especially those with split control arrangement, issued to leveraged borrowers. The objective of this exercise is to understand how characteristics of split control deals change after the tax policy. The regression specification is as follows:

$$\text{Contract feature}_{d,s,t} = \gamma_{s,t} + \beta \times \text{Split Control}_{d,t} \times \mathbb{1}[\text{Post}]_t + \beta_1 \times \text{Split Control}_{d,t} + \epsilon_{d,s,t} \tag{1}$$

The left-hand side variable is the feature of the deal, s indicates the two-digit industry of the borrower that issued the deal, t represents the year during which the deal was issued. On the right-hand side, the main explanatory variable is the dummy variable Split Control$_{d,t}$ which is equal to 1 if the deal d issued in year t is a split control deal. $\mathbb{1}[\text{Post}]_t$ is a dummy variable that equals to 1 if year t is after the passage of TD9599. We control for industry-year.

Covenant inclusion and tightness We begin by examining how frictions in ex post renegotiation affect the ex ante contractual design. Specifically, we study how the passage of the tax policy affects contractual features, covenant inclusion and tightness for split control and non-split control deals. Covenants give banks the ability to renegotiate or call loans when covenants are violated, enhancing the flexibility and efficiency of contracting (Rajan and Winton (1995)). As covenants enhance banks' monitoring incentives, we hypothesize that split control deals are more likely to feature covenants relative to non-split control deals after the tax policy.

Table 6 presents these results. We find that after the activation of TD9599, split control deals are 2.04 percentage points more likely to include at least some covenants relative to non-split control deals. This corresponds to an additional 0.1 standard deviations increase in covenant inclusion. Moreover, the average number of covenants in split control deals increases by an additional 0.42 standard deviations, which corresponds to additional 1.05 more rounds per deal for split control deals compared to non-split control deals after the tax policy.Split control deals are also 12.4 percentage points more likely to be renegotiated and amended at least once during the duration of the loan contract compared to non-split

control deals. This corresponds to an additional increase of 0.32 standard deviations for split control deals compared to non-split control deals. The average rounds of renegotiation increases by an additional 0.48 standard deviations, corresponding to 0.63 more rounds per deal compared to non-split control deals after the tax policy. These results are robust after adding deal features including logarithmic of loan amount and the maturity of the deal.

Our results indicate that the usage of covenants increases among split control deals on the extensive margin, after the tax policy. Next, we investigate the inclusion of specific types of covenants to better understand which covenants monitoring creditors rely more on for monitoring split control deals after a reduction in renegotiation costs. Table 7 presents these results. The outcome variables are *Debt-Ebitda*, *Int-Coverage*, *Fixed Charge Cov*, *Debt Issuance*, and *Other*. These variables are indicators which reflect whether there are covenants that restrict a firm's debt-to-ebitda, interest coverage, fixed charge coverage, debt issuance, or other measures, respectively. We find that after the tax policy, the inclusion of specific types of covenants increases more for split control deals relative to non-split control deals. Specifically, we find that,after the tax policy, the debt-to-ebitda ratio covenant is 20 percentage points (0.46 standard deviations) more likely to be included in split control deals compared with non-split control deals. The interest-coverage ratio covenant is 6.25 percentage points (0.13 standard deviations) more likely to be included in split control deals compared with non-split control deals after the tax policy. Te fixed charge coverage ratio covenant is 1.2 percentage points (or 0.025 standard deviations) more likely to be included in split control deals compared with non-split control deals after the tax policy. The debt-issuance covenant is 2.8 percentage points (or 0.061 standard deviations) more likely to be included in split control deals compared with non-split control deals after the tax policy. And, other types of covenants are 8.5 percentage points (or 0.19 standard deviations) more likely to be included in split control deals compared with non-split control deals after the tax policy.

We further investigate how the usage of these covenants on the intensive margin is affected by the passage of the tax policy. Covenant tightening can reflect greater proclivity to renegotiate. Table 8 presents the relation between covenant tightness and split control deals, before and after the tax policy for debt-to-ebitda, interest coverage, and fixed charge covenants. We find that prior to the tax policy, split control deals do not exhibit any statistically distinguishable difference in covenant tightness relative to non-split control deals before the tax policy for these covenants. However, after the tax policy, split control deals experienced a tightening of their debt-to-ebitda, interest coverage, and fixed charge covenants. Specifically, we find that split control deals after the tax policy require firms to maintain 0.083 higher debt-to-ebitda ratios. Compared to the average debt-to-ebtida ratio of 4.4 in

leveraged loan contracts, this corresponds to an 18% tightening in the ratio. Split control deals require firms to maintain 0.230 higher interest coverage ratios (8.5% tightening), and 0.067 higher fixed charge coverage ratios (2.5% tightening) compared to non-split control deals, after the tax policy. These findings demonstrate that banks actively increased their monitoring intensity for split control deals relative to non-split control deals. The results are consistent with previous works studying corporate cash holding and liquidity coverage and firms' performance (Ding et al. (2021), Fresard (2010)).

Overall, the results indicate that after the tax policy, banks are more likely to monitor split control borrowers through the inclusion of tighter covenants. This mechanism provides an explanation behind the ex post outcomes observed in Section 5.3.

Fees Credit contracts in corporate lending often involve the payment of fees. This section examines how the tax policy affects the presence and size of various types of fees in loan deals issued to leveraged borrowers. We consider upfront fees, commitment fees, and annual fees. An upfront fee is a one-time fee which is collected at the closing of the deal. A commitment fee is charged on the unused portion of credit. An annual fee is an annual charge against the entire commitment amount.

We hypothesize that when renegotiation costs are high, banks demand higher compensation ex ante in the form of fees. Conversely, when renegotiation costs are lower, banks' have greater ability to extract rents during the renegotiation process. As a result, we conjecture that fees are reduced. In addition, we expect to see a larger impact of the tax policy on deals that rely more on rent extraction-based renegotiation for the provision of monitoring incentive – if the tax policy indeed has an impact on the renegotiation friction.

Table 9 reports the results of this analysis. We use a within industry-year estimator across all columns. The outcome variable is the upfront fee in column 1, commitment fee in column 2, and annual fee in column 3. Consistent with our hypothesis, we find that on average, split control deals report higher fees when renegotiation costs are higher; the point estimates associated with Split Control are positive, economically meaningful across all columns, and statistically significant for upfront fees. However, when renegotiation fees are reduced, fees are reduced. The tax policy reduces the upfront fee across all deals, on average, by 14 bps or 0.12 standard deviations. This figure is 3 bps or 0.11 standard deviations for the commitment fee and 5 bps or 0.12 standard deviations for the annual fee. However, the reduction in fees is heterogeneous for split control and non-split control deals. We find that split control deals after the tax policy report additional declines by 79 bps in the upfront fee, 7 bps in the commitment fee and 32 bps in the annual fee. These results are statistically significant and economically large for the upfront and commitment fees – 79 bps constitutes

0.64 standard deviations in the upfront fee and 7 bps constitutes 0.28 standard deviations in the commitment fee. The reduction in the annual fee is economically large – 32 bps constitutes 0.76 standard deviations but lacks statistical power.[32]

Loan purpose and deal sponsorship A large body of work has demonstrated how buyouts and private equity sponsorship can reduce agency costs and increase firm value through managerial discipline and changes in corporate governance (e.g., Jensen and Meckling (1976); Jensen (1986); Lehn and Poulsen (1989); Kaplan (1989); Smith (1990); Innes (1990); Muscarella and Vetsuypens (1990); Cotter and Peck (2001); Badoer et al. (2021)). Based on these insights, we regard deals that are sponsored by private equity or used for buyouts as associated with less severe agency problems.

Banks' incentives to monitor borrowers increases after the tax policy as the frictions in ex post renegotiation are reduced. Hence, we conjecture that the tax policy allows banks to contract split control deals with marginal firms – firms that are subject to greater agency frictions and for whom efficient monitoring is more needed and valuable. In the context of loan purpose and deal sponsorship, the marginal firms are likely to be those who are associated with deals not privately sponsored or used for buyouts. In particular, we hypothesize that split control deals after the tax policy are less likely to involve private equity sponsors, fund buyouts, or use unitranche financing – as a result of the enhanced monitoring incentive of bank lenders. Table 10 presents the findings. We use a within industry-year estimator across all columns. The outcome variable is an indicator for whether a deal lacks a private equity sponsor in column 1, an indicator for whether a deal is used towards a buyout in column 2, and an indicator for whether a deal uses unitranche financing in column 3.

We find that when renegotiation costs are higher, split control deals are more likely to feature a private equity sponsor, be used for buyout activity and use unitranche financing, as indicated by the point estimates associated with Split Control. Specifically, we find that split control deals are 29 percentage points or 0.59 standard deviations less likely to not have a sponsor, 27 percentage points or 0.87 standard deviations more likely used towards buyout activity, and 0.56 percentage points or 0.067 standard deviations more likely to use unitranche financing. These estimates are economically meaningful and statistically significant at the 1% level. However, a reduction in renegotiation costs is associated with an overall increase in the likelihood that a deal does not have a sponsor, a decrease in the likelihood that a deal is used towards buyout activity, and a decrease in the likelihood that a deal uses unitranche financing, as indicated by the point estimates associated with the Post variable. We find that the tax policy is associated with an overall increase in the likelihood that a deal does

[32]Note: Annual fees are reported for fewer than 10% of deals that report upfront fees.

not have a sponsor by 0.82 percentage points or 0.02 standard deviations; a decrease in the likelihood that a deal is used towards a buyout by 0.96 percentage points or 0.03 standard deviations; and a decrease in the likelihood of that a deal uses unitranche financing by 0.15 percentage points or 0.02 standard deviations. These changes are heterogeneous for split control and non-split control deals. We find that the likelihood that a deal does not have a sponsor after the tax policy is higher by an additional 12.12 percentage points or 0.25 standard deviations. The likelihood that a split control deal is used towards a buyout after the tax policy is lower by an additional 22.42 percentage points or 0.71 standard deviations. The likelihood that a split control deal uses unitranche financing after the tax policy is lower by 3.24 percentage points or 0.38 standard deviations. These estimates are economically meaningful and statistically significant at the 1% level. Thus, consistent with our hypothesis, the tax policy allows banks to contract split control deals with marginal firms.

Boundary of the leveraged loan market In addition to the nature of loan deals, we also examine borrower characteristics as another determinant of the agency frictions.

In particular, we hypothesize that a reduction in renegotiation friction allows banks to contract split control deals with more speculative firms that are subject to greater agency frictions. In line with this hypothesis, we examine whether the likelihood that a speculative borrower obtains funding through the split control deal increases after the tax policy. A borrower is deemed as speculative if it reports a Moody's credit rating of B3 or lower.

Table 11 presents the results from this analysis. We do not report any fixed effects in column 1. We sequentially add year and industry-year fixed effects in columns 2 and 3, respectively. When renegotiation costs are higher, split control deals are less likely to feature speculative borrowers as indicated by the Split Control point estimates. However, after the tax policy, the likelihood that a speculative borrower receives a credit deal is higher by up to 0.23 percentage points or 0.01 standard deviations. These effects are heterogeneous between split and non-split borrowers. We find that the likelihood that a speculative borrower receives a credit deal is higher by an additional 8.08 to 9.37 percentage points for split control deals relative to non-split control deals, after the tax policy. This constitutes an additional increase of 0.37 to 0.42 standard deviations. These point estimates are economically meaningful, stable, and statistically significant at the 1% level across all specifications.

Usage of revolving credit In our theoretical analysis on the relationship between renegotiation and monitoring, we posit that the usage of revolving credit can better commit the monitoring creditor to conduct monitoring as compared to term loans. This is because the use of revolving credit gives the monitoring creditor more bargaining power. That is, in

renegotiation, the monitoring creditor can credibly threaten to revoke the borrower's access to any undrawn credit in the line.

Our theoretical model demonstrates that when the renegotiation friction is high, monitoring creditors rely more on revolving credit in split control deals than in non-split control ones, which is consistent with notion that the revolving credit plays a valuable role in providing incentive to monitor when such provision is lacking due to a lowered shared held by monitoring creditors. A key prediction of our model is that the minimum share held by the monitoring lender decreases when renegotiation frictions are reduced. This is because reductions in renegotiation frictions enhances banks' ability to extract rents during renegotiation. Hence, banks are less reliant on the skin-in-the-game mechanism to incentivize monitoring. We empirically test this conjecture.

Following this logic, we conjecture that the revolving credit facility plays a smaller role in the provision of monitoring incentives after the tax policy is implemented, which reduces renegotiation frictions and effective monitoring costs overall. Table 12 reports the results. The dependent variable is the revolving credit share of a deal. We do not report any fixed effects in column 1. We sequentially add year and industry-year fixed effects in columns 2 and 3, respectively. We find that overall, new deals exhibit a smaller revolving share after the tax policy. Specifically, the tax policy reduces the revolving share by 0.08 to 0.11 standard deviations. These estimates are stable, economically meaningful, and statistically significant at the 5% level. However, the magnitudes are substantially larger for split control deals. We find that split control deals after the tax policy experience additional declines in the revolving credit share by 0.12 to 0.18 standard deviations. Hence, the empirical results are consistent with the theoretical predictions of Section 2.

5.3 Impact on (Existing) Loan Outcomes

To supplement our analysis in Section 5.2 on how renegotiation friction affects the ex-ante contracting, in this section we examine how the ex-post performances of existing loan deals are affected by the passage of the tax policy. Such impact on ex-post loan outcomes, which we relate to creditors' monitoring effort, could lend further support to the underlying channel we proposed in Section 2.

In our ideal thought experiment, we compare two borrowers – one that has split control debt contracts to one that does not – before and after the tax policy. We posit that once renegotiation frictions are reduced, firms with pre-existing split control deals by the timing of TD9599 outperform firms without split control deals. We refer to firms with pre-existing split control deals by the timing of TD9599 as *split control borrowers* and firms without

pre-existing split control deals by the timing of TD9599 as *non-split control borrowers*. To this end, we run the following regression specification, comparing how firms with pre-existing split control deals before the tax policy perform after the passage of the policy, relative to firms without pre-existing split control contracts.

$$\text{Perf}_{i,s,t} = \mu_i + \gamma_{s,t} + \beta \times \mathbb{1}[\text{Split control}]_i \times \text{Post}_t + \epsilon_{i,s,t} \quad (2)$$

The main explanatory variable is Split control$_i$, which is an indicator variable that equals to 1 if firm i contracted a split control deal before 2013, which was the year TD9599 activated. Split control$_i \times$ Post$_t$ is the interaction between whether firm i has split control deals on its balance sheet and whether year t is post the TD9599. Firm fixed effects are added to control for time-invariant or slow-moving firm characteristics that might potentially affect firm performances. Industry×Year fixed effects are included to capture the time-varying industrial factors that might affect firms' performance metrics. The main left-hand side variable, *Perf*, denotes various measures of firms' performance. These outcome variables include the return on assets, probability of default within one year, probability of default within three years, and probability of default within five years based on the methodology in Merton Distance-to-Default and estimated using the historical observations on the firms' market capitalization, equity volatility, long-term debt and current liabilities. The "Distance-to-Default" is measured as the difference between the asset value of the firm and the face value of its debt, scaled by the standard deviation of firm's asset value (Merton (1974)).

We present our findings in Table 13. specifically, in column (1), we find that split control firms experienced an additional increase of 0.0519 standard deviations in their ROA after the tax policy compared with non-split control firms, corresponding to about 7.3% higher improvement in their ROA.[33] For one-year default probabilities, split control firms experienced an additional decrease of 0.0517 standard deviations in their one-year default probabilities, which corresponds to an additional 1.2% decrease in their one-year default probabilities compared with non-split control firms. The additional decrease in 3-year default probabilities and 5-year default probabilities are of similar magnitudes.

In terms of strength of firms' balance sheet, we find that post TD95999, firms with split control deals on their balance sheet experienced an additional 12% (0.1146 standard deviations) decrease in their debt-to-ebitda ratio, 9.3% (0.0199 standard deviations) increase in their retained earning scaled by total assets, a 72% (0.1532 standard deviation) decrease in their net debt issuance, and 7.1% (0.0684 standard deviation) increase in their sales scaled

[33]The calculation is as follows: 0.0519× 0.0534 (standard deviation of ROA before the tax event) and divided by 0.038 (mean of ROA before tax event). The report on other magnitudes follows the same method.

by total assets compared with other firms. These results are reported in Table 14.

Thus, our analysis lends support to our model and demonstrates that reductions in renegotiation costs affect split control borrowers more than non-split control borrowers. Further, this asymmetric impact of the tax policy on the performance of existing borrowers also sheds light on an important question our analysis seeks to address. That is, whether the fast growing participation of institutional investors in the leveraged loan market implies inefficient monitoring and hence suboptimal loan outcomes in this market. We defer detailed discussion on this issue and related policy implications in Section 5.4.

5.4 Discussion and Policy Implications

The dramatic increase in institutional investors' participation in the risky segment of corporate lending, that requires intensive monitoring, raises some questions regarding the outcomes in related credit markets. In particular, we ask ourselves whether the resulting lower stake held by the bank lenders necessarily leads to insufficient monitoring and hence suboptimal loan outcomes. If so, how can regulatory and fiscal policy be adjusted to minimize the inefficiencies associated with the rising participation of institutional investors? While we do not aim to provide definitive normative answers to these questions, the findings we present above in this section have some important policy implications regarding this issue.

To begin with, our findings that the tax policy leads to a larger improvement in performance for split control borrowers suggests that the level of monitoring prior to the policy enactment was potentially insufficient.

Put differently, had creditors' sufficiently monitored borrowers, guaranteeing that they behave properly, we would expect to see little effect on the real loan outcomes following changes in the renegotiation frictions.[34] Based on this finding, the concern that inflow of non-monitoring institutional investors – giving rise to the growing presence of split control loan deals – may lead to insufficient monitoring in the leveraged loan market is not implausible.

From a policy standpoint, our findings suggest that renegotiation frictions should be reduced in order to maintain sufficient incentives for monitoring creditors to conduct costly monitoring with small stakes. Consistent with the implications from the theoretical model, our empirical analysis studying the impact of this tax policy on the leveraged loan market also generates insights on policymaking for other credit markets that involve non-trivial participation from creditors who have limited capabilities for monitoring.

[34]The logic here is similar to that in Paravisini (2008) which makes the claim that borrowers' underinvestment is due to financial constraints. This is based on the finding that exogenous shocks to the credit supply side lead to an increase in borrowing and investment.

Finally, though not formally studied in this paper, our findings on the contractual impact of the tax policy also generate implications that extend beyond the leveraged loan market. For instance, our findings that bank lenders' usage of revolving credit decreases after the tax policy – particularly for split control deals – indicate that with the increasing participation of non-monitoring institutional investors, bank lenders may rely heavily on the usage of revolving credit to commit themselves to monitor, unless the renegotiation friction is sufficiently low. This, in turn, may increase the banking sector's vulernabilities to demand-side driven liquidity shocks or could potentially squeeze the banking sector's supply of credit lines to borrowers who rely on them for liquidity insurance purposes.

6 Conclusion

The increasing participation of institutional investors in the risky segment of corporate lending, that requires effective creditor monitoring, poses a challenge to the conventional wisdom that banks' retention of a sufficiently large stake in their originations is key to the provision of adequate monitoring incentives. In this paper, we propose a new mechanism that rationalizes this *monitoring with small stakes* puzzle and provide empirical evidence to support and identify this mechanism.

A creditor is incentivized to incur monitoring costs and conduct monitoring activities either because she may lose from not monitoring, or, because she may expect that her monitoring efforts will pay off. Based on this simple intuition, we develop a novel framework that highlights two sources of incentive provision for banks to monitor – a skin in the game-based mechanism that relies on banks' retention of loans, and a rent extraction-based mechanism that hinges on banks' payoff from renegotiations triggered by their monitoring activities.

We apply this framework to help us understand the contractual and real outcomes in the leveraged loan market, which features high participation of institutional investors. Our empirical study compares characteristics of loan deals in this particular segment of the credit market and reveals that the split control arrangement of credit contracts is more likely to be applied to borrowers who are less prone to agency frictions or in situations where creditors have stronger bargaining positions. In other words, having the monitoring creditor hold a smaller stake is less costly when monitoring is less essential or if there is an alternative source that effectively provides incentives for monitoring.

To empirically identify the key mechanism in our theoretical framework, we utilize the activation of TD9599 tax credit as a natural experiment to conduct an event-based analysis. We exploit the plausibly exogenous variation in the net payoff to creditors from renegotiation generated by TD9599. Our findings suggest that a less frictional renegotiation environment

improves creditors' incentives to monitor and facilitates the participation of non-monitoring institutional investors in the leveraged loan market. More directly related to the key channel in the theoretical framework, our empirical findings reveal an asymmetric policy impact on both real and contracting outcomes for split control versus non-split control credit deals. In particular, the passage of the tax policy leads to a greater improvement in the performance for borrowers with existing split control deals on their balance sheet before the tax policy, relative to borrowers without existing split control deals on their balance sheet. The tax policy significantly affects the contractual features of new split control deals issued in the leveraged loan market, relative to non-split control deals.

In sum, our analysis in this paper provides an answer to the widely debated concern of whether traditional bank-monitored corporate lending has become more arm's length and less effective in monitoring leveraged borrowers as the participation of institutional investors has increased. The novel mechanism proposed and empirically tested in our analysis helps rationalize the *monitoring with small stakes* puzzle in the leveraged loan market. The insights from this study may be applicable to other credit markets which face similar changes in the composition of lenders.

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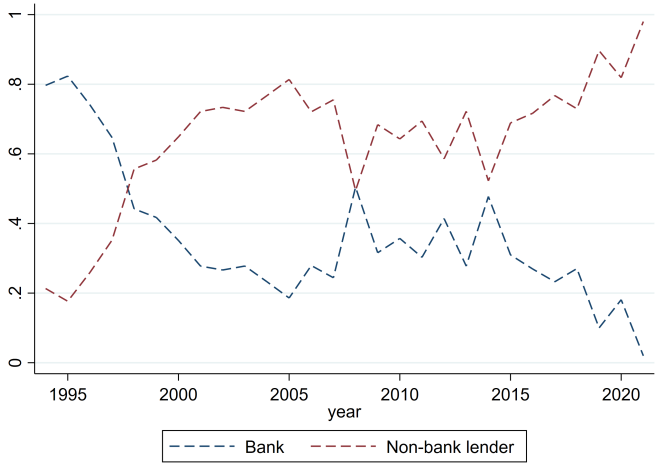
7 Figures and Tables

Figure 2. Aggregate Trend of the Leveraged Loan Market

This figures below show the aggregate trend of the leveraged loan market. The first figure (top central) plots the time trend of bank lender and non-bank lenders' dollar share in the leveraged syndicated loan market. The red dashed line shows the proportion of aggregate loan amount lent by non-bank lenders, the blue dashed line shows the proportion of aggregate loan amount lent by bank lenders. Non-bank lenders mainly include mutual funds, pension funds, investment bank, hedge funds, and other types of institutional investors. The second figure (bottom left) shows the proportion of total dollar amount of deals with institutional lenders participation over time. The third figure (bottom right) shows the proportion of total dollar amount of deals that are split control deals over time.



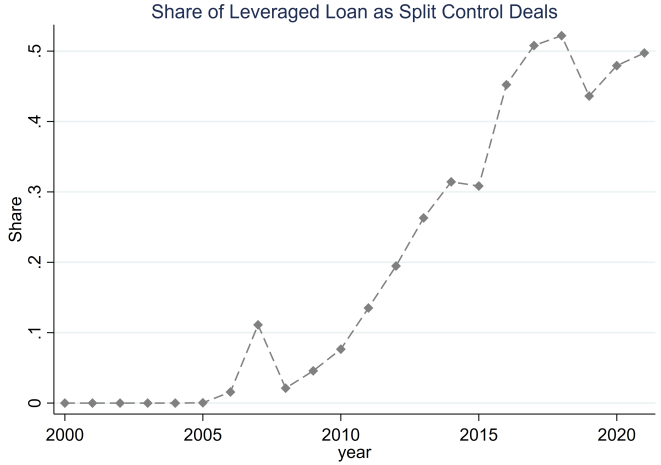


Figure 3. Rating Distribution by Split Control

This figure presents the ratings distribution for split control and non-split control loans. The x-axis reports the Moody's Senior Debt Rating. The y-axis presents the percent of loans that fall within the rating category designated in the x-axis. Loan ratings of "WR" are dropped in this comparison. Split control deals are represented by the red bars. Non-split control deals are represented by the blue bars.

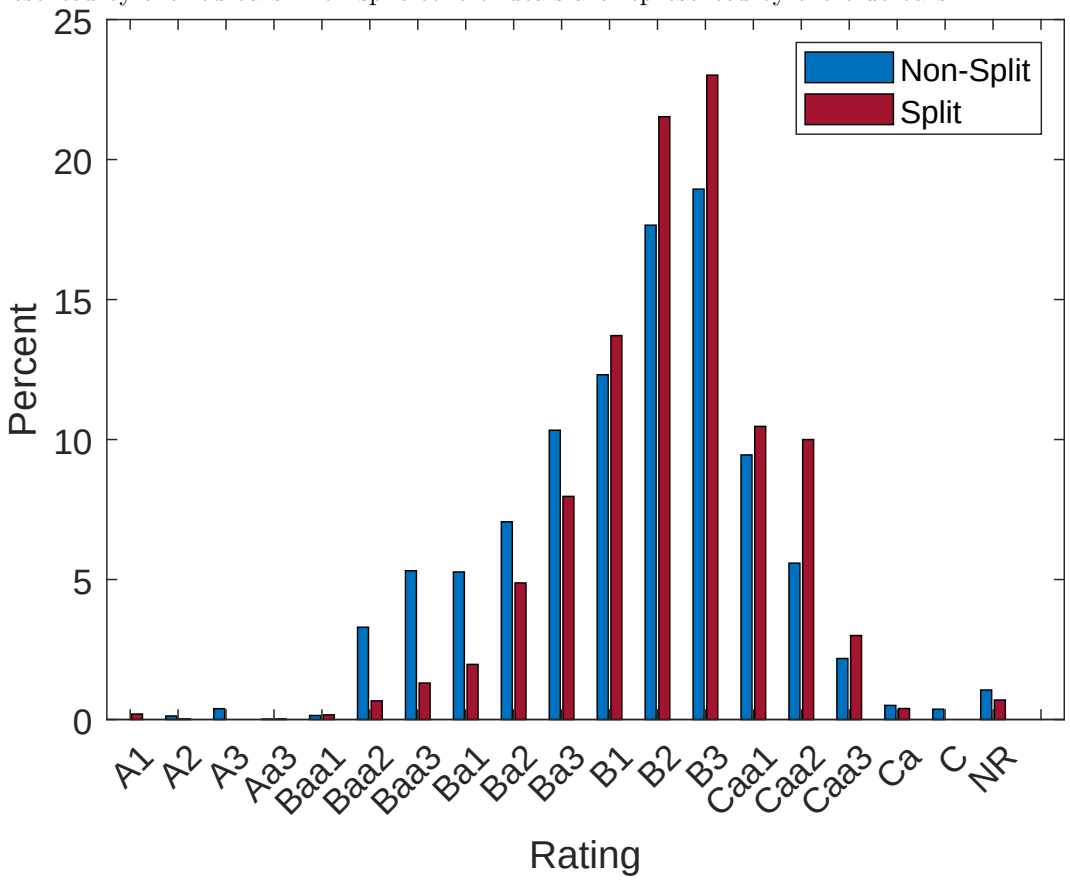
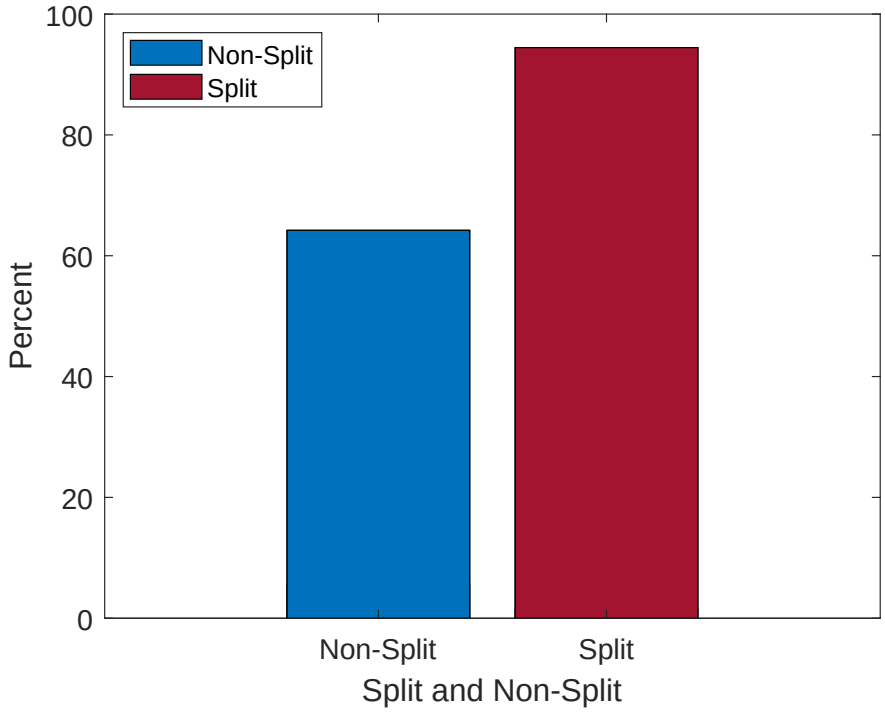
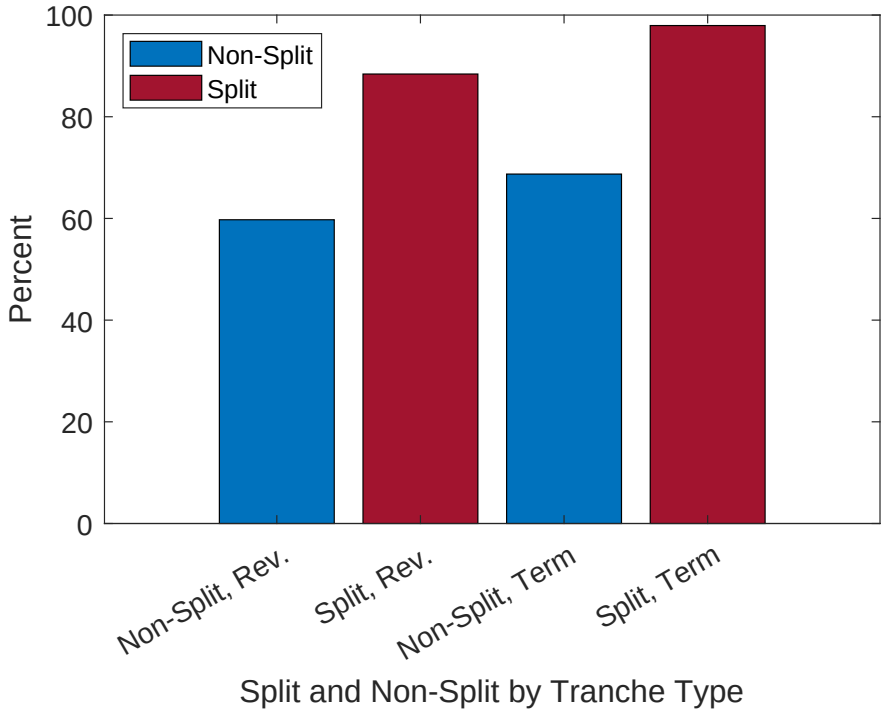


Figure 4. Secured Lending by Split Control

This figure presents the percent of secured loans for split control and non-split control loans. Figure 5(a) compares the percent of secured loans for split control loans (red) and non-split control loans (blue). Figure 5(b) compares the percent of secured loans for revolving and term loans for split control and non-split control loans. Over 64% of non-split control loans are secured; over 94% of split control loans are secured. Over 59% of non-split control revolving loans are secured; over 88% of split control revolving loans are secured; over 68% of non-split term loans are secured; over 97% of split control term loans are secured.



(a) Percent of Secured Loans



(b) Percent of Secured Loans by Tranche

Figure 5. Revolver Share by Split Control

This figure presents the percent of loans that are revolving loans for split control loans (red) and non-split control loans (blue). The revolving loan share is over 44% for non-split control loans and over 21% for split control loans.

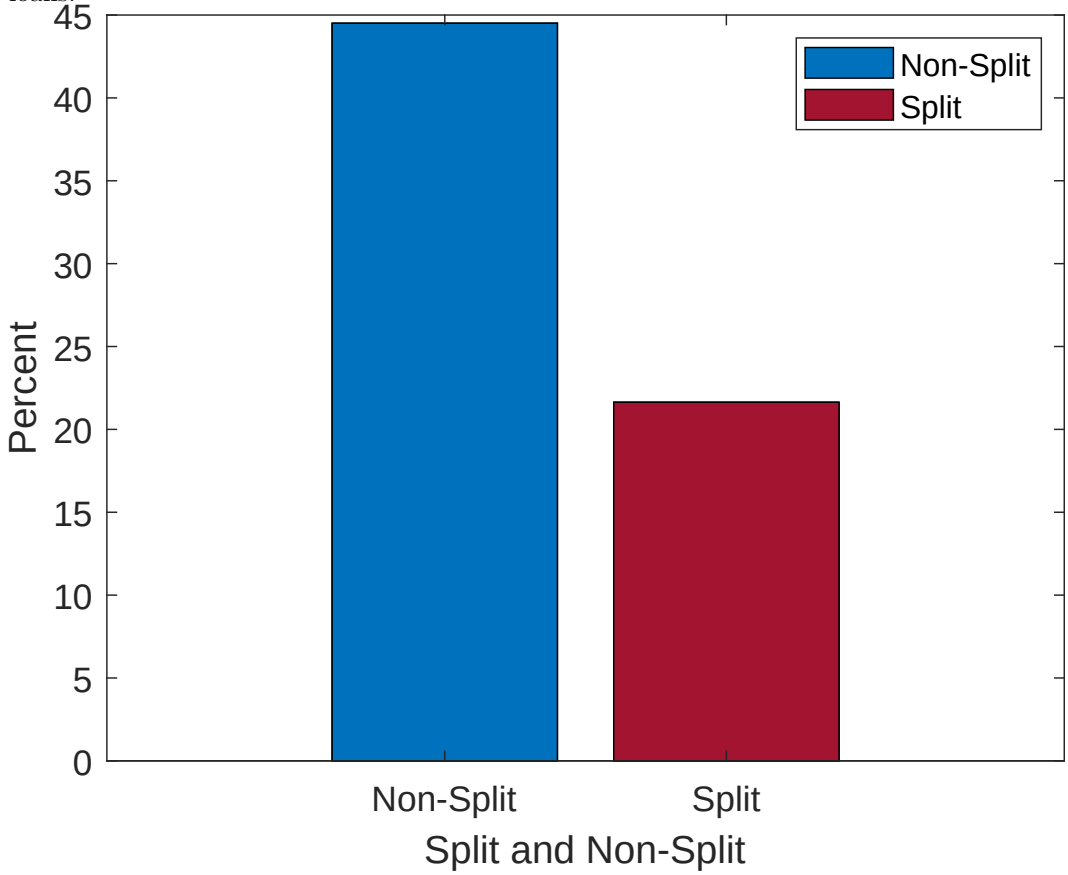


Figure 6. Percent of Sponsored Loans

This figure presents the percent of loans that are sponsored for split control loans (red) and non-split control loans (blue). The percent of sponsored loans is over 44% for non-split control loans and over 78% for split control loans.

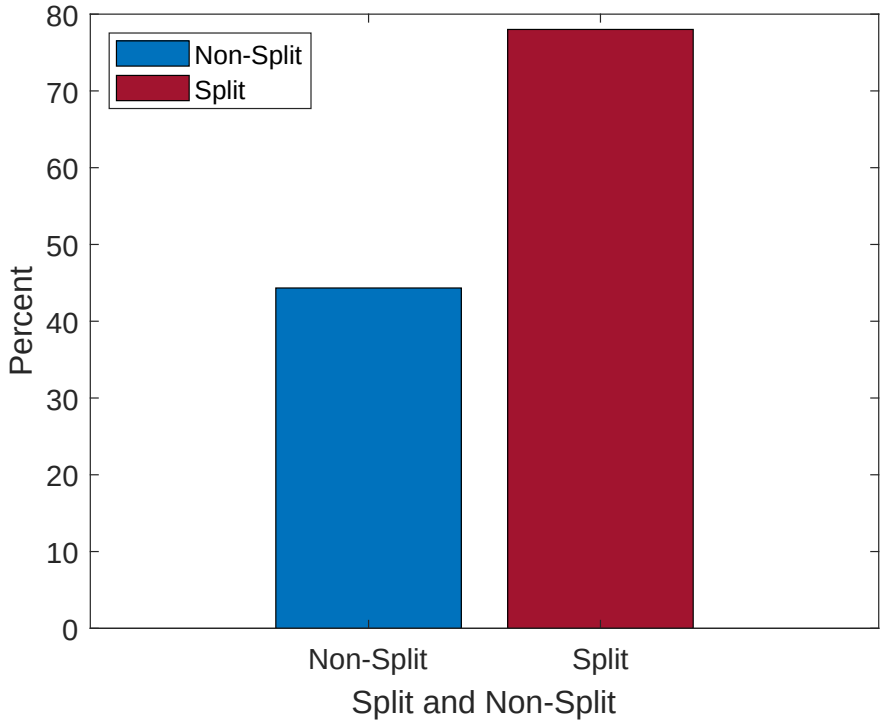


Figure 7. Industry Distribution by Split Control Deals

This figure presents the industry distribution for split control and non-split control loans. The x-axis reports the industry. The y-axis presents the percent of loans that fall within the rating category designated in the x-axis. Split control deals are represented by the red bars. Non-split control deals are represented by the blue bars.

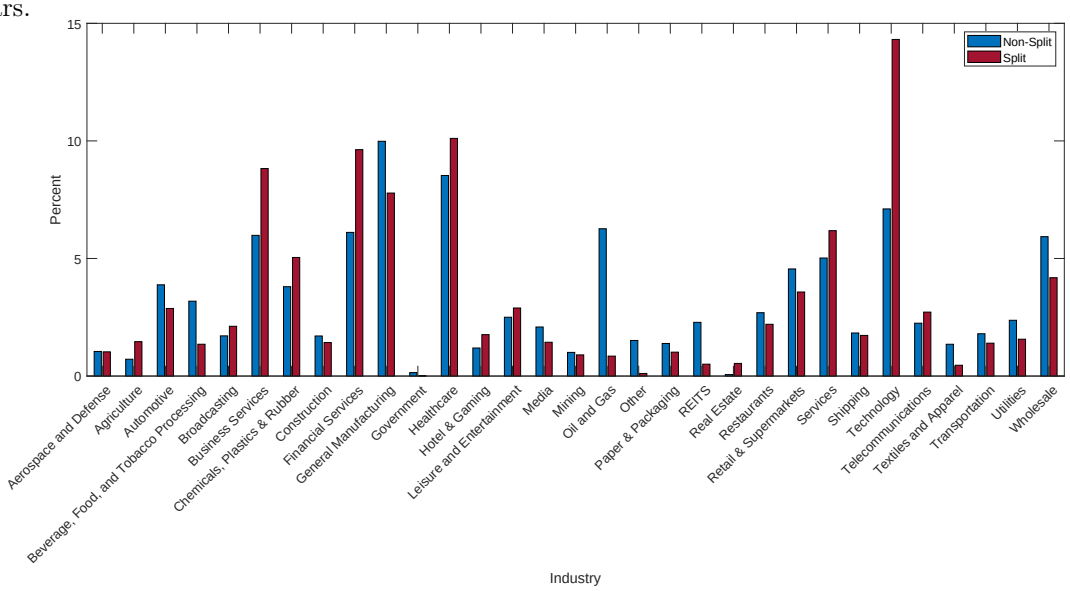


Figure 8. Aggregate Trend in Contract Features in Leveraged Loan Market

The two figures below shows the aggregate trend of contracting features of deals in leveraged loan market for split control deals and non-split control deals. The left panel shows the average number of covenants per deal for split and non-split control deals from 2005-2018. The right panel shows the average rounds of renegotiation for split and non-split control deals. Details on construction is provided in Section 3.

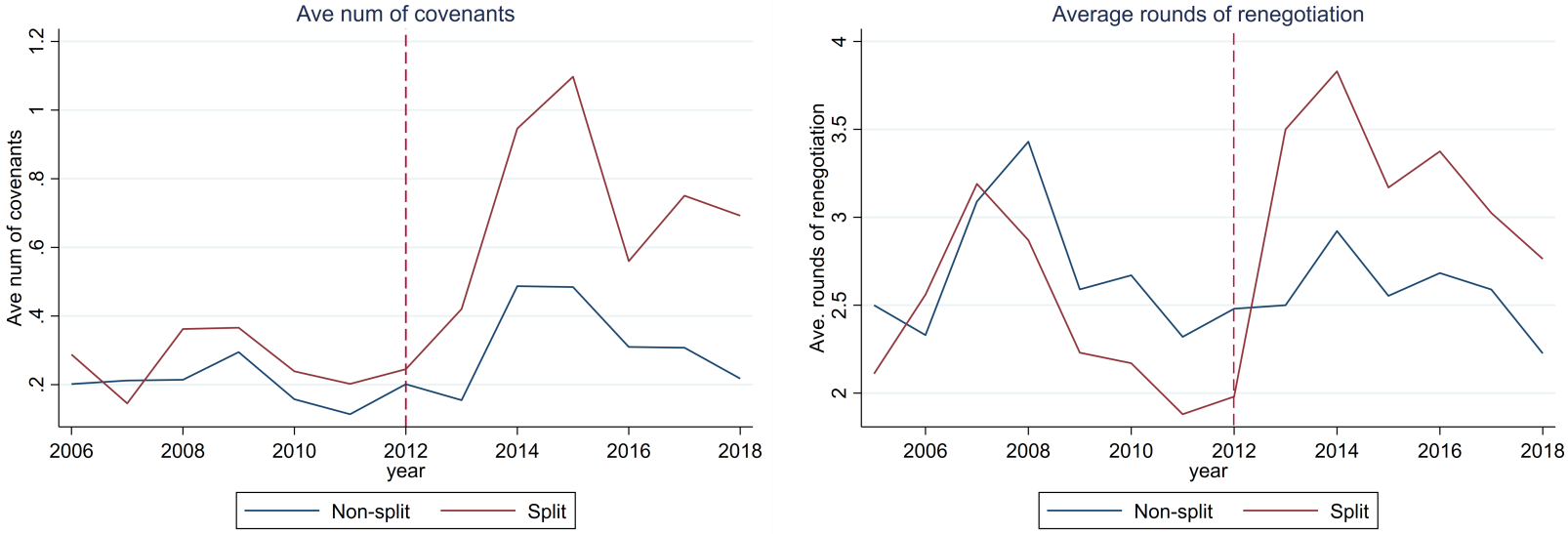


Figure 9. Aggregate Trend in Contract Features: by Covenant Categories

The figures below show the aggregate trend of covenant inclusion of leveraged loan market for split control and non-split control deals. The y-axis of each figure represents the share of split-control deals or share of non-split control deals with certain specific type of financial covenant in loan contracts over time. Details on variable definition and construction are provided in Section 3.

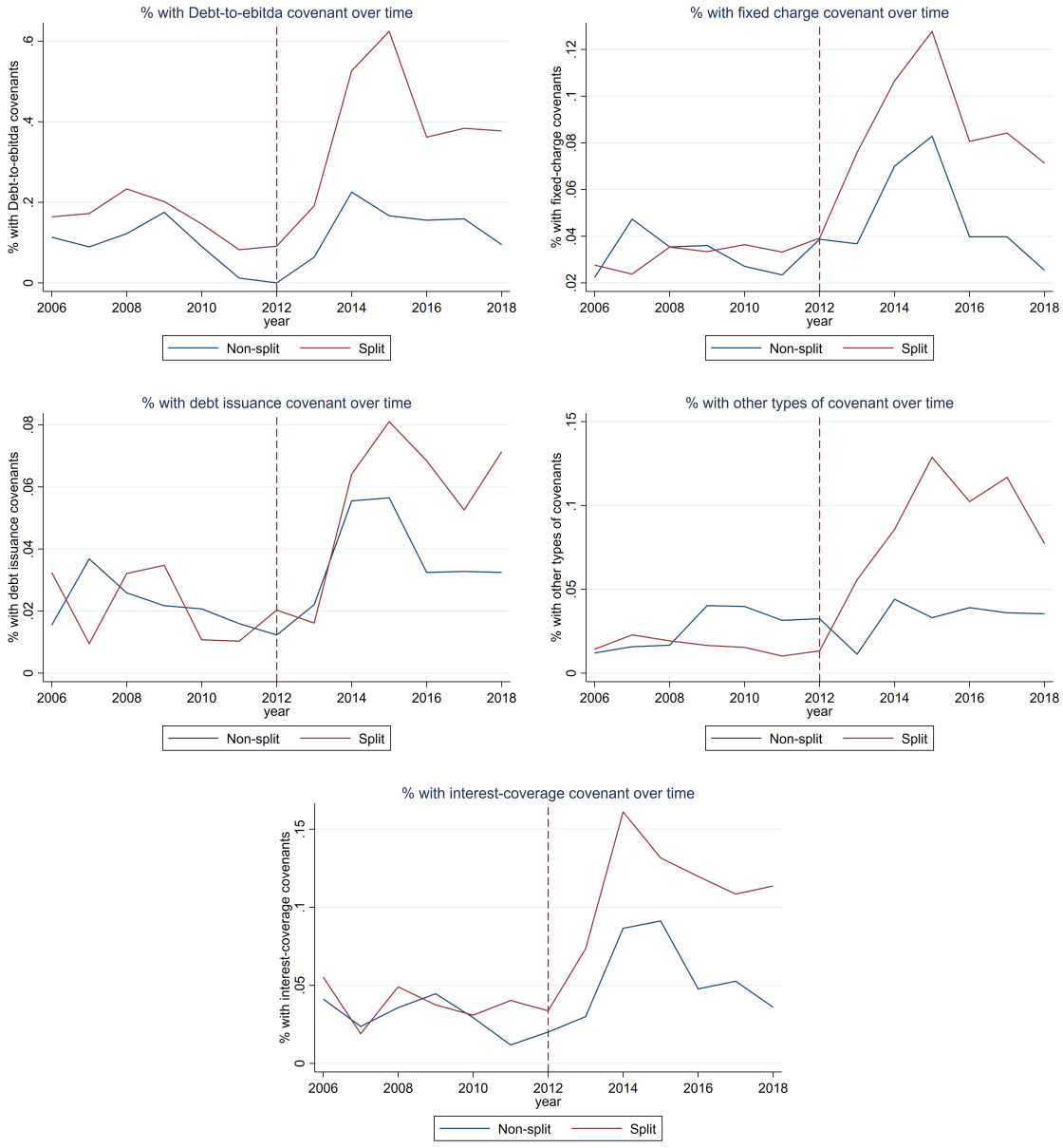


Figure 10. Differential Responses of Contract Features by Split and Non-split Control around Tax Policy Change

The figures below show the estimated coefficients capturing differential responses of contract features in split control and non-split control deals around the time window of the tax policy change. The regression equation is as follows:

$$\text{contract feature}_{d,s,t} = \gamma_s + \eta_t + \mu \times 1[\text{Split}]_{d,t} + \sum_{j \in [2009,2015]}^{j \neq 2012} \beta_j 1[\text{Split}]_{d,s,t} \times 1[\text{t=j}] \times + \pi X + \epsilon_{d,s,t}$$

Coefficients β_j's are plotted. Control variables include logarithmic of loan amount and loan maturity. Details on variable definition and construction are provided in Section 3.

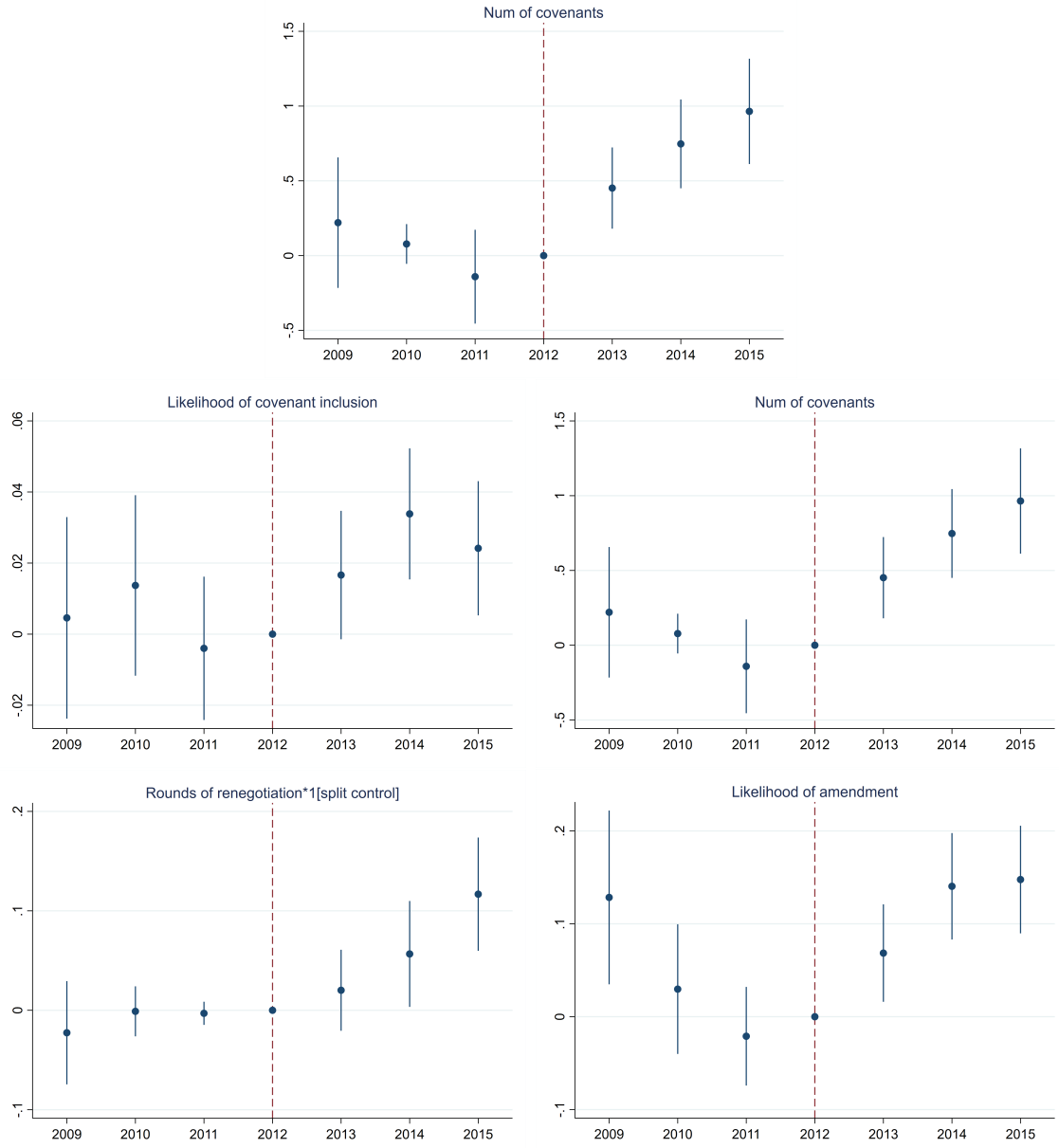


Table 1. Deal Characteristics by Split Control and Non-Split Control

Panel A: Non-split Control	Mean	SD.	P25	Median	P75
Bank share	0.7121	0.2500	0.1583	0.5233	0.9500
Avg lead share	0.3533	0.2945	0.1400	0.2667	0.5000
No. of lead	2.4500	1.9333	1.0000	2.0000	3.0000
No. of lender	4.7455	5.3333	2.0000	3.0000	6.0000
Secured	0.6333	0.4867	0.0000	1.0000	1.0000
Maturity	1596.1000	624.6100	1096.0000	1826.0000	1827.0000
Amount	179.0100	424.0600	25.0000	65.0000	175.0000
Spread	347.1775	164.1992	225.0000	300.0000	425.0000
Panel B: Split-control	Mean	SD.	P25	Median	P75
Bank share	0.2252	0.4821	0.0000	0.1667	0.7500
Avg lead share	0.1921	0.1995	0.0831	0.1335	0.2025
No. of lead	3.7221	3.0909	1.0000	3.0000	5.0000
No. of lender	5.2000	4.3000	2.0000	4.0000	7.0000
Secured	0.9645	0.1925	1.0000	1.0000	1.0000
Maturity (Days)	2132.6453	529.9552	1826.0000	2192.0000	2557.0000
Amount	621.9999	806.3333	184.5000	365.5000	733.0500
Spread	406.667	173.6667	300.0000	375.0000	475.0000

The table above compares deal characteristics for split control and non-split control deals. Panel A presents deal characteristics for non-split control deals. Panel B presents firm characteristics for split control deals. Column 1 indicates various deal characteristics including bank share, average lead share, number of lead banks, number of lenders, probability of whether the deal is secured, maturity, amount, and spread. Columns 2 through 7 indicate the sample mean, 25^{th} percentile, median, 75^{th} percentile, mean, and standard deviation values.

Table 2. Firm Characteristics by Split Control Borrowers

Panel A: Non-Split Control Borrowers						
	N	P25	Median	P75	Mean	SD
Age	3,372	2.0000	6.0000	9.0000	5.9772	5.3819
Size	4,454	6.0574	7.0234	7.9811	7.0370	1.4940
Net PP&E	4,343	3.9719	5.3607	6.7624	5.2978	2.0857
CapEx	4,154	1.7084	3.0118	4.3365	2.9668	2.0626
Gross PP&E	2,749	5.0826	6.3251	7.5169	6.2004	1.9418
R&D	1,548	0.0000	0.6801	2.4376	1.3109	1.5074
Acquisitions	4,254	0.0000	0.0000	3.0263	1.4694	2.2107
Leverage	4,123	0.2421	0.4080	0.5710	0.4230	0.2644
Debt/EBITDA	3,973	4.7283	13.1782	22.1932	15.3047	31.3498
Liquidity	4,202	0.0153	0.0464	0.1243	0.0965	0.1342
Profitability	3,984	0.0153	0.0280	0.0426	0.0274	0.0386
Sales	4,618	4.1887	5.1600	6.1699	5.1671	1.5175
Collateral	4,078	0.4173	0.6894	0.8785	0.6353	0.2722
Employment	3,246	-0.4943	0.7075	1.7228	0.4944	1.8826
Panel B: Split Control Borrowers						
	N	P25	Median	P75	Mean	SD
Age	386	4.0000	9.0000	14.0000	9.2383	6.6058
Size	486	7.5087	8.2313	9.0564	8.2604	1.1001
Net PP&E	510	5.0042	6.0227	7.2520	6.0895	1.6838
CapEx	481	2.6343	3.6533	4.5850	3.6105	1.5321
Gross PP&E	331	5.7388	6.8057	8.0703	6.8480	1.7074
R&D	212	0.0000	2.6444	3.5660	2.3870	1.7704
Acquisitions	460	0.0000	0.4038	4.5842	2.2587	2.6414
Leverage	470	0.3802	0.4897	0.6134	0.5065	0.2099
Debt/EBITDA	467	12.2333	17.6896	24.0382	18.8334	27.1313
Liquidity	480	0.0299	0.0734	0.1369	0.1017	0.1052
Profitability	484	0.0208	0.0287	0.0383	0.0302	0.0198
Sales	503	5.4894	6.1920	7.0324	6.2538	1.0852
Collateral	463	0.3004	0.4684	0.6891	0.4927	0.2356
Employment	383	1.0296	1.8083	2.7081	1.8311	1.2567

The table compares firm characteristics at the time a deal becomes active for split control and non-split control borrowers. Panel A presents firm characteristics for non-split control borrowers. Panel B presents firm characteristics for split control borrowers. Column 1 indicates various firm characteristics including firm, age, size, net PP&E, capital expenditure, gross PP&E, R&D. acquisitions, leverage, debt/EBITDA, liquidity, profitability, sales, collateral, and employment. Columns 2 through 7 indicate the number of observations, 25^{th} percentile, median, 75^{th} percentile, mean, and standard deviation values.

Table 3. Loan Purpose Distribution by Split Control

Loan Purpose	Non-Split (%)	Split (%)
General Purpose	53.4147	52.9621
Leveraged Buyout	10.8831	12.4895
Sponsored Buyout	1.8593	10.4759
Takeover	5.2318	8.2680
Acquisition	11.2265	5.0178
Dividend Recapitalization	4.1783	4.9466
General Purpose/Refinance	1.9687	2.8941
Merger	0.3212	1.1201
Spinoff	0.4236	0.6475
Exit financing	0.6798	0.2007
Dividend or Distribution to Shareholders	0.2187	0.2007
Recapitalization	0.5732	0.1813
Working capital	6.8959	0.1554
Management Buyout	0.1011	0.1101
General Purpose/Stock Repurchase	0.2118	0.0842
Capital expenditure	0.3433	0.0777
Debtor-in-possession	0.9608	0.0712
IPO Related Financing	0.1454	0.0518
Stock Repurchase	0.0761	0.0453

The table compares loan purpose for split and non-split control borrowers. The first column lists the 20 most common loan purposes. The second (third) column indicates the percent of non-split control (split control) loans used towards the loan purpose designated in the first column.

Table 4. Lender Characteristics by Participation in Split Control Deals

Panel A: No Participation in Split Control Deals						
	N	P25	Median	P75	Mean	SD
Tier-1 capital/Assets	281	0.08	0.1	0.12	0.11	0.07
Operating income/Operating costs	281	1.21	1.33	1.48	1.36	0.31
Net interest margin	281	0.01	0.01	0.01	0.01	0
Ln(1+assets)	281	11.91	13.07	14.23	13.27	1.96
Loan/Deposits	281	0.66	0.81	0.94	0.79	0.22
C&I loan/Total loan	281	0.09	0.16	0.26	0.21	0.27
Real estate loan/Total loan	281	0.57	0.7	0.81	0.67	0.29
Personal loans/Total loan	281	0.02	0.05	0.11	0.09	0.21
Agriculture loans/Total loan	281	0	0	0.03	0.05	0.1
Equity/Assets	281	0.08	0.1	0.12	0.12	0.08
Transactional deposits/Total deposits	281	0.1	0.19	0.33	0.22	0.15
Noninterest income/Total income	281	0.07	0.13	0.21	0.17	0.15
Panel B: Participation in Split Control Deals						
	N	P25	Median	P75	Mean	SD
Tier-1 capital/Assets	131	0.08	0.1	0.14	0.14	0.14
Operating income/Operating costs	131	1.26	1.43	1.66	1.53	0.63
Net interest margin	131	0.01	0.01	0.01	0.01	0
Ln(1+assets)	131	14.08	15.44	16.6	15.33	2.23
Loan/Deposits	131	0.69	0.84	0.96	0.8	0.26
C&I loan/Total loan	131	0.1	0.18	0.26	0.22	0.21
Real estate loan/Total loan	131	0.51	0.67	0.8	0.64	0.3
Personal loans/Total loan	131	0.02	0.05	0.12	0.09	0.12
Agriculture loans/Total loan	131	0	0	0.01	0.02	0.06
Equity/Assets	131	0.08	0.1	0.14	0.14	0.14
Transactional deposits/Total deposits	131	0.08	0.12	0.23	0.18	0.17
Noninterest income/Total income	131	0.09	0.15	0.25	0.22	0.32

The table compares bank lender characteristics at the time a deal becomes active for split control and non-split control borrowers. Panel A presents lender characteristics for non-split control borrowers. Panel B presents lender characteristics for split control borrowers. Column 1 indicates various lender characteristics including tier-1 capital scaled by total assets, operating income scaled by operating costs, net interest margin, logarithmic of total assets, loan-to-deposit ratio, loan profiles, equity-asset ratio, transactional deposits in total deposits and non-interest income scaled by total income. Columns 2 through 7 indicate the number of observations, 25^{th} percentile, median, 75^{th} percentile, mean, and standard deviation values.

Table 5. Bank Balance Sheet and Split Control Deals

	1[Split control]						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Tier-1 capital/Assets	0.1060***						
	(0.0277)						
ROA		1.7420**					
		(0.6830)					
Loan/Deposits			0.0054				
			(0.0150)				
Noninterest income/Total income				-0.0165			
				(0.0109)			
Equity/Assets					0.0944***		
					(0.0264)		
Bank Size						-0.0408***	
						(0.0042)	
1[Previous Relationship]							0.0266***
							(0.0070)
Bank FE	Y	Y	Y	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y	Y	Y	Y
Deal Controls	Y	Y	Y	Y	Y	Y	Y
AdR-squared	0.21	0.21	0.21	0.21	0.21	0.21	0.21
N	25,469	25,474	25,449	25,474	25,494	26,901	26,901

The table presents the correlation between banks' characteristics and the likelihood of entering a split-control deal contract in the leveraged loan market. The regression equation is as follows:

$$1[\text{Split control}]_{b,s,t} = \gamma_{s,t} + \pi_b + \beta \times \text{Bank Char}_{b,t} + \mu\mathbf{X} + \epsilon_{b,s,t}$$

Tier-1 capital/assets is defined as the sum of retained earnings and common equity scaled by total assets, ROA is defined as net income scaled by total assets, Loan/Deposits is defined as total deposits scaled by total loans, Non-interest income/Total income is defined as non-interest income scaled by total income, Equity/Assets is defined as total equity scaled by total assets, Bank Size is defined as the logarithmic of total assets. "1[Relationship] is a dummy variable that equals to 1 if the borrower and the bank had issued any syndicated loans before the current deal. Deal controls include the logarithmic of deal amount, maturity and spread. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in the brackets.

Table 6. Changes in Contract Features After the Tax Policy

	1[Covenants]	Num Cov	1[Renegotiated]	1[Amended]	Rounds	1[Covenants]	Num Cov	1[Renegotiated]	1[Amended]	Rounds
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Split Control×Post	0.0204***	0.4230***	0.1238***	0.1240***	0.4847**	0.0218***	0.3299***	0.1235***	0.1238***	0.5386**
	(0.0045)	(0.0977)	(0.0163)	(0.0163)	(0.2376)	(0.0046)	(0.0471)	(0.0164)	(0.0164)	(0.2412)
Split Control	-0.0004	-0.0693	-0.1429***	-0.1432***	-0.0843	0.0047**	-0.0088	-0.1394***	-0.1398***	-0.1005
	(0.0020)	(0.0904)	(0.0155)	(0.0155)	(0.2233)	(0.0022)	(0.0294)	(0.0156)	(0.0156)	(0.2263)
Industry×Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Deal controls	N	N	N	N	N	Y	Y	Y	Y	Y
R-squared	0.04	0.02	0.10	0.10	0.09	0.05	0.04	0.12	0.12	0.09
N	22,750	22,750	22,750	22,750	1,727	22,347	22,347	22,347	22,347	1,717

The table presents the heterogeneous changes of deal characteristics for split and non-split control deals in response to the activation of TD9599. The regression equation is as follows:

$$\text{Contract feature}_{d,s,t} = \gamma_{s,t} + \beta \times \text{Split Control}_{d,t} + \beta_1 \times \text{Split Control}_{d,t} \times \mathbb{1}[\text{Post}]_t + \epsilon_{d,s,t}$$

1[Covenants] is an indicator variable that equals to 1 if the deal has at least some covenants. "Num Cov" is the total number of covenants. 1[renegotiated] is a dummy variable that equals to 1 if the deal is renegotiated for at least. 1[Amended] is a dummy variable that equals to 1 if the loan is amended for at least once. "Rounds" is the numbder of rounds of renegotiation. Industry-year included. Industry classification is at 2-digit SIC level. Deal control variables include the logarithmic of loan amount and maturity. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in the brackets.

Table 7. Changes in Contract Features After the Tax Policy: Covenants

	Debt-Ebitda	Int-cov	Fixed charge cov	Debt issuance	Other	Debt-Ebitda	Int-cov	Fixed charge cov	Debt issuance	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Split Control×Post	0.2018***	0.0625***	0.0122*	0.0280***	0.0885**	0.1856***	0.0491***	0.0108*	0.0229***	0.0521***
	(0.0283)	(0.0158)	(0.0055)	(0.0091)	(0.0398)	(0.0262)	(0.0108)	(0.0053)	(0.0082)	(0.0132)
Split Control	0.0140	-0.0095	0.0111*	-0.0075	-0.0500	0.0111	-0.0038	0.0106*	-0.0041	-0.0155*
	(0.0195)	(0.0130)	(0.0059)	(0.0058)	(0.0385)	(0.0166)	(0.0060)	(0.0061)	(0.0041)	(0.0088)
Industry×Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Deal controls	N	N	N	N	N	Y	Y	Y	Y	Y
R-squared	0.02	0.01	0.01	0.00	0.01	0.03	0.02	0.01	0.00	0.03
N	22,750	22,750	22,750	22,750	22,750	22,347	22,347	22,347	22,347	22,347

The table presents the heterogeneous responses of covenant inclusions for split and non-split control deals in response to the activation of TD9599. The regression equation is as follows:

$$\text{Contract feature}_{d,s,t} = \gamma_{s,t} + \beta \times \text{Split Control}_{d,t} \times \mathbb{1}[\text{Post}]_t + \beta_1 \times \text{Split Control}_{d,t} + \epsilon_{d,s,t}$$

The left-hand side variables of the regression are indicator variables which equal to 1 if the loan contract d (issued by a borrower in industry s) in year t has Debt-to-Ebitda ratio covenant, interest coverage ratio covenant, fixed charge coverage ratio covenant, debt issuance covenant and other types of covenants. Some typical examples include extra collateral provision, restrictions on sales of assets, restrictions on changes in management team, etc. Industry classification is at 2-digit SIC level. Column (1)-(5) do not have deal control variables, column (6)-(10) report results with deal control variables. Deal control variables include the logarithmic of loan amount and maturity. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in the brackets.

Table 8. Changes in Contract Features Post the Shock: Tightness

	Debt-Ebitda	Int-Coverage	Fixed Charge Coverage	Tightness(Murfin (2012))
	(1)	(2)	(3)	(4)
Split Control × Post	-0.083**	0.230**	0.067**	0.056**
	(0.031)	(0.179)	(0.028)	(0.019)
Split Control	-0.150	-0.078	-0.053	-0.033*
	(0.136)	(0.174)	(0.042)	(0.016)
Industry-Year FE	Y	Y	Y	Y
Deal controls	Y	Y	Y	Y
AdR-squared	0.303	0.442	0.668	0.587
N	5,450	2,768	2,761	5,450

The table presents the heterogeneous changes of loan covenant values for split and non-split control deals in response to the activation of TD9599. The regression equation is as follows:

$$\text{Cov value}_{d,s,t} = \gamma_{s,t} + \beta \times \text{Split Control}_{d,t} + \beta_1 \times \text{Split Control}_{d,t} \times \mathbb{1}[\text{Post}]_t + \epsilon_{d,s,t}$$

In column (1)-(3), we explore how do the most commonly utilized financial covenants vary among split control deals and non-split control deals before and after the tax policy."Debt-Ebitda" is the value of debt-to-ebitda ratio of a loan contract, "Int-Coverage" is the value of interest coverage ratio of a loan contract, and "Fixed Charge Coverage" is the value of fixed charge coverage ratio of a loan contract. Industry classification is at two-digit SIC level. In column (4), we explore how do the covenant tightness change for split and non-split control deals before and after the tax policy. The measurement of tax policy is based on the methodology in Murfin (2012). Deal control variables include the logarithmic of loan amount and maturity. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in the brackets.

Table 9. Fees

	Upfront Fee (1)	Commitment Fee (2)	Annual Fee (3)
Split Control × Post	-78.8563**	-6.6878**	-31.8943
	(33.2081)	(3.3703)	(31.9687)
Split Control	78.1401**	1.0706	21.9015
	(33.0486)	(3.0865)	(26.5698)
Post	-14.5934	-2.6190	-5.1111
	(10.8637)	(2.0751)	(13.7021)
Industry × Year FE	✓	✓	✓
N	4,533	8,430	406
adj. R^2	0.2963	0.2738	0.4227

This table presents the results from the following regression: $\text{Fees}_{d,s,t} = \gamma_{s,t} + \beta \times 1[\text{Split control}]_{d,t} + \beta_1 \times 1[\text{Split control}]_{d,t} \times 1[\text{Post}]_t + X_{d,t} + \epsilon_{d,s,t}$ where s indicates the two-digit industry of the borrower that issued the deal, t represents the year during which the deal was issued. X denotes deal level controls include deal size, maturity, and spread. On the right-hand side, the main explanatory variable is the dummy variable $\text{Split Control}_{d,t}$ which is equal to 1 if the deal d issued in year t is a split control deal. $\mathbb{1}[\text{Post}]_t$ is a dummy variable that equals to 1 if year t is after the passage of TD9599. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 10. Deal Sponsorship Activity

	$1_{\text{No Sponsor}}$ (1)	1_{Buyout} (2)	$1_{\text{Unitranche}}$ (3)
Split Control × Post	0.1212***	-0.2242***	-0.0324***
	(0.0405)	(0.0485)	(0.0033)
Split Control	-0.2859***	0.2733***	0.0056***
	(0.0382)	(0.0470)	(0.0012)
Post	0.0082	-0.0096	-0.0015
	(0.0270)	(0.0175)	(0.0013)
Industry × Year FE	✓	✓	✓
N	19,922	19,922	19,922
adj. R^2	0.2624	0.1143	0.0573

This table presents the results from the following regression: $y_{d,s,t} = \gamma_{s,t} + \beta \times 1[\text{Split control}]_{d,t} + \beta_1 \times 1[\text{Split control}]_{d,t} \times 1[\text{Post}]_t + X_{d,t} + \epsilon_{d,s,t}$ where s indicates the two-digit industry of the borrower that issued the deal, t represents the year during which the deal was issued. X denotes deal level controls include deal size, maturity, and spread. On the left-hand side, the outcome variable $y_{d,s,t}$ indicates whether the deal lacks a private equity sponsor in column 1, is used towards buyout activity in column 2, and uses unitranche financing in column 3. On the right-hand side, the main explanatory variable is the dummy variable Split Control$_{d,t}$ which is equal to 1 if the deal d issued in year t is a split control deal. $\mathbb{1}[\text{Post}]_t$ is a dummy variable that equals to 1 if year t is after the passage of TD9599. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 11. Deal Credit Risk

	$\mathbb{1}_{\text{Speculative}}$ (1)	$\mathbb{1}_{\text{Speculative}}$ (2)	$\mathbb{1}_{\text{Speculative}}$ (3)
Split Control×Post	0.0937***	0.0853***	0.0808***
	(0.0269)	(0.0269)	(0.0277)
Split Control	-0.0137	-0.0103	-0.0070
	(0.0241)	(0.0242)	(0.0249)
Post	0.0023	0.0009	-0.0000
	(0.0031)	(0.0130)	(0.0132)
Year FE		✓	
Industry × Year FE			✓
N	20,463	20,463	19,922
adj. R^2	0.0337	0.0359	0.0451

This table presents the results from the following regression: $1[\text{Speculative}]_{d,s,t} = \gamma_{s,t} + \beta \times 1[\text{Split control}]_{d,t} + \beta_1 \times 1[\text{Split control}]_{d,t} \times 1[\text{Post}]_t + X_{d,t} + \epsilon_{d,s,t}$ where s indicates the two-digit industry of the borrower that issued the deal, t represents the year during which the deal was issued. X denotes deal level controls include deal size, maturity, and spread. $1[\text{Speculative}]_{d,s,t}$ is an indicator for whether a deal is *speculative*. A deal is speculative if it has a rating of B3 or below. On the right-hand side, the main explanatory variable is the dummy variable Split $\text{Control}_{d,t}$ which is equal to 1 if the deal d issued in year t is a split control deal. $\mathbb{1}[\text{Post}]_t$ is a dummy variable that equals to 1 if year t is after the passage of TD9599. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 12. Substitution from Revolving Credit Facilities

	Revolving Share (1)	Revolving Share (2)	Revolving Share (3)
Split Control×Post	-0.1172**	-0.1787***	-0.1441**
	(0.0574)	(0.0572)	(0.0571)
Split Control	-0.4315***	-0.3826***	-0.3035***
	(0.0558)	(0.0551)	(0.0544)
Post	-0.0765***	-0.1277**	-0.1109**
	(0.0140)	(0.0525)	(0.0514)
Year FE		✓	
Industry × Year FE			✓
N	17,827	17,827	17,426
adj. R^2	0.3111	0.3164	0.3911

This table presents the results from the following regression: $\text{Revolving Share}_{d,s,t} = \gamma_{s,t} + \beta \times 1[\text{Split control}]_{d,t} + \beta_1 \times 1[\text{Split control}]_{d,t} \times 1[\text{Post}]_t + X_{d,t} + \epsilon_{d,s,t}$ where s indicates the two-digit industry of the borrower that issued the deal, t represents the year during which the deal was issued. X denotes deal level controls include deal size and maturity. We do not include spread because of simultaneity issues. Revolving share is the share of a deal that is revolving credit. We standardize this variable for ease of interpretation. On the right-hand side, the main explanatory variable is the dummy variable $\text{Split Control}_{d,t}$ which is equal to 1 if the deal d issued in year t is a split control deal. $\mathbb{1}[\text{Post}]_t$ is a dummy variable that equals to 1 if year t is after the passage of TD9599. Heteroskedasticity-robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 13. Ex post Firm Performances

	ROA	Default Prob(1-year)	Default Prob(3-year)	Default Prob(5-year)
	(1)	(2)	(3)	(4)
Split Control× Post	0.0519*	-0.0517***	-0.0520***	-0.0518***
	(0.0304)	(0.0182)	(0.0193)	(0.0181)
Firm FE	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y
AdR-squared	0.7707	0.7197	0.7170	0.7197
N	14821	14859	13440	14859

The table presents the heterogeneous of firm performances in response to the activation of TD9599. The regression equation is as follows:

$$\text{Perf}_{i,s,t} \quad = \quad \mu_i + \gamma_{s,t} + \beta \times \mathbb{1}[\text{Split control}]_i \times \text{Post}_t + \epsilon_{i,s,t}$$

$\mathbb{1}[\text{Split control}]_i$ is an indicator variable that equals to 1 if firm i is a split-control firm (with split-control loans on balance sheet in 2013). ROA is calculated as firms' net income scaled by total assets, Default Prob (1-year), Default Prob (3-year) and Default Prob (5-year) are 1-year, 3-year and 5-year Merton distance-to-default implied default probabilities. Post is an indicator variable that equals to 1 for years later than 2013. Industry-year fixed effects and firm fixed effects are both included. Industry classification is at 2-digit SIC level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in the brackets.

Table 14. Ex post Firm Balance Sheet Changes

	Debt-Ebitda	Retained earnings	Net debt issuance	Sales/Assets
	(1)	(2)	(3)	(4)
Split Control× Post	-0.1146***	0.0199***	-0.1532***	0.0684***
	(0.0396)	(0.0065)	(0.0438)	(0.0106)
Firm FE	Y	Y	Y	Y
Industry×Year FE	Y	Y	Y	Y
AdR-squared	0.6215	0.7438	0.4394	0.9491
N	14814	21431	22926	21431

The table presents the heterogeneous of firms' balance sheet healthiness in response to the activation of TD9599. The regression equation is as follows:

$$\text{Perf}_{i,s,t} \quad = \quad \mu_i + \gamma_{s,t} + \beta \times \mathbb{1}[\text{Split control}]_i \times \text{Post}_t + \epsilon_{i,s,t}$$

$\mathbb{1}[\text{Split control}]_i$ is an indicator variable that equals to 1 if firm i is a split-control firm (with split-control loans on balance sheet in 2013). Debt/Ebitda is calculated as book debt scaled by ebitda. "Retained earnings" is retained earning scaled by total assets. Net debt issuance is calculated as book debt less lagged book debt, scaled by total assets. Sales/Assets is sales scaled by total assets. Industry-year fixed effects and firm fixed effects are both included. Industry classification is at 2-digit SIC level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in the brackets.

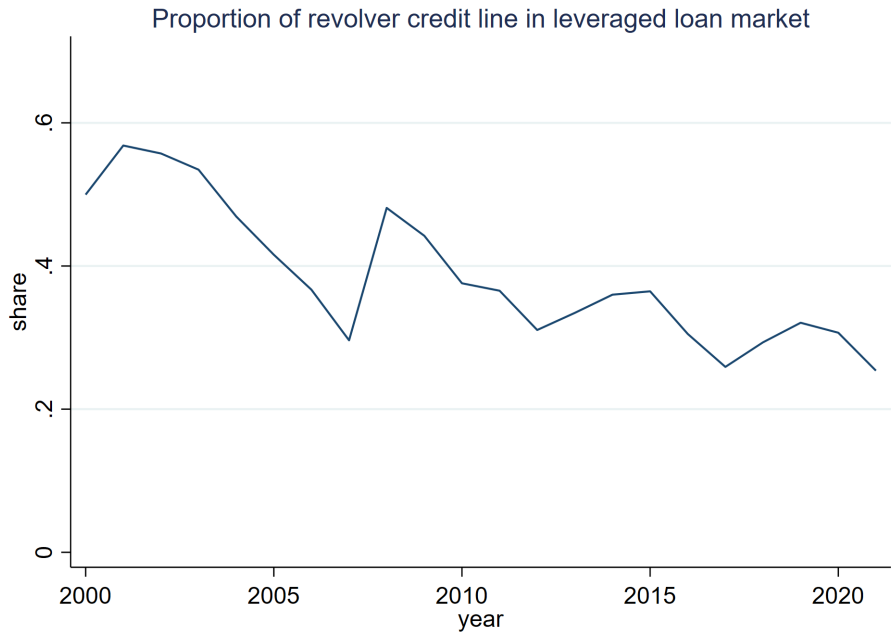
Online Appendix for:

"Monitoring with Small Stakes"

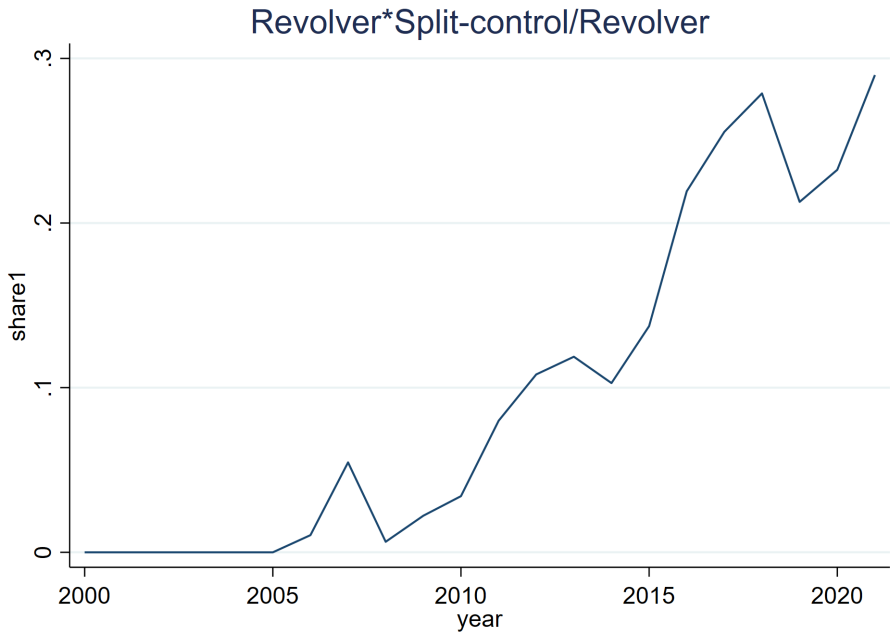
A Figures and Tables

Figure A.1. Share of Revolver: Leveraged Loan Market and Split Control Deals

The figures below show aggregate trend of revolver credit usage in the leveraged loan market. The top panel shows the proportion of total deals' dollar amount that is issued as revolver credit loan. The bottom panel shows the proportion of total dollar amount revolver credit lines that are issued in split control deals.



(a) Revolver Share in Leveraged Loan Market



(b) Revolver Share in Split Control

Figure A.2. Asset-Based Lending by Split Control

This figure presents the percent of loans that are asset-based for split control loans (red) and non-split control loans (blue). The asset-based lending share is over 9% for non-split control loans and over 5% for split control loans.

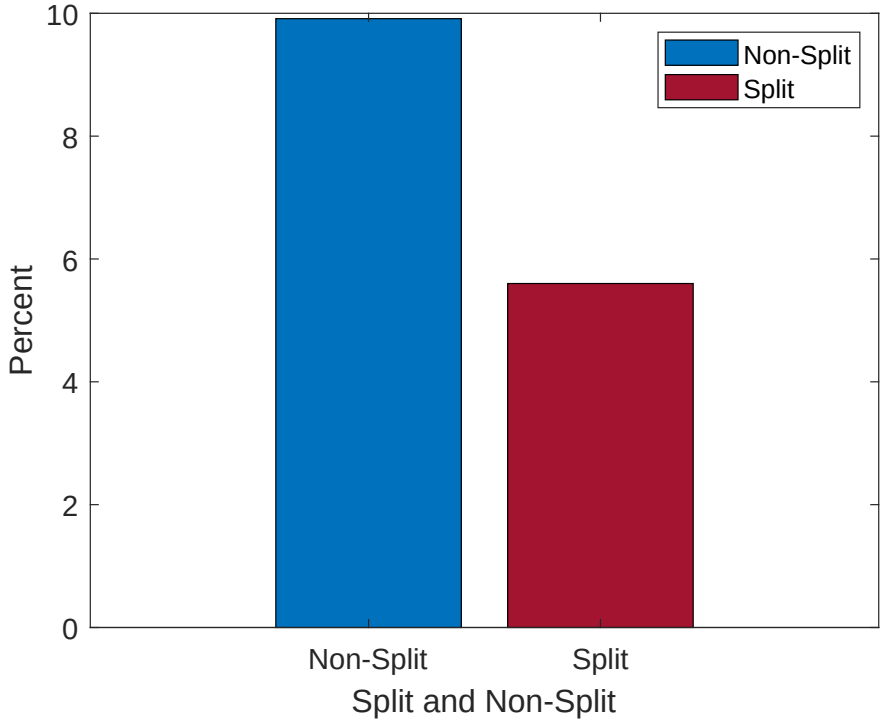
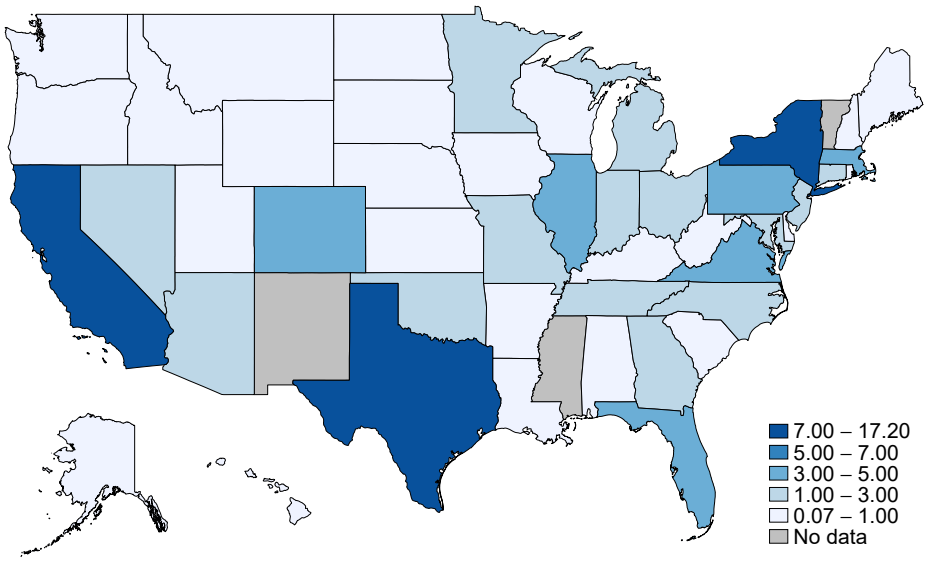
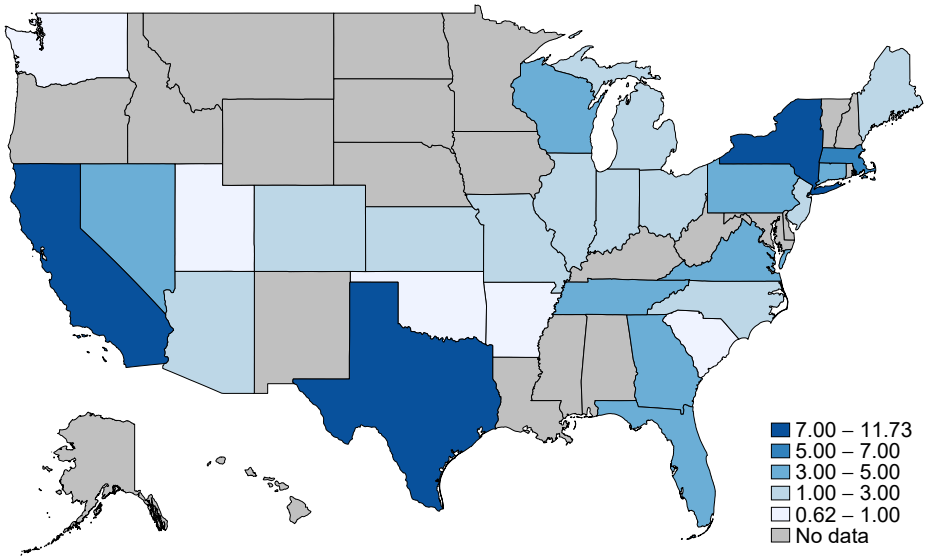


Figure A.3. Geography of Firms by Split Control Borrowers

The figures present the geography of borrowers at the time a deal becomes active for split and non-split control borrowers. The blue gradient indicates the frequency bin of firms operating in that particular geography, e.g., darkest blue indicates that between 7.00% and 11.73% of all firms in the sample operate in that state.



(a) Non-Split Control



(b) Split Control

Table A.1. Features of Deals and Pre-shock Firm Balance Sheet Condition

Panel A: Contract Features	Mean	SD	5^{th}	Median	95^{th}
1[Has covenant]	0.951	0.215	1.000	1.000	1.000
Num of covenants	0.377	2.481	0.000	0.000	2.000
1[Renegotiated]	0.171	0.377	0.000	0.000	1.000
1[Ammended]	0.171	0.376	0.000	0.000	1.000
Rounds of renegotiation	0.462	1.302	0.000	0.000	3.000
1[Debt-to-Ebitda]	0.257	0.437	0.000	0.000	1.000
1[Interest-coverage]	0.058	0.500	0.000	0.000	0.000
1[Fixed charge coverage]	0.047	0.486	0.000	0.000	0.000
1[Debt issuance]	0.029	0.445	0.000	0.000	0.000
1[Other]	0.216	0.412	0.000	0.000	1.000
Debt-to-Ebitda ratio	4.3898	1.4806	2.5000	4.2500	6.5000
Interest coverage ratio	2.7095	0.7574	1.5000	2.7500	4.0000
Fixed charge coverage ratio	2.7838	1.9199	1.0000	2.0000	6.0000
Upfront Fee	118.7973	122.7575	12.5000	100.0000	300.0000
Commitment Fee	46.5243	24.2756	25.0000	50.0000	75.0000
Annual Fee	47.4165	42.1419	10.0000	37.5000	150.0000
1[Buyout]	0.1106	0.3137	0.0000	0.0000	1.0000
1[No Sponsor]	0.6146	0.4867	0.0000	1.0000	1.0000
1[Unitranche]	0.0072	0.0846	0.0000	0.0000	0.0000
1[Speculative]	0.0515	0.2210	0.0000	0.0000	1.0000
Revolving Share	0.5674	0.3922	0.0688	0.5261	1.0000
Panel B: Firms' pre-shock balance sheet condition	Mean	S.d.	5-th	Median	95-th
ROA	0.0378	0.0540	0.0000	0.0199	0.1490
Default Prob (1-year)	0.4908	0.0575	0.4894	0.4994	0.5000
Default Prob (3-year)	0.4911	0.0567	0.4900	0.4995	0.5000
Default Prob (5-year)	0.4908	0.0575	0.4898	0.4994	0.5000
Debt/ebitda	17.3176	21.6965	-14.5511	12.3784	72.0627
Retained earning	-0.1189	0.2733	-0.4671	0.0402	0.1756
Net debt issuance	0.0752	0.1775	-0.1081	0.0047	0.5797
Sales/Assets	0.6210	0.7365	0.0021	0.3855	2.1343

The table compares deal features and firms' pre-shock balance sheet healthiness for split control and non-split control deals. Panel A presents the summary statistics for contract features. Panel B presents the summary statistics of firms' balance sheet conditions. Columns 2 through 6 indicate the mean, standard deviation, 5^{th} percentile, median, and 95^{th} percentile values.