Monitoring with Small Stakes *

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September 24, 2023

Abstract

This paper proposes a mechanism to address the "monitoring with small stakes" puzzle in syndicated lending. We identify two sources that incentivize creditor monitoring: "skin in the game" and rent extraction from renegotiation. Renegotiation-based rent extraction serves as a substitute to banks' loan stakes, facilitating institutional investors' participation in syndicated lending. We use the passage of a tax policy that exogenously reduced renegotiation frictions to empirically identify this mechanism. we find that a less frictional renegotiation environment leads to more diligent monitoring, smaller bank shares in new loans, and improved borrower performance, particularly in pre-existing deals with lower bank shares.

Keywords: contract theory, renegotiation, monitoring, rent extraction, institutional lenders, 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 do banks maintain their monitoring incentives when they have low loan retention? Canonical contract theory models propose that moral hazard and adverse selection issues are mitigated when creditors retain a sufficiently large stake in their originations.[1] This is because having more "skin in the game" provides banks with stronger incentives to closely monitor borrowers and minimize default risk, which ultimately leads to increased debt capacity for borrowers.[2]

Over the past decade, institutional investors have increasingly participated in syndicated lending, challenging the canonical loan retention mechanism. The leveraged loan market, which features borrowers with greater agency problems, requires effective creditor monitoring. However, this market is characterized by high syndicate participation from institutional investors who often lack adequate monitoring capabilities, resulting in lower banks' stake in originated loans.[3] Since 2010, there has been a secular decline in both the aggregate share owned by bank lenders and the dollar amount contributed by bank lenders in the leveraged loan market, as illustrated in Figure 1.[4] These findings present a puzzle: how are banks' monitoring incentives preserved with low skin in the game and multiple creditor classes of equal priority? More broadly, are banks special in their capacity of serving as credible monitors, or are they arms-length?

We propose a novel mechanism to explain the *monitoring with small stakes* puzzle by conceptualizing two sources of incentive provision for costly creditor monitoring. The first source is the traditional skin in the game channel, wherein creditors engage in monitoring to

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

[2] The financial contracting literature shows that creditors' incentives in conducting costly monitoring impacts borrowers' debt capacity, see e.g., Diamond (1984), Diamond (1991), Rajan and Winton (1995), Park (2000).

[3] Loan contracts have evolved into split control deals which pair covenant-lite term loans, primarily held by institutional investors, with covenant-laden revolving credit, primarily held by banks (Berlin et al. (2020)). In practice, split control agreements delegate the exclusive right to monitor and renegotiate financial covenants to banks.

[4] The dollar amount is calculated by multiplying the dollar tranche amount with the percentage share contributed by bank lenders for each tranche and aggregating it at the annual level. To address potential data coverage issues, we provide evidence in Panel A of Appendix Figure A.9, demonstrating that the proportion of deals with non-missing lenders' shares (and lenders' amount contributed) has remained relatively stable since 2010. Furthermore, in Panel B of Appendix Figure A.9, we demonstrate that this trend is consistent at the deal level.

safeguard the salvage value of their claims and collateral (e.g., Holmstrom and Tirole (1997); Gorton and Pennacchi (1995)). The second source is the ability of creditors to extract rents from borrowers during renegotiation, which also enhances monitoring incentives. This is because creditors' incentives to monitor borrowers increase when they anticipate a higher payoff from rent extraction during renegotiation, which is often triggered by their monitoring activities. While the former source is well-established in the literature, our analysis focuses on the latter source as a novel explanation for the puzzle.

When the monitoring creditors (e.g., banks) hold a small stake, their incentives to monitor borrowers are ambiguous as the payoff from protecting the salvage value is limited. To credibly communicate with and convince the non-monitoring creditors (e.g., institutional investors) of a low borrower default risk, which requires diligent monitoring that cannot be verified by others, the monitoring creditor must be able to generate a sufficiently high payoff from the rent extraction process during renegotiation. We demonstrate that banks' monitoring efforts are sensitive to their bargaining positions and frictions in the renegotiation process, with this sensitivity increasing as banks' own stake in the loan decreases. Consequently, reducing renegotiation frictions or enhancing creditors' bargaining positions can facilitate the ex-ante underwriting of credit contracts in which banks have small stakes, particularly for borrowers subject to severe agency conflicts—a key conjecture we empirically test.

Formally, we develop a framework under which the renegotiation-based mechanism serves as an alternative source and potential substitute for the stake-based mechanism in providing monitoring incentives and facilitating the participation of non-monitoring creditors in leveraged lending. This framework helps explain how monitoring creditors can credibly commit to monitoring borrowers despite holding a minority share of the origination, which in turn, encourages non-monitoring creditors to participate and assume a significant share of the origination.[5]

Relatedly, our framework demonstrates that renegotiation is an endogenous equilibrium outcome rather than an out-of-equilibrium phenomenon à la Maskin and Moore (1999). Canonically, renegotiation has been largely viewed or modeled as an exogenous game with

[5]This "monitoring the monitor" problem is made clear in Diamond (1984) which highlights the incentive problem of a bank that behaves as a delegated monitor and demonstrates how debt contracts can mitigate such incentive issues. This incentive problem is later examined in other contexts and with other types of solutions (e.g., Rajan and Winton (1995), Park (2000), Dang et al. (2017)).

ex post surplus available under unanticipated or noncontractable states of the world (e.g., Hart and Moore (1988), Aghion and Bolton (1992)). In contrast, our proposed mechanism highlights the endogenous nature of renegotiation by linking its occurrence and outcomes to creditors' monitoring incentives.

We empirically test this renegotiation-based mechanism of monitoring incentive provision in the context of the leveraged loan market. Our analysis aims to identify whether an increased expected payoff from ex-post rent extraction in renegotiation better incentivizes bank lenders to engage in monitoring activities, thereby enabling them to retain a smaller stake ex ante. Empirically identifying this mechanism is challenging, as it involves constructing shifters that affect creditors' ability to renegotiate or other factors determining their net payoff from renegotiation. However, such shifters are likely endogenous and could be correlated with other confounding factors that also affect the contractual and performance outcomes of underwritten loans, making it difficult to identify the channel in a clean manner.

We utilize the activation of TD9599 tax credit as a natural experiment that effectively lowered (increased) creditors' net cost (expected payoff) in renegotiation with their borrowers.[6] This tax policy redesignated syndicated loans as publicly traded debt in late 2012, lowering the tax burden for creditors. For the sake of simplicity, we will refer to the decreases (increases) in net cost (expected payoff) for creditors resulting from the policy as a "reduction in ex-post renegotiation friction" for the remainder of this paper.[7] We combine this policy change with cross-sectional variation in bank lenders' share in loans extended to leveraged borrowers. In particular, we use the split control status of loan deals, per Berlin et al. (2020), as a proxy for banks' loan share: the average bank commitment share in split control deals is 22%, compared to 71% for non-split control deals. For robustness, we also estimate the baseline regressions directly using bank lenders' shares, following Blickle et al. (2020).[8] Using a difference-in-differences (DiD) design, we identify the impact of this policy-induced reduction in renegotiation frictions on both the ex ante contractual design of newly

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

[7]The detailed description and discussion of this policy are provided in Section 5.1.

[8]To overcome the limited coverage of information on each lenders' shares in a syndicated loan deal within major databases like Dealscan and SDC Platinum, we utilize split control status as a proxy for bank skin in the game. This approach enables us to analyze a larger sample size without compromising generality. For robustness, we use the estimated bank lenders' shares in deals following the methodology provided in Blickle et al. (2020). These analyses are provided in Appendix.

issued loans and the ex post performance of pre-existing loans.

One key empirical prediction of our analysis is that banks' incentives to monitor borrowers is sensitive to frictions in the renegotiation environment, and this sensitivity is higher in loans where banks hold smaller shares. To this end, we start our analysis by investigating how the passage of the tax policy differentially affects renegotiation outcomes for split and non-split control deals. We provide direct evidence of rent extraction via the renegotiation channel by comparing the loan renegotiation outcomes and creditor actions around the tax policy. We find that after the tax policy, lenders of split control deals are more likely to accelerate borrower repayments, increase interest rates, demand extra borrowing base provision, impose extra covenants, or charge extra amendment fees in their renegotiation with borrowers, compared to lenders of non-split control deals. Overall, our findings suggest an increased payoff in lenders' renegotiation with their borrowers after the passage of the tax policy, which strengthened lenders' bargaining position, particularly for split control deals where bank lenders hold smaller loan shares.

In a more direct investigation of the policy's impact on banks' monitoring incentives, we construct empirical measures of banks' monitoring intensity following Gustafson et al. (2021). We find that split control deals are more likely to require the delivery of financial statements, have agent banks conduct field examination requests, and request more frequent financial statement submissions relative to non-split control deals, after the tax policy. These findings provide direct evidence in support of our mechanism that banks' monitoring intensity increases when they expect a higher net payoff from renegotiation which is triggered by their monitoring activities. The greater response observed for split control deals to the policy-induced reduction in renegotiation frictions indicates greater reliance on the renegotiation-based mechanism in the provision of monitoring incentives in these loan deals where banks hold smaller stakes.

Having established the impact on renegotiation outcomes and creditor monitoring, we then shift our investigation to examine how reduced frictions in ex post renegotiation influence the ex ante design of credit contracts in the leveraged loan market. Covenants are an important mechanism through which monitoring-induced renegotiation is triggered (Rajan and Winton (1995)). Our findings indicate that covenants gain significance when renegotiation costs are reduced, particularly for split control deals. After the tax policy, split control deals experience a greater increase in both the inclusion and tightness of covenants

compared to non-split control deals. These increases are more pronounced in profitability related covenants (e.g., debt-to-ebitda ratio, interest rate coverage ratio) than capital structure related covenants (e.g., debt issuance), suggesting a more significant role played by creditor monitoring (Christensen and Nikolaev (2012)).

Moreover, we investigate how the policy affects borrowers with potentially more severe agency problems. Our findings reveal that, after the tax policy, split control deals are less reliant on external monitoring sources such as private equity. Specifically, we observe larger declines in the likelihood of private equity sponsors, buyout activities, and the use of unitranche financing for split control deals compared to non-split control deals after the tax policy. On the extensive margin, we hypothesize that creditors' heightened commitment to monitor allows marginal borrowers facing severe agency problems to access the credit market, expanding the boundaries of the leveraged loan market. Consistent with this conjecture, we find that split control deals are more likely to be issued to speculative borrowers relative to non-split control deals after the tax policy.

We further investigate the impact of the tax policy on other contractual aspects of newly issued loan deals. We posit that when renegotiation frictions are reduced, banks extract greater payoffs through the renegotiation channel. Hence, banks ought to rely more on ex post compensation rather than ex ante compensation after the tax policy. Consistent with our conjecture, we find that the tax policy reduces upfront fees and commitment fees. These fee reductions are greater for split control deals compared to non-split control deals. This structural shift in the compensation scheme suggests that credit contracts rely less on the stake-based incentive provision mechanism after the tax policy.

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 around the policy event for existing loan deals. We find that firms with split control deals on their balance sheet at the time of TD9599, referred to as "split control firms," exhibit larger increases in return on assets (ROA) and reductions in default probabilities following the tax policy, in comparison to those without such deals on balance sheet. Additionally, these split control firms also experience more significant reductions in debt-to-EBITDA ratio and net debt issuance, while also displaying a more pronounced increase in retained earnings and sales compared to their non-split control counterparts. These findings lend support to our theoretical prediction that reduced friction in renegotiation leads to larger performance

improvements in loan deals with smaller bank stakes.

The implications of our analysis bear significant policy relevance. The observed asymmetric impact of the policy, with borrowers in split control deals showing substantial performance improvements compared to those in non-split control deals, highlights the potential inadequacy of monitoring levels prior to the tax policy in loans where non-bank lenders take significant stakes. This underscores the importance of addressing monitoring challenges associated with increased institutional investor participation. Relatedly, our analysis suggests that fiscal policies aimed at reducing renegotiation frictions can facilitate institutional investor participation in the leveraged loan market and potentially expand the boundary of the credit market. These insights can inform policymakers in formulating measures to enhance monitoring practices and foster a stable and efficient credit environment.

Related Literature. Our analysis in this paper, which addresses the "monitoring with small stakes" puzzle in the context of the leveraged loan market, makes novel contribution to several strands of literature.

Financial intermediaries play a critical role in reducing agency frictions and facilitating the flow of credit by actively monitoring borrowers. Yet the incentive issue in conducting monitoring, known as the "monitoring the monitor" problem (Diamond (1984)), naturally arise when such monitoring activities are not easily verifiable. 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.[9] Later analysis (e.g., Gorton and Pennacchi (1995), Holmstrom and Tirole (1997), and Gryglewicz et al. (2021)) propose that lenders retain a sufficient share of loan originations ("skin in the game") to align incentives between investors and lenders and increase borrowers' debt capacity. Complementing this theoretical literature, recent empirical studies (e.g., Sufi (2007), Ivashina (2009), Gustafson et al. (2021)) document that (lead) banks often retain a significant share of loans that require effective monitoring to credibly commit to monitoring. However, the recent rise of institutional investors' participation, through either lending syndicate or loan securitization, raises the concern that banks may have insufficient skin in the game to maintain their monitoring incentives (e.g., Drucker and Puri (2009), Bord and Santos (2012),

[9]In essence, the analysis in our paper shares a similar insight: one needs either a large enough stake or sufficient ability to extract rents from monitoring-triggered renegotiations to make the delegated monitor's payoff sensitive to her monitoring action.

Wang and Xia (2014), Billett et al. (2016)). Our paper contributes this literature by proposing a novel channel that explains how monitoring incentives are preserved when banks only retain small stake in their originated loans. We highlight that renegotiation-based rent extraction could serve as a substitute to the traditional skin in the game channel.

The impact of ex-post renegotiation on ex-ante contractual structure has been recognized and explored by a large theoretical literature (e.g., Hart and Moore (1988), Bolton and Scharfstein (1996), Hart and Moore (1998), Garleanu and Zwiebel (2009).) However, empirical research on this important issue in financial contracting has been limited.[10] One of the primary challenges faced by empirical studies exploring the impact of ex-post renegotiation on ex-ante contracting is the difficulty in identifying exogenous sources of variation that can precisely test the predictions generated by the theoretical literature, as renegotiation outcomes are rarely exogenous. Our analysis in this paper overcomes this obstacle by leveraging the passage of TD9599 as an experimental setting, through which we provide direct evidence that a policy-driven reduction in renegotiation costs leads to an increase in monitoring activities conducted by bank lenders. This, in turn, has implications for the contractual structure of new credit agreements as well as the performance of existing loan deals. By establishing these empirical linkages, our analysis contributes to bridging the gap between ex-post renegotiation and ex-ante contract design in the empirical literature of financial contracting.

Our analysis also contributes to the growing literature that examines the prevalence of covenant-lite loans and the associated split control arrangement in the leveraged loan market (e.g., Becker and Ivashina (2016), Billett et al. (2016), Berlin et al. (2020)). Becker and Ivashina (2016) attribute the rapid expansion in the provision of cov-lite loans to the broadened participation in loan syndicates by non-bank investors, which introduces frictions in creditor coordination that cov-lite loans help alleviate. Berlin et al. (2020) further document that cov-lite loans are typically paired with bank-held revolving lines of credit that preserve traditional financial covenants.[11] Based on their findings, Berlin et al. (2020) argue that

[10] Among these studies, Roberts and Sufi (2009) find that over 90% of long-term loan contracts are renegotiated before maturity and that ex ante contractual contingencies can affect the bargaining power of the contracting parties in renegotiation. Benmelech and Bergman (2008) focus on renegotiation under financial distress and show that liquidation value of collateral affects renegotiation under incomplete financial contracts.

[11] 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

banks' monitoring incentives are still effectively preserved in cov-lite loans that involve substantial participation of non-bank investors. Our findings complement their analysis by highlighting the specific role of the renegotiation-based mechanism in the provision of monitoring incentives. We demonstrate that split control deals rely more on this renegotiation-based mechanism in maintaining banks' monitoring incentives.

The rest of the paper is organized as follows. Section 2 presents our model that highlights the role of the renegotiation-based mechanism when the stake-based mechanism is limited in providing monitoring incentives. We then bring the theory to the empirics. Section 3 describes the data and sample construction. Section 4 conducts a preliminary examination of the leveraged loan market, by comparing loan deals where banks hold relatively small shares (split control deals) to those where banks hold relatively high shares (non-split control deals). In Section 5, we empirically identify the renegotiation-based mechanism in the provision of monitoring incentives, by conducting an event-based analysis that exploits an exogenous policy-induced reduction in renegotiation frictions. Section 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. Consider a setting in which an entrepreneur has a project that needs to be financed externally. All players in this economy are risk neutral and the risk free rate is normalized to be unity. 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 has the opportunity to engage in certain "asset diverting" behavior;

(iii) On date 2, the project pays off.

feature is designed to alleviate coordination problems with institutional investors. The blue line in Figure 1 shows that the dollar proportion of leveraged loans has been rising and reached about 50% of the total volume of split control deals.

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 well-behaved. However, once the entrepreneur utilizes the opportunity to turn the project into a "bad" one, the project generates a total payoff of X_L, which is strictly lower than X_H. Moreover, only a $\gamma < 1$ fraction of X_L is pledgeable and can be seized by the creditor. Under this specification, parameter γ essentially captures the severity of the agency problem.[12]

A. Benchmark framework with single creditor

We begin our analysis by considering the scenario where there is a single creditor who conducts financing and potentially monitors the entrepreneur. We will examine how the monitoring incentives of this single creditor impact the entrepreneur's borrowing ability and how these incentives are influenced by renegotiation dynamics.

Contracting without monitoring. To highlight the central role played by the creditor monitoring in determining borrowers' debt capacity, we first consider credit contracts without creditor monitoring. In the absence of 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

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

The project can be financed if and only if the lender's cost of capital does not exceed this maximum payment the entrepreneur can promise without diversion, i.e.,

$$rI \leq D^u, \tag{2}$$

[12]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 (1998) and Berglöf and Von Thadden (1994).

where r is the funding cost of the creditor. It is easy to see that entrepreneurs with severe agency problems, (i.e., small γ) are unlikely to get financed because a smaller γ makes condition 2 more likely to fail. In particular, only entrepreneurs with $\gamma \geq \gamma^u$ can receive financing without monitoring, where $\gamma^u \equiv 1 - \frac{X_H - rI}{X_L}$.

Contracting with monitoring. Now suppose that the creditor can conduct costly monitoring to prevent such opportunistic behavior of borrowers. Specifically, we assume that 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 cost of $c(\theta)$, where function $c(\theta)$ satisfies $c'(\theta) > 0$ and $c''(\theta) > 0$.[13] In our following analysis, we consider quadratic monitoring cost $c(\theta) = \frac{c}{2}\theta^2$ with $c > 0$. When the detection fails, which occurs with probability $1 - \theta$, the entrepreneur has the opportunity to decide whether or not she wants to divert the project.

In the state where the creditor successfully detects the arrival of the 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 diverting opportunity cannot be eliminated unless the entrepreneur is willing to forgo it. In this case, renegotiation occurs, as it strictly improves the total surplus between the creditor and the entrepreneur (since $X_H > X_L$). To highlight the "equally" important role in providing monitoring incentives of these two channels, we set $p = \frac{1}{2}$ in the following analysis.

We assume that the renegotiation outcomes follow a Nash bargaining solution, where the creditor is able to obtain a $\beta \in [0, 1]$ fraction of the surplus in negotiation. This parameter, β, can be thought of capturing the relative bargaining power as well as other potential frictions in the negotiation process.[14] Under this specification, the payoff to the creditor after renegotiation is

$$V_C = \gamma X_L + \beta(X_H - X_L).$$

[13] 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.

[14] 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).

In determining the optimal monitoring effort θ, a creditor solves

$$\max_{\theta} \theta \left(\frac{1}{2} D + \frac{1}{2} V_C \right) + (1-\theta)\gamma X_L - c(\theta)$$

The optimality condition of monitoring effort thus implies

$$\frac{1}{2} \underbrace{(D - \gamma X_L)}_{\text{salvage value recovery}} + \frac{1}{2} \underbrace{(V_C - \gamma X_L)}_{\text{rent extraction}} = c'(\theta). \tag{3}$$

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 the renegotiation triggered by creditors' monitoring activities. This second source is relevant when the diversion opportunity cannot be eliminated automatically and hence, a certain fraction of the surplus needs to be shared with the entrepreneur to "bribe" her to not divert the project.

In our later empirical analysis, we are interested in studying how a policy shock influencing frictions in the renegotiation process (e.g., change in β) affects both ex-post loan outcomes and ex-ante loan contracting, through its impact on 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. It is easy to see that $\epsilon_{\theta,\beta} > 0$.

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

$$\theta^s(D) \left(\frac{1}{2} D + \frac{1}{2} V_C \right) + \left[1 - \theta^s(D) \right] \gamma X_L - c\left(\theta^s(D) \right) \geq rI \tag{4}$$

It is easy to see 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 determine 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 $\gamma \geq \gamma^s$, where the cutoff γ^s is uniquely determined by*

$$\frac{1}{2}\left[(1+\beta)X_H - (\gamma^s+\beta)X_L\right]\theta^s(X_H) + \gamma^s X_L - c\left(\theta^s(X_H)\right) = rI.$$

Further, we have $\gamma^s < \gamma^u$ when monitoring cost c is sufficiently low and surplus split β is sufficiently high.

In what follows, we assume there is another creditor who has a cheaper cost of capital but has no capacity to monitor or the ability to verify others' monitoring activities. We investigate the optimal credit contract design that allows for maximum participation of a non-monitoring creditor in financing the project.

B. Multiple creditors where only one can monitor

The main focus of our analysis is on loan deals that involve the participation of creditors who never monitor (e.g., *institutional investors*). To this end, now suppose the creditor who is capable of monitoring only retains a fraction of total loan ownership and their monitoring activity is not verifiable. We will call this monitoring creditor the *bank*. Specifically, we assume that a loan contract specifies the fraction f_B of a loan that is contributed by the monitoring bank.

Crucially, although the bank only retains a fraction $f_B < 1$ of the loan ownership, it exclusively handles renegotiation with borrowers. In this regard, we make the following assumption on the renegotiation between creditors and borrowers when the monitoring creditor is only holding $f_B < 1$ fraction of the loan.

Assumption 1. ***Renegotiation with fractional ownership***

The bank's ability to extract rents in renegotiation with borrowers is independent of the loan

share f_B owned by herself. Furthermore, the surplus from renegotiation cannot be shared with the institutional investor due to their lack of ability to monitor or verify.

This assumption captures the notion that while the salvage value recovered by the bank through monitoring is proportional to its share in loan ownership, the payoff from rent extraction during renegotiation with the borrower is not as sensitive to the bank's ownership share. In practice, one could interpret this assumption by linking it to the discrete nature of options available to creditors. For instance, bank lenders could influence borrowers' activities through covenants even if they only have partial ownership of the loans. Furthermore, creditors' option of threatening to terminate the contract or accelerate repayment, which often do not depend on the loan shares they own, could also strengthen their bargaining position in renegotiation with borrowers.[15]

Importantly, Assumption 1 also suggests that the bank are able to extract rents that cannot be not be verified and therefore shared with the non-monitoring creditors. In essence, the inability to detect entrepreneurs' opportunistic behavior or to verify the rent extracted by the bank makes the non-monitoring institutional investors redundant in the renegotiation process. Under this assumption, the post negotiation payoff to the bank and the entrepreneur can thus be specified as

$$V_B = f_B\gamma X_L + \beta(X_H - X_L);\;\; V_E = (1-\gamma)X_L + (1-\beta)(X_H - X_L)$$

where the rent extraction from renegotiation — captured by parameter β — is independent of the share f_B owned by the bank.[16] Accordingly, the payoff to the non-monitoring creditor remains at $V_I = (1 - f_B)\gamma X_L$, given that no surplus from renegotiation will be shared with him.

[15]For instance, creditors quitting a lending relationship may generate a negative impact on a borrower by affecting market perception, regardless of the loan share they actually own. Alternatively, being forced to accelerate repayment could significantly impact borrowers' operations even if the creditor only retains a small share in the loan deal.

[16]In specifying the bank's payoff from renegotiation with the borrower, it is assumed that the bank negotiates on behalf of the non-monitoring creditors. Hence the total surplus gain from renegotiation is $X_H - X_L$, from which, a β fraction is accrued to the bank. Assumption 1 states that this fraction β is relatively insensitive to the share f_B owned by the bank — in the extreme, β is independent of f_B.

Equilibrium monitoring effort. After the credit contract has been underwritten, the bank's optimal decision on her monitoring effort θ is then determined by

$$\max_{\theta} \theta \left(\frac{1}{2} f_B D + \frac{1}{2} V_B \right) + (1-\theta) f_B \gamma X_L - c(\theta)$$

which hence implies

$$\frac{1}{2} \underbrace{f_B(D - \gamma X_L)}_{\text{salvage value recovery}} + \frac{1}{2} \underbrace{\beta(X_H - X_L)}_{\text{rent extraction}} = c'(\theta^B) \tag{5}$$

Denote the optimal monitoring effort θ satisfying the above Eq. (5) by $\theta^B \equiv \theta(f_B, D)$. 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.

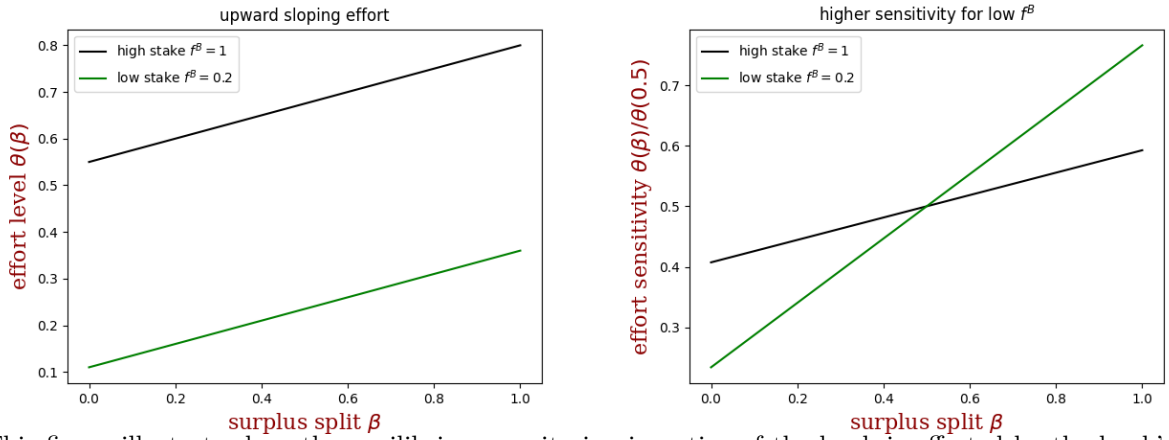
Proposition 2. *The sensitivity of monitoring effort θ to the rent extraction parameter β is higher when the bank is holding a smaller share in loan ownership, i.e.*

$$\frac{\partial \epsilon_{\theta,\beta}}{\partial f_B} < 0.$$

Intuitively, when the bank holds a small share of the loan, rent extraction through renegotiation plays a relatively larger role in providing monitoring incentives. Therefore, changes in renegotiation frictions that affect banks' rent extraction are likely to have a larger impact on the monitoring effort incurred by the bank in equilibrium, as illustrated in the right panel of the figure above.

Contract design and institutional investors' participation. 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 this section, we consider the contract design problem in which the objective is to maximize (minimize) the share $1 - f_B$ (f_B) held

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; the right panel plots the sensitivity of equilibrium monitoring effort to changes in bargaining parameter.
Parameterization: $X_H = 1.5$, $X_L = 1$, $D = 1.5$, $\gamma = 0.4$, $c(\theta) = \theta^2$.

by institutional investors (bank) in the credit agreement.[17]

Recognizing the bank lender's monitoring effort choice $\theta(f_B, D)$, the participation condition for the institutional investor can be expressed as

$$\frac{1}{2}\theta(f_B, D)D + \left[1 - \frac{1}{2}\theta(f_B, D)\right]\gamma X_L \geq \tilde{r}I, \tag{6}$$

where the cost of funding $\tilde{r}$ of the institutional investor is lower than that of the bank lender r.

We define the minimum share of the loan that needs to be held by the bank lender who monitors by f_B^*.

Proposition 3. *The credit contract that maximizes the participation of institutional investors sets $D = X_H$, and the minimum share f_B^* held by the bank, which monitors, is*

[17] One could rationalize this contract design specification by considering that institutional investors have a significantly lower cost of funding compared to the bank lender. Therefore, it is efficient to design a credit contract that maximizes the participation of these creditors with cheaper funding sources, even though they may lack monitoring capabilities.

determined by the following condition:

$$\frac{1}{2}\theta(f_B^*, X_H)X_H + \left[1 - \frac{1}{2}\theta(f_B^*, X_H)\right]\gamma X_L = \tilde{r}I. \tag{7}$$

f_B^* *satisfies* $\frac{\partial f_B^*}{\partial \beta} < 0$.

The above expression characterizes the conditions under which renegotiation-based rent extraction can effectively serve as a substitute for 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 due to reduced frictions in the renegotiation process (e.g., an increase 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. Furthermore, we have the following corollary stating how the minimum stake that the monitoring lender needs to hold is affected by the severity of the agency problem.

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.,* $\frac{\partial f_B^*}{\partial \gamma} < 0$.

C. Implications and Hypotheses for Testing

As discussed earlier, our model can be naturally placed in the context of leveraged loan market, which is featured by growing participation of non-monitoring institutional investors and highly levered borrowers who are subject to agency problems. Our model generates several testable hypotheses on the contractual design and loan outcomes in this particular segment of the credit market. This section summarizes the three main empirical predictions from the model, which are empirically tested in the subsequent analyses.

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 that are less subject to agency problems, or situations where bank lenders are better able to extracts rents in their renegotiation with the borrowers.

Hypothesis 2. *A change in renegotiation frictions leads to a larger impact on creditor monitoring and loan outcomes for deals in which banks hold smaller shares (e.g., split control deals) than those in which banks hold larger shares (e.g., non-split control deals).*

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 loan deals in which banks hold small shares (e.g., split control deals).*

3 Data and Sample Construction

3.1 Deal and Firm Information

This paper employs several datasets. This section details the primary datasets utilized in our analysis. Our empirical analysis is restricted between 2005 and 2018.

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.

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* (including debt-to-equity ratio, debt issuance, and net debt issuance), and *Other*. We record the value of the financial covenants if it is also reported in the SDC database.[18] 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 size, 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 A.4.

3.2 Data Collection on Loan Renegotiation and Monitoring

In this section, we explain in detail how we collect information and construct variables related to loan renegotiation terms and lenders' monitoring commitments from SEC filings. We conduct keyword search using the SEC API.[19] To better make queries on SEC API, we restrict our sample to firms with Ticker symbol, which results in a total of 4,228 companies. We collected the data and augment all the negotiation outcomes at annual frequency.

[18] 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. Covenants that appear multiple times in the dataset with different thresholds associated with them suggest that the deal underwent renegotiation or amendment. Thus, we construct the rounds of renegotiation of a financial contract by counting the maximum number of times any financial covenant shows up with different thresholds in SDC.

[19] The SEC API provides platform to search and extract information of all the filings by publicly listed companies.

Construction of loan renegotiation information. We obtain information for loan renegotiation outcomes from the renegotiation files supplemented to the 10-Q and 10-K filings. In 10-K filings, "Item 15: Exhibits, Financial Statement Schedules" display all the related files about the companies' financial statements and changes to the companies' agreements including credit agreements.[20] We restrict our attention to changes in *credit agreements* between a company and its bank lenders. This is done by confining the search of documents to exhibits with titles of format "XX-th Amended and Restated Credit Agreement."[21] We collect all the credit amendment files shown as exhibits in 10-K and 10-Q filings during 2005 and 2018 for companies in our data set and conduct the relevant text searches.

Within each of the amendment documents, we collect the ticker of the filing company, the credit agreement initiation date, and the agent bank of the credit agreement to match with our sample of deals. To identify accelerated repayments, we search for indicators such as "accelerated maturity," "accelerated repayment," and the co-occurrence of "acceleration" or "accelerated" with "repayment" or "maturity" in the text. To detect the initiation of amendment fees, we look for the occurrence of keywords such as "amendment fee," "extension fee," and "monitoring fee." We also require that the keywords for fees appear together with "administrative agents" and "agent banks" in the same paragraph to confirm that the fees are paid only towards agent lenders. For the inclusion of extra covenants, we search for phrases like "inserting in Section XXX" and "XXX is modified by adding the following paragraph" and require that the added paragraph contains specific financial covenants. To identify interest rate increases, we search for the co-occurrence of "LIBOR" and "increases" or "lifted" in the same paragraph. To detect demands for extra borrowing base or collateral, we look for keywords such as "borrowing base," "collateral," and "extra," or "in excess of." For reductions in the borrowing amount, we search for the co-occurrence of "revolver amount" or "revolver credit line amount" and "decreased." We locate 770 credit renegotiation and amendment documents filed as exhibits in 10-Q and 1,853 files in 10-K for companies with tickers in our sample.

[20] For 10-Q filings, "Item 6: Exhibits" demonstrate the corresponding financial statements and changes in all kinds of agreements.

[21] For instance, Urban Outfitters incorporated its sixth amended and restated credit agreements in its 10-Q report in July of 2012, and in "Item 6 Exhibits" of that 10-Q filing, the firm demonstrated the "Sixth Amended and Restated Credit Agreement" for its loan contract with a group of syndicated lenders with Wachovia Bank as the administrative agents.

Construction of monitoring commitment in loan contracts. To better measure lenders' monitoring intensity and monitoring commitment, we conduct keyword searches in the original credit agreements.

When a company enters into a new credit agreement or renews an existing credit agreement, they are required to file for "Item 1.01: Entry into a Material Definitive Agreement" in their 8-K filings.[22] The original agreement of the newly entered facility is appended to the exhibits of that 8-K. For all the companies with tickers in our sample, we collect all the exhibits associated 8-K filings between 2005 and 2018 that are original credit agreements. We further collect the date that the new credit agreement is signed as well as the lead bank associated with the deal, which enables us to match with our deal data set.

To measure lenders' monitoring intensity and monitoring commitment at loan origination, we extract information and construct three variables from the credit agreement files following Gustafson et al. (2021). First, we record the occurrence of a financial statement reporting requirement in the credit agreement by searching keywords such as "financial statement," "income statement," "delivery," "submission." Second, we record whether there are field examinations, inspections and appraisals of collateral by searching keywords such as "field exam," "inspections," "asset appraisal," and "collateral appraisal." Finally, we record the frequency of financial statement or income statement delivery by recording the occurrence of keywords such as "monthly," "quarterly," "semi-annually," and "annually." If the frequency is monthly, we represent the frequency by 1 month, and if the frequency if quarterly, we code it as 3 months, etc. We locate a total of 282 credit agreement files. Among 282 credit agreements, 85 explicitly mention the monitoring frequency. The average monitoring frequency associated with these agreements is 5.82 months.

4 Corporate Lending with Non-Monitoring Creditors

This section describes the evolution of corporate lending as institutional investors' participation has been increasing. We begin by describing the leveraged loan market and discussing

[22]For instance, in the 8-K form filed by CME Group Inc in January of 2011, "Item 1.01 Entry into a Material Definitive Agreement" documented the initiation of a $1 billion multi-currency revolving senior credit facility credit agreement between the company and a syndicate of lenders, with Bank of America as the agent bank.

how the increased participation of non-bank lenders in this market has been linked to the rise of cov-lite loans and split control deals. We then compare 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 in the Leveraged Loan Market

The literature on banking and contract theory has long recognized the importance of lenders' incentives in conducting costly monitoring during credit contracting. Bank monitoring plays a pivotal role and delivers social benefits, particularly when borrowers encounter severe agency issues. However, the monitoring incentives of banks are ambiguous when banks hold relatively small stakes in the loans they originate. This issue of incentives in conducting valuable yet costly monitoring is similar to the extensively debated concerns about loan originators' motivation to adequately screen borrowers when they subsequently sell their originated loans through securitization (e.g., Keys et al. (2010), Drucker and Puri (2009); Blickle et al. (2020)). Our study aims to investigate how banks' lower loan retention, which amounts to a smaller skin in the game, affects their monitoring behavior and contractual features, and the potential complementary source of incentives that reconciles low skin in the game.

While banks are commonly perceived as lenders who intensively screen and monitor borrowers, non-bank institutional investors are often seen as passive lenders with limited screening and monitoring capabilities (see e.g., Becker and Ivashina (2016), Berlin et al. (2020), Gustafson et al. (2021), Chernenko et al. (2022)).[23] The syndicated loan market, which typically involves active participation from both banks and non-bank institutional lenders, provides us with an ideal laboratory to study the impact of the presence of non-monitoring creditors in corporate lending. Our specific focus is on the leveraged segment of the syndicated loan market, where effective monitoring by creditors is crucial due to the greater agency problems faced by the borrowers.[24]

[23] Relatedly, Beyhaghi et al. (2019) document that compared to bank lenders, non-bank investors are more likely to exit the syndicate rather than stay engaged in the lengthy and costly process of loan renegotiations, which are crucial for ensuring favorable loan and firm performance.

[24] 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

One notable characteristic of the leveraged loan market is the significant increase in the participation of non-bank institutional investors over the past two decades, a trend that has gained momentum following the Great Financial Crisis. These participants include finance companies, insurance companies, hedge funds, distressed debt funds, loan mutual funds, and collateralized loan obligations (CLOs). According to the IMF, the proportion of leveraged loans held by non-bank institutional investors surged from approximately 30% in 2001 to over 80% in 2018. Concurrently, the percentage of loans held by banks declined from around 50% in 2001 to below 10% in 2018.[25]

Several recent studies have identified various factors contributing to the increased participation of non-bank institutional investors in the leveraged loan market. These factors include the search for yield behavior in a low-interest-rate environment (e.g., Becker and Ivashina (2016), Goel (2018)), heightened regulatory requirements (e.g., Loumioti (2019), Chernenko et al. (2022)), and stricter securitization standards faced by banks following the financial crisis (e.g., Irani et al. (2020), Kundu (2022)). Figure 1 shows the aggregate trends of institutional lenders' participation in the leveraged loan market and the time trend of split control deals (explained in the next section) in the leveraged loan market. Indeed, we observe a significant surge in the post-crisis period that is characterized by low interest rates and more stringent banking regulation.

4.2 Split Control Deals in the Leveraged Loan Market

The increased participation of institutional investors in the leveraged loan market has led to significant structural changes in loan contract design. In response to the entry of institutional investors, a distinct form of contractual arrangement known as *split control* has emerged to adapt to the evolving dynamics of the leveraged loan market (see, e.g., Becker and Ivashina (2016) and Berlin et al. (2020)).[26] Split control deals are those in which

follow the definition given by LPC. We refer readers to Kundu (2022) for more details on the classification of leveraged loans.

[25]The data is available at the 2019 Global Financial Stability Report.

[26]Several recent studies have analyzed the transformation of loan contracts within the leveraged loan market. Becker and Ivashina (2016) demonstrate a clear correlation between the surge of cov-lite deals with the inflow of non-bank institutional investors in the leveraged loan market. Berlin et al. (2020) examine the expansion of cov-lite loans and highlight their consistent pairing with revolving lines of credit, which are retained by banks and feature traditional financial covenants.

institutional cov-lite loans are paired with revolving lines of credit, which are retained by banks and feature traditional financial covenants.[27] This split structure gives bank lenders the exclusive right and ability to monitor and renegotiate financial covenants. 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 when it has cov-lite term loan tranches alongside a non-cov-lite revolving credit tranche. In other words, we refer to deals as split control deals if the financial covenants only apply to a subset of tranches and can be waived or modified only by a subset of lenders.

Split control deals and banks' skin in the game. The central hypothesis of our conceptual framework posits that as banks hold smaller loan shares, the provision of monitoring incentives becomes increasingly reliant on the renegotiation-based channel, which acts as a substitute for the stake-based channel. In our subsequent analysis, a key empirical test thus involves the comparisons between loan deals associated with different levels of banks' stake in the loan. To this end, we use split control status as a proxy for the degree of bank skin in the game. The main reason we use split control status as a proxy for bank skin in the game is because for a non-trivial portion of loan deals, information about bank share is not available.

We validate this proxy by examining the within-bank retention of term loans and revolving lines of credit. 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%, whereas for non-split control deals, the average bank commitment is 71%. Thus, the disparity in bank retention between split control and non-split control deals supports our use of split control status as a proxy for low skin in the game. For robustness, we estimate our baseline regressions using a direct measure of the bank lenders' deal shares, following the methodology of Blickle et al. (2020). We show that our results are robust to this alternative measure of banks' shares in Appendix Tables A.1-A.3.

Furthermore, not only has banks' commitment share in leveraged loans diminished, but the total dollar amount of banks' lending in the leveraged loan market has also declined

[27] Banks typically retain the revolving lines of credit, while the cov-lite term loans are typically held by non-bank institutional investors.

as exhibited in the second sub-figure of Figure 1. The average dollar amount contributed by lead arrangers who are bank lenders in split control deals is $20.03 million (median of $11.25 million)—significantly lower than in non-split control deals where the average is $27.84 million dollars (median of $19.98 million). We show that these results are also evident at the firm (borrower) level. In Appendix Figure A.1, we find that banks' share of total debt at the firm level exhibits a secular decline over time.[28]

Differences between split and non-split control deals. As a starting point of our empirical analysis, we conduct a detailed examination of the differences between split control and non-split control deals based on borrower characteristics, industry, secured status, loan purpose, private equity sponsorship, and lender characteristics. These factors are examined in relation to our conceptual framework, where the monitoring lender holds only a partial stake in the loan.

Regarding borrowers' characteristics, we find that split control borrowers tend to be older, larger in size, exhibit higher productivity and profitability compared to non-split control borrowers. These patterns are consistent with Berlin et al. (2020). In addition, split control borrowers are more commonly found in industries with higher intangible assets. On the contracting characteristics, we find that split control deals are more likely to be secured and are often associated with private equity activities compared to non-split control deals.[29] Turning to the lenders' characteristics, we observe that well-capitalized and profitable banks, with stronger lending relationships with their borrowers, are more likely to participate in split control deals. Detailed descriptions of these findings are provided in Appendix B.

Overall, our findings suggest that split control deals, characterized by low bank share (f_B), are more commonly associated with borrowers who exhibit lower susceptibility to

[28]One may be concerned that the decrease in the banks' stake in borrowers' debt may be due to a mechanical change in the composition of borrowers' capital structure, such as a shift from high-yield bonds to institutional term loans. In this case, the banks' share of debt would decline as a proportion of total bank debt and term loans over time, but would not change as a percentage of total debt. However, we show that after accounting for all sources of debt, including high-yield bonds, the banks' share of debt has declined over time.

[29]This is in line with existing research that highlights how buyouts and private equity participation can mitigate agency problems, enhance firm value through managerial discipline, and improve operational 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)). Specifically, 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.

agency conflicts. These borrowers are typically more creditworthy or benefit from credit discipline imposed by private equity sponsors. Moreover, our comparison of split control deal characteristics to non-split control deal characteristics suggests that split control deals rely more on the renegotiation-based rent extraction channel rather than the salvage value recovery channel. This is evident in cases where borrowers operate in intangible industries with limited fixed assets, opt for secured loans, or have established relationships with banks, granting the banks a more favorable bargaining position in renegotiation.[30]

These findings align with the predictions outlined in our conceptual framework presented in Section 2. Specifically, as highlighted in Hypothesis 1, our framework suggests that credit contracts featuring small stakes can still be effectively underwritten if the severity of agency frictions remains relatively low (e.g., high γ). Additionally, such contracts remain viable if the rent extraction channel is robust enough to substitute for the stake-based channel in providing monitoring incentives (e.g., high β).

5 Identifying the Renegotiation Channel: An Event-Based Analysis

Many theoretical studies in the incomplete contracting literature have recognized and analyzed the importance of ex post renegotiation on the ex ante design of contracts.[31] The primary goal of this paper is to empirically identify a specific channel: the renegotiation-based rent extraction mechanism, which serves as an alternative to creditors' skin in the game in providing incentives for monitoring. This mechanism, in turn, facilitates the underwriting of credit agreements in which monitoring creditors hold relatively small stakes.

Empirical identification of this channel is challenging as it involves constructing exogenous

[30]The more favorable bargaining position of relationship lender could be related to the information monopoly possessed by these lenders through information acquired during the lending process (e.g., Rajan (1992); Schenone (2010)).

[31]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 (1998) 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.

shifters that exclusively impact lenders' incentives to conduct monitoring through the renegotiation channel. Importantly, achieving a clean empirical identification requires shifters that do not influence the severity of the underlying agency problem. Otherwise, any observed effects on ex-ante contracting or ex-post loan outcomes cannot be solely attributed to changes in lenders' monitoring activities.

In this section, we conduct an event-based analysis to empirically identify the impact of a policy-induced change on both the ex ante contracting features and the ex post loan outcomes in the leveraged loan market. This empirical design exploits exogenous variation in lenders' net payoff from renegotiation to test the model predictions 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 by changes in renegotiation environments.

5.1 Background of TD9599 and Empirical Design

Our empirical analysis exploits the passage of TD9599 in 2012, a tax policy that altered the taxes owed on publicly traded debt. When debt is modified outside of bankruptcy proceedings, the restructuring is treated as a taxable exchange. Such debt modifications may include changes in the issue's principal, maturity, timing of interest payments, yield, or recourse status (Campello et al. (2018)). The amount of taxes owed by the original lenders depends on the IRS' classification of the debt as public versus private. For privately traded debt, taxes are based on the difference between the *par value* of the newly-renegotiated debt contract and the original debt. Generally, the par value of out-of-court renegotiated debt is equivalent to the original par value. Thus, while debt holders may experience a capital loss from restructuring privately traded debt, they cannot claim tax credits (Asquith et al. (1994); Demiroglu and James (2015); Campello et al. (2018)). In contrast, for publicly traded debt, taxes are based on the difference between the *market value* of the newly-renegotiated debt contract and the debt's original par value. Debtholders can thus receive a tax credit from restructuring publicly traded debt as the market value is generally below the par value. Hence, the renegotiation payoff (costs) associated with publicly traded debt are generally higher (lower) for creditors than that associated with privately traded debt.

TD9599 changed the classification of privately and publicly traded debt on September 13, 2012. Prior to the passage of TD9599, debt was classified as publicly traded according

to three conditions of a 1994 regulation: (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 added a fourth condition that debt would be classified as public if a "soft quote" could be obtained from one broker, dealer, or pricing service—a condition satisfied by most syndicated loans (Campello et al. (2018)). Consider a scenario where a bank provides a $100 million revolver credit line to a borrower. Prior to TD9599, if the borrower's performance deteriorated and the market value of the loan was renegotiated to $50 million, the lender would not have been entitled to any tax credit. However, with the implementation of TD9599, the lender is eligible to receive $0.35 × (50 - 100) = $17.5 million in tax credit, assuming a tax rate of 35%. Thus, the tax credit is substantial.

One potential concern is that the passage of TD9599 might be endogenous to bank monitoring and its associated effects in the leveraged loan market. We argue that TD9599 was a plausibly exogenous event that occurred outside of the leveraged loan market. The announcement of TD9599 was unanticipated and the scope of the regulation was uncertain. The IRS drafted TD9599 in response to a request from the US Treasury to review the tax definition of public debt, which had remained unchanged since 1994. On January 6th, 2011, the IRS released an initial proposal for public comment. Notably, none of the comments cited renegotiation or enhancement of bank monitoring as a motive for the proposed change.[32] In fact, the IRS did not specify which debt contracts would be subject to TD9599, nor did they provide a timeline for its adoption. Hence, the policy was unforeseen by market participants. Additionally, it is worth mentioning that IRS proposals often have a high discard rate of up to a third, and the IRS ranks as the second highest among U.S. administrative agencies for the length of time spent on drafting new documents (Yackee and Yackee (2016); Campello et al. (2018)). Given the uncertainty surrounding final approval and adoption, the passage of TD9599 presents a plausibly exogenous natural experiment to study how a reduction in lenders' renegotiation costs affects credit market outcomes. As an aside, our analysis in Section 5.4 focuses on the outcomes of loan deals issued well before the tax policy was implemented. As such, the extent of selection bias in this analysis is limited.

The new designation of syndicated loans as publicly traded debt has been shown to dramatically reduce "renegotiation frictions" and increase lenders' willingness to renegotiate

[32]See IRS TD 9599.

loans, according to previous studies.[33] Relatedly, in our investigation of the ex-post renegotiation of credit agreements, discussed in detail in Section 5.2, we find evidence that agent banks are more likely to decrease the size of revolving credit facilities during renegotiation, after TD9599.

In the following subsections, we explore the impact of this plausibly exogenous tax policy on loan renegotiation and the monitoring activities of creditors that trigger such renegotiation (Section 5.2). We then investigate the policy impact on both the ex ante design of credit contracts (Section 5.3) and the ex post performance of outstanding loan deals (Section 5.4). In particular, we are interested in how such policy impact potentially differs for loan deals associated with small (high) bank share, as proxied by split (non-split) control deals.

5.2 Heterogeneous Impact on Renegotiation and Creditor Monitoring

The goal of the paper is to empirically establish the renegotiation-based channel as an alternative to the stake-based channel in the provision of monitoring incentives. To achieve this goal, our main empirical strategy tests whether loan deals with varying degrees of bank shares respond differently to a similar shock to the renegotiation environment—the passage of TD9599.

Impact on loan renegotiation. We begin by directly examining changes in loan renegotiation around the tax policy for split and non-split control deals. A key tenet of our theoretical analysis is that the renegotiation-based rent extraction plays a more significant role in credit agreements where the stake-based mechanism alone is insufficient to ensure effective creditor monitoring. Accordingly, our model posits that loan deals in which monitoring creditors hold smaller shares (e.g., split control deals) are more susceptible to changes in the renegotiation environment (Hypothesis 2).

We analyze several facets of renegotiation. These include investigating the frequency of loan deal renegotiations (measured by the number of renegotiation rounds) and assessing

[33] Campello et al. (2018) document the significant drop in CDS spreads 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.

whether, following the tax policy, banks accelerate repayment, impose amendment fees, introduce additional covenants, raise interest rates, or request a broader borrowing base during renegotiation, after the tax policy. The main regression specification is as follows:

$$\text{Renegotiation}_{d,s,t} = \gamma_{s,t} + \beta \times \text{Split Control}_{d,t} \times \mathbb{1}[\text{Post}]_t + \beta_1 \times \text{Split Control}_{d,t} + \epsilon_{d,s,t}. \tag{8}$$

The left-hand side variables include the frequency and outcomes of renegotiation, where d stands for 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 coefficient of interest is the interaction term $\text{Split Control}_{d,t} \times \mathbb{1}[\text{Post}]_t$, where the dummy variable $\text{Split Control}_{d,t}$ takes a value of 1 if the deal d issued in year t is a split control deal and $\mathbb{1}[\text{Post}]_t$ is a dummy variable that equals to 1 if year t is after the passage of TD9599. For all the regression specifications, we use a within industry-year estimator across all specifications. Industry×year fixed effects are captured by $\gamma_{s,t}$. This absorbs the dummy variable indicating post-TD9599. The inclusion of industry×year fixed effects allow us to tease out time-varying industrial factors on the credit demand side that could be driving the contractual changes.

Figure 2 illustrates the frequency of renegotiation in loan deals before and after the implementation of the tax policy. In the left panel, we observe that prior to policy, both split control and non-split control deals experienced an average of approximately 2.0 to 2.5 rounds of renegotiation. After the tax policy, split control deals experienced a substantial increase in the number of rounds of renegotiation, averaging around 3.5 rounds of renegotiation one year later. In contrast, the number of rounds of renegotiation for non-split control deals remained around 2.5. The right panel of Figure 2 plots the coefficients on the interaction term between split control deal dummy and post dummy by year. Consistent with the left panel, the number of renegotiation rounds for split control deals exceeded those of non-split control deals by a significant margin, after the tax policy.

More formally, Table 2 presents the regression estimates of Eq. (8), indicating greater creditor intervention for split control deals following the tax policy. Specifically, in columns 1, the results indicate that split control deals experience an extra 12.4 percentage points increase in the probability of having at least one renegotiation and amendment during the loan contract period compared to non-split control deals. This corresponds to an additional

increase of 0.32 standard deviations. Moreover, in Column 2, we find that split control deals experience an additional 0.63 rounds of renegotiation in comparison to non-split control deals after the tax policy, amounting to 0.48 standard deviations.

We further examine the differential policy impact on renegotiation outcomes for split control and non-split control deals. Table 3 presents the results. Our findings provide direct evidence supporting the renegotiation-based rent extraction mechanism. After the tax policy, banks in split control deals exhibit a higher likelihood of undertaking various actions in renegotiation compared to those in non-split control deals.

Specifically, after the tax policy, banks in split control deals are 0.67 percentage points more likely to accelerate borrower repayments (0.11 standard deviations), 1.08 percentage points more likely to increase interest rates (0.31 standard deviations), 1.25 percentage points more likely to demand extra borrowing base provision (0.28 standard deviations), 1.44 percentage points more likely to include extra covenants in the loans (0.34 standard deviations), 0.67 percentage points more likely to charge extra amendment fees (0.21 standard deviations), and 0.86 percentage points more likely to reduce the borrower's borrowing limit in the revolving credit line tranche (0.26 standard deviation), compared to banks in non-split control deals.

Overall, these findings demonstrate a significant policy impact on both the occurrence and outcomes of loan renegotiation, particularly in split control deals where banks have lower skin in the game.

Impact on creditor monitoring. Thus far, we have provided suggestive evidence that creditors conduct more diligent monitoring after the tax policy, as indicated by the higher frequency of renegotiations and more creditor-friendly outcomes in these renegotiations (e.g., Rajan and Winton (1995), Park (2000)). This section provides direct evidence demonstrating that banks increase their monitoring intensity and commitment in response to the tax policy. We further show that these changes are larger for split control deals compared to non-split control deals.

To empirically gauge bank lenders' monitoring intensity and commitment, we extract information from the original credit agreements filed under the 8-K. Following Gustafson et al. (2021), we construct three measures of lenders' monitoring intensity. The first measure is a dummy variable indicating whether the credit agreement mandates firms to provide a financial statement. The second measure is a dummy variable indicating whether lenders

conduct on-site field examinations of the borrowing firm. The third measure quantifies the frequency of financial statement submissions by counting the number of months between submissions.

Table 4 presents the results of this analysis. Following the tax policy, split control deals experience a notable increase in their monitoring intensity. The likelihood that split control deals require periodic financial statement deliveries increases by an additional 1.5 percentage points (0.25 standard deviations), relative to non-split control deals after the tax policy. Moreover, the likelihood that split control deals conduct on-site field exam requests increases by an extra 7.12 percentage points (0.46 standard deviations), relative to non-split control deals after the tax policy. Further, the frequency at which split control deals receive financial statements increases by an additional one quarter, relative to non-split control deals after the tax policy.

In summary, our findings indicate that the sensitivity of monitoring incentives to changes in renegotiation environments differs for split control and non-split control deals. The higher sensitivity of split control deals to the tax policy reflects greater dependence on the renegotiation-based mechanism in the provision of monitoring incentives for these loan deals which feature relatively small bank stakes, which is consistent with our theoretical model.

5.3 Impact on Loan Contracting

This section examines how these changes in loan renegotiation and creditor monitoring documented in Section 5.2 affect the ex-ante design of credit contracts in the leveraged loan market. Specifically, we compare the contract features of loan deals issued before and after the tax policy.

5.3.1 Trend of Loan Contracting Features in Leveraged Loan Market

We first present graphical illustrations depicting the changes in contractual features in the leveraged loan market. Specifically, we focus on the period surrounding the implementation of the tax policy.

The share of bank lenders in the leveraged loan market has declined significantly since the tax policy change. In the first sub-figure of Figure 1, we present the evolution of banks' loan shares in the leveraged loan market: it is evident that banks' commitment share has declined

significantly after the implementation of the tax policy.[34] The decrease in the market share of bank lenders is evident not only in split control deals but also in non-split control deals. Appendix Figure A.8 presents the average bank share in non-split control deals. A similar pattern is observed: for non-split control deals, the average bank share declined from about 70% to 30%, indicating that the tax policy significantly reduced the need for banks to hold large stake in the provision of monitoring incentives.

Figure 3 illustrates the time trend of the incidence of various types of covenants for split and non-split control deals. As shown in the top left sub-figure, prior to 2012, there were negligible differences in the number of covenants between split and non-split control deals during loan origination. The difference in the number of covenants between split and non-split control deals was less than 0.1. However, after the passage of TD9599, the number of covenants per tranche associated with split control deals increased dramatically from 0.2 to more than 1.1, whereas the number of covenants per tranche in non-split control deals increased from 0.2 to 0.5 over the same period. We further examine how the incidence of debt-to-ebitda, fixed charge coverage ratio, debt issuance, interest coverage ratio, and other types of covenants changes over time in the other sub-figures. Before the tax policy, split and non-split control deals exhibited comparable frequencies of debt-to-ebitda covenants, with approximately 20% of both types of deals having at least one covenant restricting the firms' debt-to-ebitda ratio. However, following the implementation of the tax policy, there was a notable increase in the inclusion of debt-to-ebitda covenants for split control deals. After the policy, 60% of split control deals included such a covenant, in contrast to a covenant inclusion rate of 20% observed in non-split control deals. Similar patterns of increased covenant inclusion for split control deals relative to non-split control deals are observed for fixed charge coverage ratio, debt issuance, interest coverage ratio, and other covenant types.[35]

[34] This decline is consistent with the rise of split control deals (which generally feature a lower bank share) in the leveraged loan market, as depicted in Figure 1 (fourth sub-figure).

[35] "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.

5.3.2 Regression Analysis

This section investigates the impact of the tax policy on the contractual features of loan deals issued to leveraged borrowers to codify the findings presented in Section 5.3.1. Specifically, our analysis aims to understand how changes in banks' monitoring incentives, resulting from the reduction of renegotiation frictions, translate into various aspects of contractual outcomes in the leveraged loan market.

Our baseline regression is specified as follows:

$$\mathrm{Y}_{d,s,t} = \gamma_{s,t} + \beta \times \mathbb{1}[\text{Split control}]_{d,t} + \beta_1 \times \mathbb{1}[\text{Split control}]_{d,t} \times \mathbb{1}[\text{Post}]_t + X_{d,s,t} + \epsilon_{d,s,t}.$$

Y indicates the outcome variable. The outcomes of interest include indicators of covenant inclusion, covenant tightness, as well as other contract features including fees, deal purpose, and rating. Subscript d denotes 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. X denotes deal level controls include deal size and maturity.

Covenant inclusion. We begin with an important dimension in the ex-ante design of contracts: covenants. Specifically, we study the effects of the tax policy on salient features of covenants, such as inclusion and tightness, and how such effects differ across loan deals. With the notion that covenants serve as contractual devices that enhance banks' incentives to monitor (Rajan and Winton (1995)), our empirical investigation aims to determine how covenant-based monitoring is differentially affected for deals with high and low skin in the game around the policy.

Table 5 presents results on covenant inclusion. In column 1, we find that after the activation of TD9599, split control deals were 2.04 percentage points more likely to include covenants relative to non-split control deals. This corresponds to an additional 0.10 standard deviations rise in covenant inclusion. Furthermore, as indicated in column 2, the average number of covenants in split control deals increased by an additional 1.05 compared to non-split control deals after the tax policy, representing an additional 0.42 standard deviations increase. We establish the robustness of these results by including deal controls in columns 3-4. In addition, we present the time-varying regression coefficients on the interaction between the split control indicator and the year dummy between 2009 and 2015 in Figure 4.

Consistent with our findings in Table 5, we observe that the response of split control deals in covenant inclusion is significant following the tax policy, compared to non-split control deals.

In Table 6, we further examine how the inclusion of specific types of covenants are affected for split and non-split control deals. The outcome variables are indicators that reflect whether there are covenants that restrict a firm's debt-to-ebitda, interest coverage, fixed charge coverage, debt issuance (including debt-to-equity ratio), or other measures, respectively. As shown in column 1, 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. This estimate is larger than the point estimates associated with the interest coverage ratio covenant, fixed charge coverage ratio covenants, and debt-issuance covenant, which are 6.25 (0.13 standard deviations), 1.2 percentage points (0.25 standard deviations), and 2.8 percentage points (0.06 standard deviations) more likely to be included in split control deals compared with non-split control deals after the tax policy, as shown in columns 2-4, respectively. We show that these results are robust to the inclusion of deal controls in columns 6-10.

Our findings indicate that when renegotiation costs are reduced, banks involved in split control deals have greater incentives to conduct covenant-based monitoring compared to those involved in non-split control deals. Specifically, the banks focus more on covenants related to cash flows' ability to cover debt obligations, such as debt-to-ebitda ratio and interest coverage ratio, rather than capital structure-related covenants such as debt issuance. This preference for profitability covenants suggests that lenders are more actively monitoring borrowers' managerial actions. Profitability covenants can detect deterioration in credit quality earlier than capital structure covenants since they become binding with a decrease in earnings, whereas capital structure covenants typically require losses or a series of losses to become binding (Christensen and Nikolaev (2012)).

Covenant tightness. Thus far, our results indicate a more pronounced response in covenant inclusion among split control deals after the tax policy. This suggests a greater emphasis on covenant-based monitoring after the tax policy, particularly on the extensive margin. On the intensive margin, it remains to be examined whether there are concurrent changes in covenant tightness. An intensification of covenant tightness could also induce a greater proclivity to monitor and renegotiate.

Table 7 presents the differences in covenant tightness between split and non-split control deals, around the tax policy. 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. However, after the tax policy, split control deals experience a tightening of their debt-to-ebitda, interest coverage, and fixed charge covenants relative to non-split control deals. Specifically, we find that split control deals require borrowers to maintain 0.083 higher debt-to-ebitda ratios compared to non-split control deals after the tax policy, representing an 18% tightening relative to the pre-event average level. Split control deals require borrowers to also maintain 0.230 extra higher interest coverage ratios (8.5% extra tightening), and 0.067 extra higher fixed charge coverage ratios (2.5% extra tightening), compared to non-split control deals, after the tax policy.

Furthermore, following Murfin (2012), we construct a measure of covenant tightness and examine how covenant tightness varies for split and non-split control deals around the tax policy.[36] Our findings suggest that following the passage of the tax policy, split control deals experienced 0.056 higher covenant strictness (7.6% extra tightening) compared with non-split control deals. In general, our findings demonstrate that split control deals feature notably more stringent covenants and more frequent instances of amendment and renegotiation compared to non-split control deals after the tax policy. This aligns with the observation put forth by Murfin (2012) that covenant stringency and firms' post-covenant violations are positively correlated.

Loan purpose and deal sponsorship. The existing literature suggests that buyouts and private equity sponsorship can reduce agency costs and increase firm value by improving corporate governance and fostering managerial discipline.[37] Consequently, private equity can effectively serves as an external monitor and deals with private equity firms are considered less prone to agency problems. In Hypothesis 3, we posit that as banks' incentives to monitor borrowers increase with reductions in renegotiation costs, they are more likely to enter into split control deals with firms that are subject to greater agency frictions (e.g., those without effective external monitoring). Applying this prediction in the context of private

[36]Following Murfin (2012), we estimate the covariance matrices of strictness measure using historical changes in the natural logarithm of ebitda-to-debt ratio, interest coverage ratio, fixed charge coverage ratio for each borrower-deal, as these three are the most commonly seen in the leveraged loan deals.

[37]See, 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).

equity firms, we hypothesize that split control deals are less likely to involve private equity sponsors, fund buyouts, or use unitranche financing—a type of flexible financing used for funding acquisitions and mid-size buyouts, after the tax policy.

Panel A of Table 8 presents the findings. We use a within industry-year estimator across all columns. The outcome variables are indicators reflecting whether a deal lacks a private equity sponsor or deal guarantor (column 1), is used for a buyout (column 2), or utilizes unitranche financing (column 3). Our findings support our hypothesis by revealing that after the tax policy, the likelihood that a split control deal does not feature a sponsor or deal guarantor is higher by an additional 8.88 percentage points (0.18 standard deviations). Furthermore, the likelihood that a split control deal is used towards a buyout decreases by an additional 15.90 percentage points (0.51 standard deviations), while the likelihood of utilizing unitranche financing in split control deals decreases by 3.21 percentage points (0.38 standard deviations). Hence, our findings complement Haque et al. (2023), which also documents that PE sponsors' actions substitute for bank monitoring and are associated with greater non-bank participation in the syndicated loan market.

Boundary of the leveraged loan market. Our findings so far indicate that banks are more likely to enter into split control deals with firms that face higher agency frictions after the tax policy. To further investigate the impact of reduced renegotiation costs on credit provision to marginal firms in terms of credit rating, we analyze changes in the likelihood of banks contracting split control deals with speculative borrowers. A borrower is classified as speculative if it holds a Moody's credit rating of B3 or lower. This analysis allows us to examine whether the tax policy affects the credit relationships between banks and riskier borrowers.

Panel B of Table 8 presents the results from this analysis. When renegotiation costs are lowered, there is an overall increase in the likelihood of speculative borrowers receiving credit deals. However, the effect is more pronounced for split control deals compared to non-split control deals. Specifically, the likelihood that a speculative borrower receives a loan deal is higher by an additional 8.41 to 9.51 percentage points for split control deals compared with non-split control deals, after the tax policy. This constitutes additional increases of 0.38 to 0.43 standard deviations. These point estimates are economically meaningful, stable, and statistically significant at the 1% level across all specifications. Hence, our findings demonstrate that a less frictional renegotiation environment can expand the boundary of

the leveraged loan market, particularly for loan deals where banks hold relatively small shares.

Fees. In part, fees are compensation for options embedded in credit contracts (Thakor et al. (1981); Berg et al. (2016)). We hypothesize that when the renegotiation cost (payoff) is relatively low (high), banks demand lower ex ante compensation in the form of fee charging. This hypothesis is in the spirit of Williamson (1983) who argues that advance payments are equivalent of posting a "hostage" or a credible commitment that prevents parties from opportunistically changing contract terms during renegotiation. Consequently, we posit that the tax policy results in a decrease in advance fee payments, particularly in split control deals. This is because split control deals rely more on the renegotiation-based channel for incentive provision, thereby making them more vulnerable to the effects of the tax policy.

Panel C of Table 8 reports the results of this analysis. The outcome variable is the upfront fee in column 1, annual fee in column 2, and commitment fee in column 3. The upfront fee refers to a one-time payment collected upon the closing of the deal. The annual fee represents an annual charge calculated based on the entire commitment amount and the commitment fee represents a fee with reference to the undisbursed loan amount of a loan deal. Our findings support our hypothesis that split control deals are associated with larger fee reductions than non-split control deals following the implementation of the tax policy. Specifically, we find that split control deals experience an additional decline of 50 basis points in the upfront fee. This decrease is economically meaningful, representing 0.45 standard deviations of the upfront fee, and is statistically significant at the 5% level. We also find that split control deals experience additional declines of 20 basis points (0.46 standard deviations) in the annual fee and 4 basis points (0.16 standard deviations) in the commitment fee after the tax policy, though these decreases are not statistically significant. Thus, our results demonstrate that the tax policy leads to a more pronounced reduction in advance payments for split control deals compared to non-split control deals.

5.4 Impact on (Pre-existing) Loan Outcomes

Given that the comparison between the contractual structures of loan deals before and after the tax policy may entail distinct borrowers with varying monitoring needs, one may be concerned that the observed differences between split control and non-split control deals

may be influenced by specific borrower-related confounding factors. To address this concern, we supplement our analysis in Section 5.3 with analysis on the impact of the tax policy on the ex-post performance of pre-existing loan deals. Focusing on the loan deals underwritten before the policy allows us to study the dynamics of creditors' monitoring when faced with the same set of borrowers.

In our ideal thought experiment, we compare the performance changes of two borrowers — one that has split control contracts to one that does not — before and after the tax policy. Recall that in Hypothesis 2, we propose that borrowers in pre-existing split control deals at the time of the tax policy exhibit a larger performance improvement than those in non-split control deals, after the tax policy. To this end, we run the following regression specification, comparing how firms with pre-existing split control deals before the tax policy perform, relative to firms without pre-existing split control contracts, after the passage of the policy:

$$\text{Perf}_{i,s,t} = \mu_i + \gamma_{s,t} + \beta \times \mathbb{1}[\text{Split control borrower}]_i \times \text{Post}_t + \epsilon_{i,s,t}, \tag{9}$$

where *split control borrowers* are defined as firms with pre-existing split control deals at the time of TD9599. The dependent variable is the performance of firm i of industry s in year t. The main explanatory variable, Split control borrower$_i \times$ Post$_t$, is the interaction between whether firm i has split control deals on its balance sheet and whether year t is after TD9599, where the dummy variable $\mathbb{1}[\text{Split control borrower}]_i$ takes a value of 1 if firm i contracted a split control deal before the event year. Firm fixed effects are added to control for time-invariant or slow-moving firm characteristics that may potentially affect firm performances. Industry×Year fixed effects are included to capture the time-varying industrial factors that may affect firms' performance metrics.

The dependent variable, *Perf*, captures various measures of firms' performance. Specifically, we examine the return on assets, the probability of default within one year, three years, and five years. To estimate these probabilities, we employ the Merton Distance-to-Default methodology, which utilizes historical data on market capitalization, equity volatility, long-term debt, and current liabilities. The "Distance-to-Default" represents the difference between the firm's asset value and the face value of its debt, scaled by the standard deviation of the firm's asset value à la Merton (1974).

We present our findings in Panel A of Table 9. In particular, column 1 demonstrates that split control borrowers experience an additional 7.3% improvement in return on assets (ROA) compared to non-split control firms after the tax policy. This improvement corresponds to an additional increase of 0.05 standard deviations.[38] Furthermore, column 2 shows that split control borrowers experience an additional decline of 1.20% in their one-year default probabilities relative to non-split control firms after the tax policy (0.05 standard deviations). The magnitudes of the additional decreases in the three-year and five-year default probabilities are similar.

Our analysis also examines the strength of firms' balance sheets. We find that after the tax policy, firms with split control deals on their balance sheet experience significant improvements. Specifically, Panel B of Table 9 shows that these firms experience an additional 14% decrease (0.11 standard deviations) in their debt-to-EBITDA ratio, indicating a healthier financial position.[39] Moreover, the retained earnings of these firms increase by an additional 9.3% (0.02 standard deviations), indicating improved profitability and net worth. Additionally, these firms experience an additional 38% decline (0.15 standard deviations) in net debt issuance, indicating a reduction in borrowing. Lastly, their sales scaled by total assets increases by an additional 7.1% (0.07 standard deviations), indicating growth in business activity.

These findings provide evidence in support of our model, demonstrating that reductions in renegotiation costs — which strengthen creditor's monitoring incentives — have a more pronounced impact on the performance of split control borrowers compared to non-split control borrowers (Hypothesis 2). We defer detailed discussion on this issue and related policy implications to the next section.

5.5 Discussion and Policy Implications

The dramatic increase in institutional investors' participation in the risky segment of corporate lending that requires intensive monitoring raises concerns regarding the outcomes in related credit markets. In particular, one question that naturally arises is whether the

[38] 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.

[39] 0.1146×21.69 gives an average of 2.48 unit decrease in debt-to-ebitda ratio. Compared to the pre-event average debt-to-ebitda ratio of 17.31, this amounts to 14% decrease.

resulting lower stake held by the bank lenders necessarily leads to insufficient monitoring and suboptimal loan outcomes. If so, how can regulatory and fiscal policy be designed 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.

Our findings indicate that the level of monitoring prior to the implementation of the tax policy may have been inadequate, as evidenced by the significant improvement in the performance of split control borrowers after the policy enactment. Put differently, if creditors had been sufficiently and effectively monitoring borrowers to ensure their proper behavior, we would then expect minimal impact on loan outcomes following the reduction in renegotiation frictions. This implies that the inflow of non-monitoring institutional investors may be associated with insufficient monitoring in the leveraged loan market in the presence of frictions in the renegotiation process.

Thus, our findings suggest that reducing renegotiation frictions can serve as a viable policy measure to ensure that banks maintain sufficient incentives for conducting thorough monitoring despite holding smaller stakes. Addressing renegotiation frictions becomes crucial as it enables policymakers to foster a conducive environment for effective monitoring practices. This, in turn, enhances the stability and efficiency of credit markets. In essence, our study underscores the importance of assessing the implications of institutional investor participation and its impact on monitoring dynamics within credit markets.

6 Conclusion

The increasing participation of institutional investors in the risky segment of corporate lending, where effective creditor monitoring is crucial, poses a challenge to the conventional wisdom that emphasizes the importance of banks retaining a significant stake in their loan origination to ensure adequate monitoring incentives. This paper proposes a new mechanism that rationalizes this *monitoring with small stakes* puzzle and provides empirical evidence to support and identify this mechanism.

Creditors are incentivized to engage in monitoring activities by two primary factors: the potential for incurring losses resulting from insufficient monitoring and the expectation of being rewarded for their monitoring efforts. Building upon this intuition, we propose a

novel framework that identifies two distinct mechanisms for incentivizing banks to engage in monitoring. The first mechanism is based on skin in the game, which entails banks retaining loans as a means to maintaining monitoring incentives through direct exposure to loan loss. The second mechanism is centered around rent extraction, which relies on banks leveraging their monitoring activities to trigger renegotiation processes, through which they can extract payoffs that are not shared with other non-monitoring creditors. In this context, banks derive incentives to monitor as it enables them to influence the occurrence and outcomes of renegotiation to secure favorable terms for themselves.

We apply this framework to 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 bank hold a smaller stake is more viable when monitoring is less essential or if there is an alternative source that effectively provides incentives for monitoring.

To empirically identify this renegotiation-based mechanism in the provision of monitoring incentives, we conduct an event-based analysis leveraging the activation of the TD9599 tax credit as a natural experiment. This empirical design allows us to exploit the plausibly exogenous variation in the expected net payoff to creditors from renegotiation and study its impact on the leveraged loan market. The results of our analysis confirm 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 importantly, by using split control status as a proxy for low bank skin in the game, our empirical findings reveal an asymmetric policy impact on both the contracting and real outcomes of low-bank-stake (split control) loans versus high-bank-stake (non-split control) loan deals. In terms of contracting, we observe that the tax policy significantly influences the contractual features of new split control deals compared to non-split control deals. On the real side, we find that the passage of the tax policy has a greater impact on the performance of borrowers with existing split control deals compared to those without such deals. Importantly, we provide direct evidence that these differences arise from changes in banks' monitoring activities, which are associated with higher payoffs during renegotiation.

In conclusion, our analysis addresses the ongoing debate regarding the effectiveness of traditional bank-monitored corporate lending in monitoring leveraged borrowers amidst the growing participation of institutional investors. The novel mechanism proposed and empirically tested in our analysis helps rationalize the *monitoring with small stakes* puzzle in the leveraged loan market. These insights are not only valuable for understanding the dynamics of this specific market but also have potential applicability to other credit markets that experience similar shifts in lender composition.

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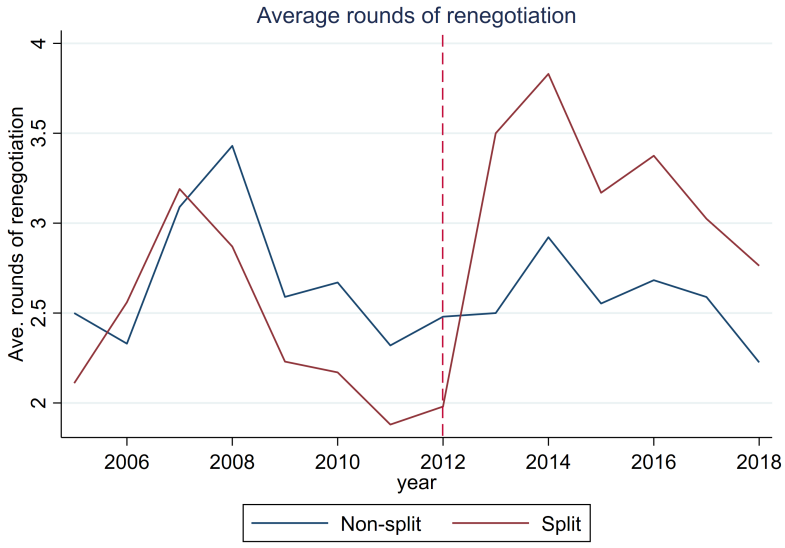
Figure 1. Aggregate Trend of the Leveraged Loan Market

This figures below show the aggregate trend of the leveraged loan market. The first figure (top left) 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, hedge funds, and other types of institutional investors. The second figure (top right) shows the total dollar amount lent by bank lenders and lead bank lenders in the U.S. leveraged loan market. The dollar amount is calculated by multiplying dollar tranche amount with the percentage share contributed by bank lenders for each tranche, and then aggregate to year level. The proportion of deals with non-missing lenders' shares (and lenders' amount contributed) is demonstrated in Figure A.9. The third figure (bottom left) plots the time trend of the proportion of deals with non-bank lenders. The fourth figure (bottom right) shows the proportion of total dollar amount of deals with institutional lenders participation over time. The frequency of the data is annual.

Figure 2. TD9599 and Renegotiation

The figures below show the aggregate trend of rounds of renegotiation for split control deals and non-split control deals around the activation of TD9599. The left panel shows the average rounds of renegotiation for split control deals and non-split control deals respectively. Details on variable definition and construction are provided in Section 3. The frequency of the data is annual. The right panel shows the time-varying coefficients of the following regression specification:

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



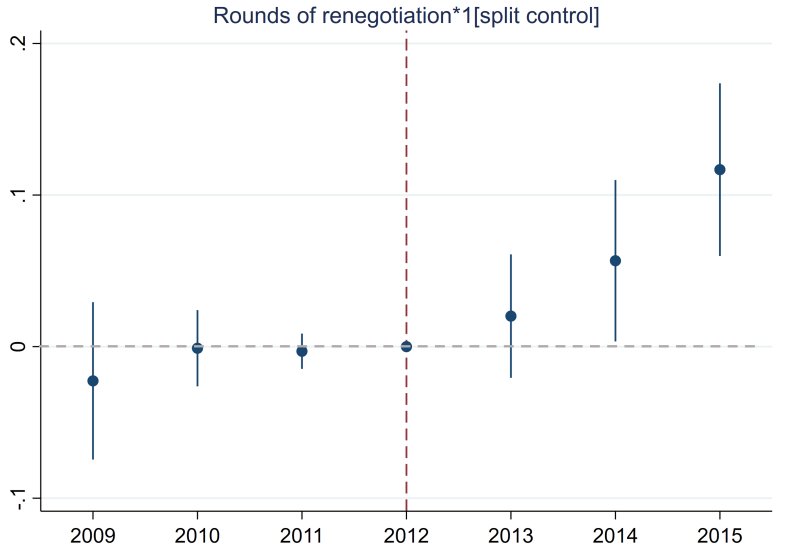


Figure 3. Aggregate Trend in Contract Features by Covenant Categories

The figures below show the aggregate trend of covenant inclusion of leveraged loan market for split control and non-split control deals. The top left panel shows the average number of covenants per tranche in a deal for split and non-split control deals from 2005-2018. 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 from 2005-2018. Details on variable definition and construction are provided in Section 3. The frequency of the data is annual.

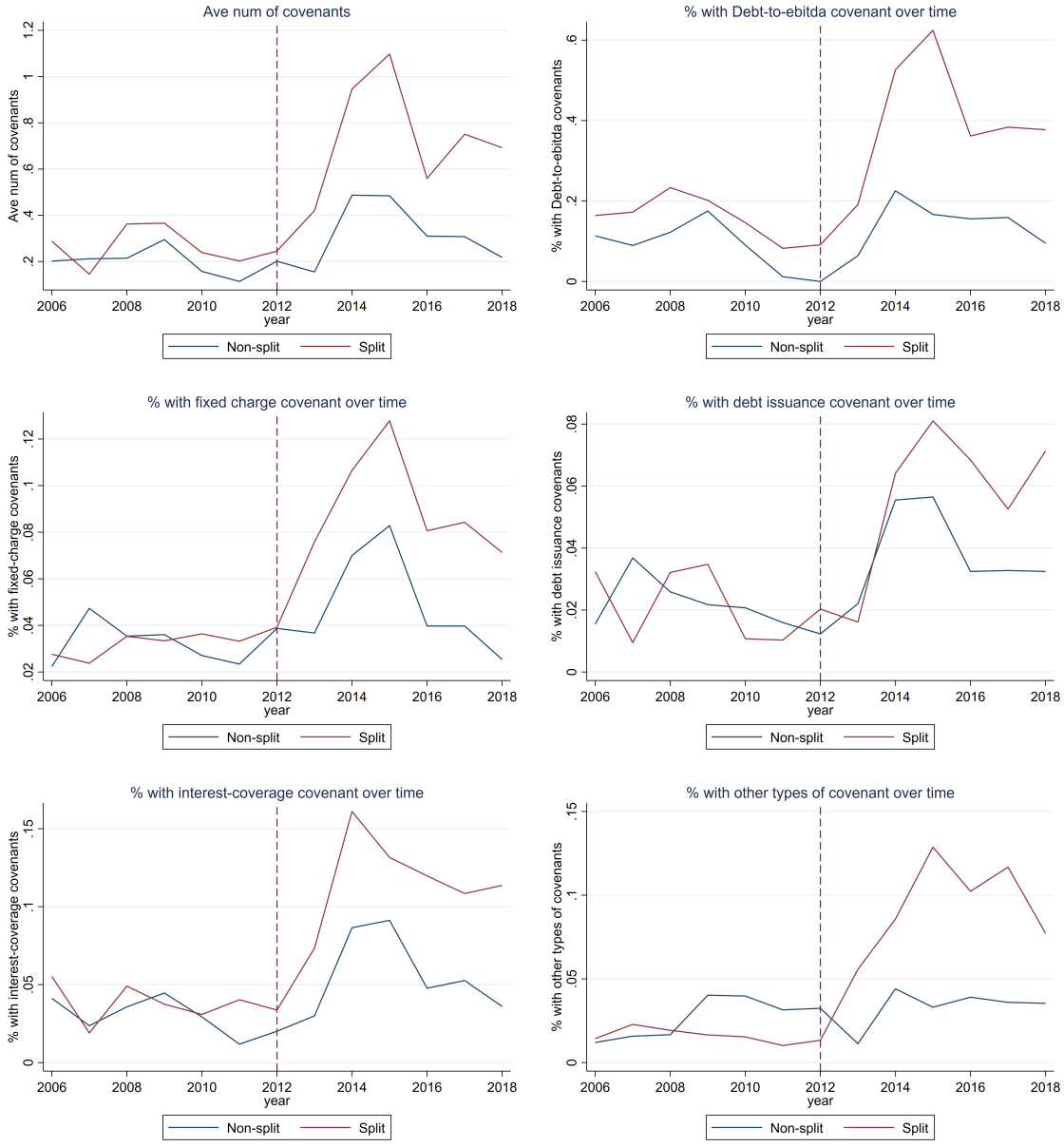


Figure 4. Differential Responses of Contract Features by Split and Non-split Control around Tax Policy Change

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. The frequency of the data is annual.

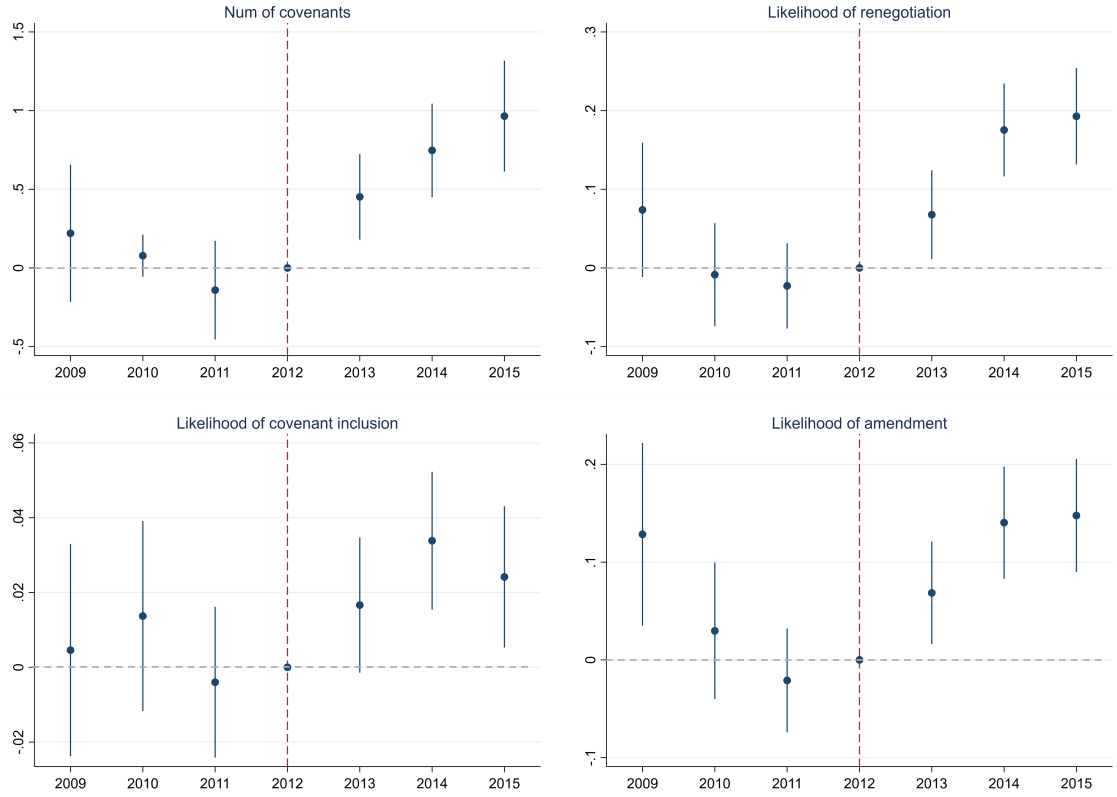


Table 1. Deal Characteristics by Split Control and Non-Split Control

Panel A: Non-split Control	Mean	SD.	P25	Median	P75
Bank share	0.7121	0.2500	0.1583	0.5233	0.9500
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
$ amount per lead bank lender	27.8405	52.6058	10.0000	19.9998	31.7361
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
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
$ amount per lead bank lender	20.0341	5.6250	38.3601	11.2500	20.9091
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. The table shows summary statistics for all deals between 2005-2018.

Table 2. Impact of the Tax Policy: Renegotiation Occurrence and Frequency

	1[Renegotiated]	Rounds	1[Renegotiated]	Rounds
	(1)	(2)	(3)	(4)
Split Control×Post	0.1238***	0.4847**	0.1235***	0.5386**
	(0.0163)	(0.2376)	(0.0164)	(0.2412)
Split Control	-0.1429***	-0.0843	-0.1394***	-0.1005
	(0.0155)	(0.2233)	(0.0156)	(0.2263)
Loan spread			-0.9346***	-0.6179***
			(0.0731)	(0.0483)
ln(Loan amount)			0.1167***	0.0771***
			(0.0128)	(0.0085)
Maturity			0.0271**	0.0179**
			(0.0128)	(0.0084)
Industry×Year FE	✓	✓	✓	✓
Deal controls			✓	✓
N	22,750	22,750	22,347	22,347
Adj. R^2	0.10	0.09	0.12	0.09

The table presents the renegotiation outcomes of credit agreements for split control and non-split control deals before and after the activation of TD9599. The regression equation is as follows:

$$\text{Renegotiation}_{d,s,t} = \gamma_{s,t} + \beta \times \mathbb{1}[\text{Split control}]_d \times \text{Post}_t + \beta_1 \mathbb{1}[\text{Split control}]_d + X_{d,s,t} + \epsilon_{i,s,t}$$

$\mathbb{1}[\text{Split control}]_i$ is an indicator variable that equals to 1 if deal d is a split control. The dependent variables are indicator variables indicating whether the deal is ever renegotiated and the rounds of renegotiation. Rounds of renegotiation is constructed by counting the maximum number of times a covenant has taken different values for a deal. Industry classification (s) is at 2-digit SIC level. $\gamma_{s,t}$ captures the industry×year fixed effects. The regression is at deal-year level. Deal control variables (X) include the deal size, maturity and loan spread. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in in parentheses.

Table 3. Impact of the Tax Policy: Renegotiation Outcomes and Rent Extraction

	Acceleration	Fees	Extra covenants	Decrease amount	Increased interest	Extra collateral
	(1)	(2)	(3)	(4)	(5)	(6)
Split Control×Post	0.0064*	0.0067*	0.0144***	0.0086**	0.0108***	0.0125***
	(0.0035)	(0.0037)	(0.0040)	(0.0034)	(0.0037)	(0.0036)
Split Control	0.0016	-0.0006***	-0.0002	-0.0004	-0.0006***	-0.0002
	(0.0015)	(0.0002)	(0.0001)	(0.0039)	(0.0002)	(0.0041)
Loan spread	0.0069***	0.0040**	0.0005	0.0058**	0.0081***	0.0021
	(0.0019)	(0.0019)	(0.0014)	(0.0028)	(0.0019)	(0.0029)
Maturity	0.0058**	0.0022	0.0042	0.0064**	0.0066**	0.0012
	(0.0028)	(0.0024)	(0.0027)	(0.0030)	(0.0027)	(0.0032)
ln(Loan amount)	0.0199***	0.0044*	0.0102***	0.0124***	0.0111***	-0.0039
	(0.0028)	(0.0026)	(0.0028)	(0.0029)	(0.0029)	(0.0031)
Controls	✓	✓	✓	✓	✓	✓
Industry× Year FE	✓	✓	✓	✓	✓	✓
AdR-squared	0.0260	0.0115	0.0176	0.0148	0.0235	-0.0025
N	214236	214236	214236	214236	214236	214236

The table presents the renegotiation outcomes of credit agreements for split control and non-split control deals before and after the activation of TD9599. The regression equation is as follows:

$$\text{Renegotiation}_{d,s,t} = \gamma_{s,t} + \beta \times \mathbb{1}[\text{Split control}]_d \times \text{Post}_t + \beta_1 \mathbb{1}[\text{Split control}]_d + X_{d,s,t} + \epsilon_{i,s,t}$$

$\mathbb{1}[\text{Split control}]_i$ is an indicator variable that equals to 1 if deal d is a split control. The dependent variables are indicator variables indicating the occurrence of renegotiation outcome. "Acceleration" indicates accelerated repayments of loans or shortening of maturity, "Fees" indicates the occurrence of amendment fees, extra monitoring fees and extension fees. "Increased interest" indicates the occurrence of increases in loan interest rates. "Extra collateral" indicates the occurrence of extra borrowing base requests. "Decrease loan amount" indicates the occurrence of reduction in credit limit of the revolver credit line. Deal control variables (X) include the deal size, maturity and loan spread. Industry classification (s) is at 2-digit SIC level. $\gamma_{s,t}$ captures the industry×year fixed effects. The regression is at deal-quarter level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in in parentheses.

Table 4. Impact of the Tax Policy: Monitoring Intensity in Financial Contracts

	Financial statement	Field Exam/Inspection	Frequency
	(1)	(2)	(3)
Split Control×Post	0.0154*	0.0712**	-3.0186*
	(0.0710)	(0.1087)	(1.4259)
Split Control	-0.0632	-0.8020	3.7678
	(0.5162)	(0.5559)	(2.7255)
ln(Loan amount)	0.0532	0.0399	0.0828
	(0.0400)	(0.0431)	(0.0562)
Loan Spread	-0.0000	-0.0002	-0.0001
	(0.0004)	(0.0004)	(0.0005)
Maturity	0.0016	-0.1340	-0.1891
	(0.1457)	(0.1569)	(0.2048)
Industry× Year	✓	✓	✓
Deal controls	✓	✓	✓
N	149	149	149
Adj. R^2	0.12	0.05	0.09

The table presents the contractual monitoring intensity for credit agreements initiated before and after the activation of TD9599:

$$\text{Monitoring}_{d,s,t} = \gamma_{s,t} + \beta \times \mathbb{1}[\text{Split control}]_d \times \text{Post}_t + \beta_1 \mathbb{1}[\text{Split control}]_l + X_{d,s,t} + \epsilon_{i,s,t}$$

$\mathbb{1}[\text{Split control}]_d$ is an indicator variable that equals to 1 the deal is a split control deal. The dependent variables are indicator variables indicating the monitoring obligation and intensity in the credit agreement. "Financial Statement" indicates that the creditors requests submission of financial statement. "Field Exam/Inspection" indicates the commitment of field examination and inspection of firms assets in the credit agreement. "Frequency" measures the frequency of financial statement delivery required by the credit agreement. The frequency could be 12 months (annually), 3 months (quarterly), or 1 month (monthly). The regression is at the deal level. Deal control variables (X) include the deal size, maturity and loan spread. Industry classification (s) is at 2-digit SIC level. $\gamma_{s,t}$ captures the industry×year fixed effects. The regression is at deal contract level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in in parentheses.

Table 5. Changes in Contract Features After the Tax Policy: Covenant Inclusion

	1[Covenants]	Num Cov	1[Amended]	1[Covenants]	Num Cov	1[Amended]
	(1)	(2)	(3)	(4)	(5)	(6)
Split Control×Post	0.0204***	0.4230***	0.1240***	0.0218***	0.3299***	0.1238***
	(0.0045)	(0.0977)	(0.0163)	(0.0046)	(0.0471)	(0.0164)
Split Control	-0.0004	-0.0693	-0.1432***	0.0047**	-0.0088	-0.1398***
	(0.0020)	(0.0904)	(0.0155)	(0.0022)	(0.0294)	(0.0156)
Loan spread				-0.4699***	-0.2377***	-0.5385***
				(0.0347)	(0.0638)	(0.0456)
ln(Loan amount)				0.1309***	0.0544***	0.0978***
				(0.0060)	(0.0112)	(0.0080)
Maturity				0.0186***	0.0254**	-0.0198**
				(0.0065)	(0.0111)	(0.0080)
Industry×Year FE	✓	✓	✓	✓	✓	✓
Deal controls				✓	✓	✓
N	22,750	22,750	22,750	22,347	22,347	22,347
Adj. R^2	0.04	0.02	0.10	0.05	0.04	0.12

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:

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

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 number of rounds of renegotiation. Industry-year included. Industry classification (s) is at 2-digit SIC level. Deal control variables (X) include the deal size, maturity and loan spread. $\gamma_{s,t}$ captures the industry×year fixed effects. The regression is at the deal level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in in parentheses.

Table 6. Changes in Contract Features After the Tax Policy: Covenant Types

	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***	0.0522***	0.0280***	0.0885**	0.1856***	0.0491***	0.0308***	0.0229***	0.0521***
	(0.0283)	(0.0158)	(0.0095)	(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)
Loan spread						-0.5923***	-0.4691***	-0.5281***	-0.3282***	-0.0422
						(0.0499)	(0.0474)	(0.0515)	(0.0460)	(0.0472)
ln(Loan amount)						0.0593***	0.1116***	-0.0163*	0.0532***	0.0145
						(0.0088)	(0.0093)	(0.0092)	(0.0105)	(0.0113)
Maturity						0.0244***	0.0110	0.0257***	-0.0042	0.0159**
						(0.0071)	(0.0071)	(0.0076)	(0.0083)	(0.0066)
Industry×Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Deal controls						✓	✓	✓	✓	✓
N	22,750	22,750	22,750	22,750	22,750	22,347	22,347	22,347	22,347	22,347
Adj. R^2	0.02	0.01	0.01	0.00	0.01	0.03	0.02	0.01	0.00	0.03

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:

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

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 (s) 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 (X) include the deal size, maturity, and loan spread. $\gamma_{s,t}$ captures the industry×year fixed effects. The regression is at the deal level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in in parentheses.

Table 7. Changes in Contract Features After the Tax Policy: Covenant 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)
Loan spread	0.0139	-0.3006	0.2715	-0.0342
	(0.0103)	(0.1858)	(0.2869)	(0.0576)
ln(Loan amount)	0.0117***	0.3574***	0.0372***	0.0201***
	(0.0034)	(0.0850)	(0.0096)	(0.0066)
Maturity	-0.0065	-0.0575	-0.0378	0.0425
	(0.0049)	(0.0935)	(0.0863)	(0.0313)
Industry-Year FE	✓	✓	✓	✓
Deal controls	✓	✓	✓	✓
N	5,450	2,768	2,761	5,450
Adj. R^2	0.303	0.442	0.668	0.587

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:

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

In column (1)-(3), we explore how do the most commonly utilized financial covenants vary among split 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. 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 covenant tightness is based on the methodology in Murfin (2012). Industry classification (s) is at two-digit SIC level. Deal control variables (X) include the deal size, maturity, and loan spread. $\gamma_{s,t}$ captures the industry×year fixed effects. The regression is at the deal level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in in parentheses.

Table 8. Changes in Contract Features After the Tax Policy: Loan Purpose, Sponsorship and Boundary

Panel A	$\mathbb{1}_{\text{No Sponsor}}$	$\mathbb{1}_{\text{Buyout}}$	$\mathbb{1}_{\text{Unitranche}}$
	(1)	(2)	(3)
Split Control × Post	0.0888**	-0.1590***	-0.0321***
	(0.0385)	(0.0426)	(0.0033)
Split Control	-0.2534***	0.2107***	0.0046***
	(0.0360)	(0.0408)	(0.0011)
Industry × Year FE	✓	✓	✓
AdR-squared	0.2566	0.1110	0.0543
N	19,922	19,922	19,922

Panel B	$\mathbb{1}_{\text{Speculative}}$	$\mathbb{1}_{\text{Speculative}}$	$\mathbb{1}_{\text{Speculative}}$
	(1)	(2)	(3)
Split Control×Post	0.0951***	0.0877***	0.0841***
	(0.0252)	(0.0252)	(0.0257)
Split Control	-0.0129	-0.0103	-0.0078
	(0.0221)	(0.0221)	(0.0226)
Year FE		✓	
Industry × Year FE			✓
AdR-squared	0.0338	0.0360	0.0453
N	20,463	20,463	19,922

Panel C	Upfront Fee	Annual Fee	Commitment Fee
	(1)	(2)	(3)
Split Control×Post	-50.3365**	-19.5327	-3.5809
	(20.5395)	(31.3760)	(2.7736)
Split Control	47.8469**	10.9939	-1.4150
	(20.2714)	(21.7469)	(2.4872)
Year FE		✓	
Industry × Year FE			✓
AdR-squared	0.3313	0.4234	0.2914
N	4,533	406	8,430

This table presents the results from the following regression:

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

where s indicates the two-digit industry of the borrower that issued the deal, t represents the year during which the deal was issued. Deal control variables (X) include the deal size, maturity and loan spread. 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. Industry classification (s) is based on the DealScan major industry group. $\gamma_{s,t}$ captures the industry×year fixed effects. The regression is at the deal level. Robust standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 9. Ex Post Firm Performance and Balance Sheet Condition

Panel A	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	✓	✓	✓	✓
Industry×Year FE	✓	✓	✓	✓
AdR-squared	0.7707	0.7197	0.7170	0.7197
N	14821	14859	13440	14859
Panel B	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	✓	✓	✓	✓
Industry×Year FE	✓	✓	✓	✓
AdR-squared	0.6215	0.7438	0.4394	0.9491
N	14814	21431	22926	21431

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

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

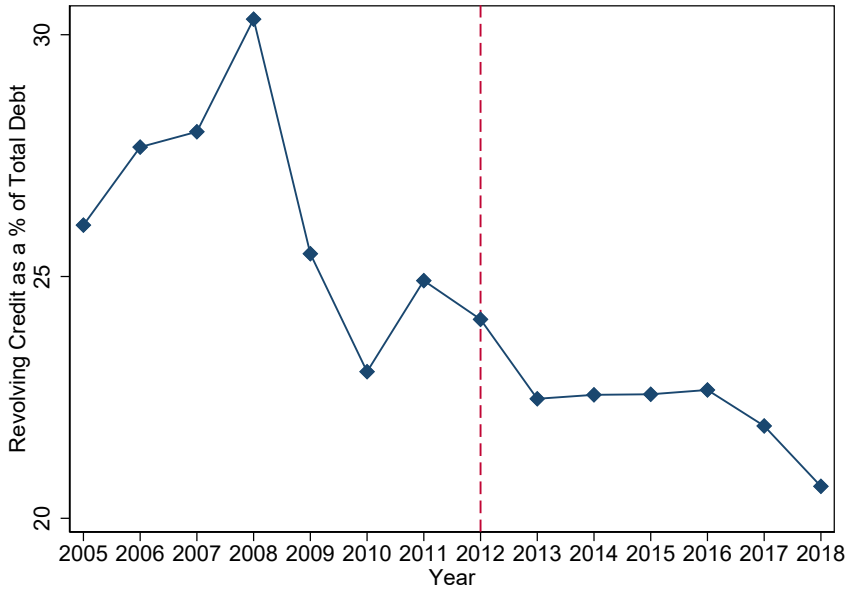
$\mathbb{1}[\text{Split control}]_i$ is an indicator variable that equals to 1 if firm i is a split control firm (with split control loans on balance sheet in 2013). ROA is calculated as firms' net income scaled by total assets, Default Prob (1-year), Default Prob (3-year) and Default Prob (5-year) are 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. 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 (s) is at 2-digit SIC level. $\gamma_{s,t}$ captures the industry×year fixed effects. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in the brackets.

Internet Appendix for:
"Monitoring with Small Stakes"

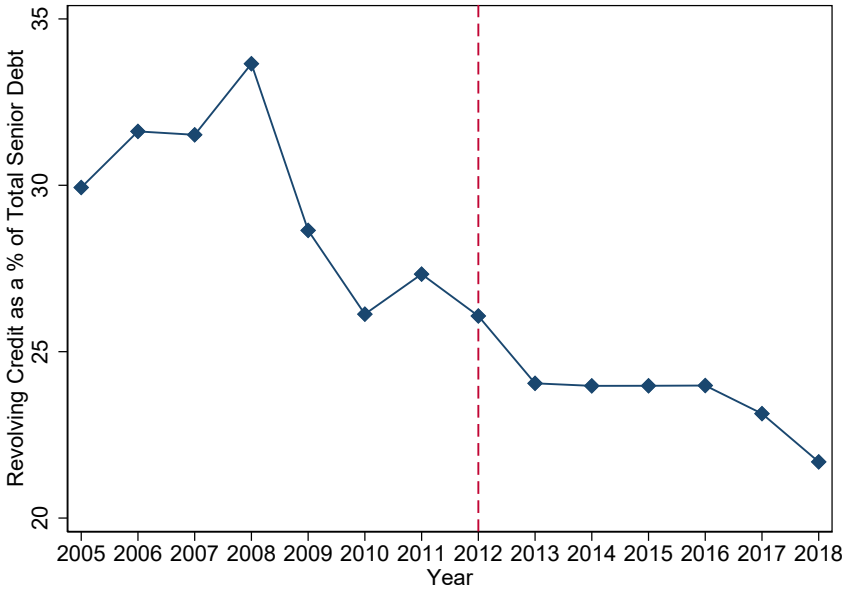
A Figures and Tables

Figure A.1. Bank Share of Total Debt

This figure presents the share of revolving credit as a percent of debt. Figure 2(a) presents firms' share of revolving credit as a percent of total debt. Figure 2(b) presents firms' share of revolving credit as a percent of total senior secured debt.



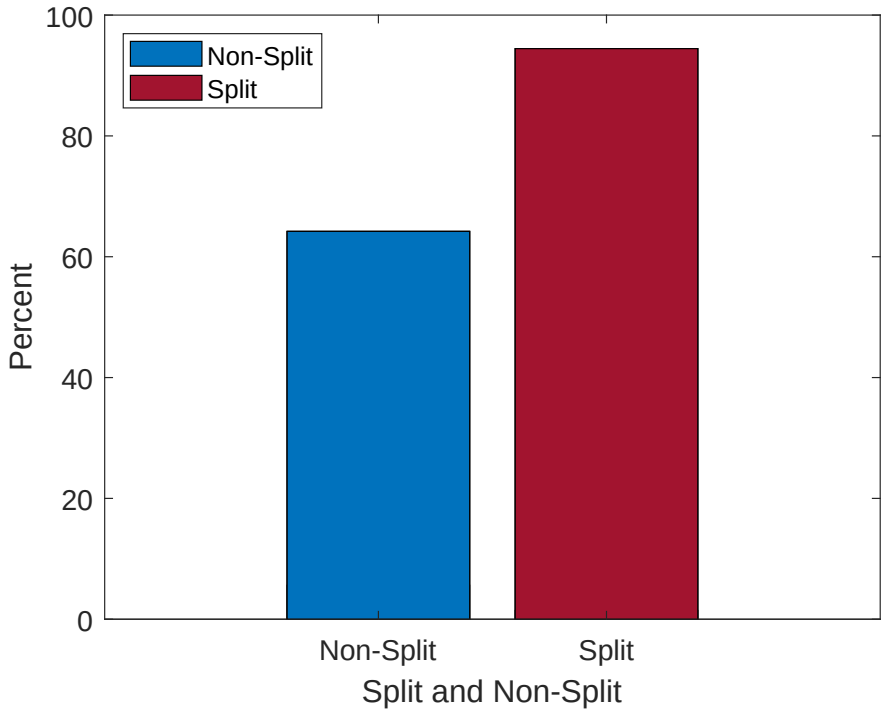
(a) Bank Share of Total Debt



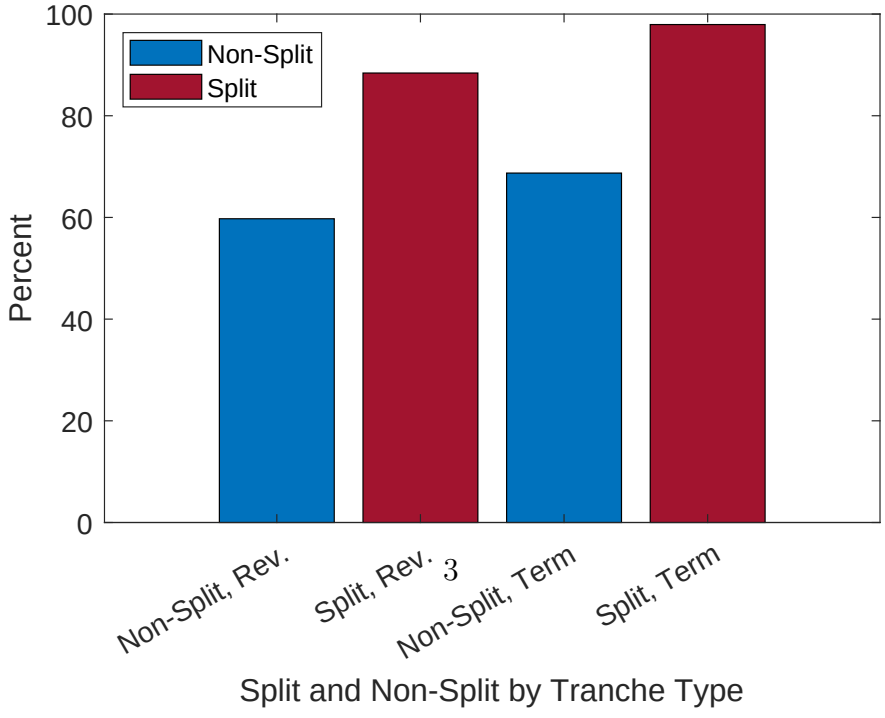
(b) Bank Share of Total Senior Debt

Figure A.2. Secured Lending by Split Control

This figure presents the percent of secured loans for split control and non-split control loans. Figure 3(a) compares the percent of secured loans for split control loans (red) and non-split control loans (blue). Figure 3(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 A.3. 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.

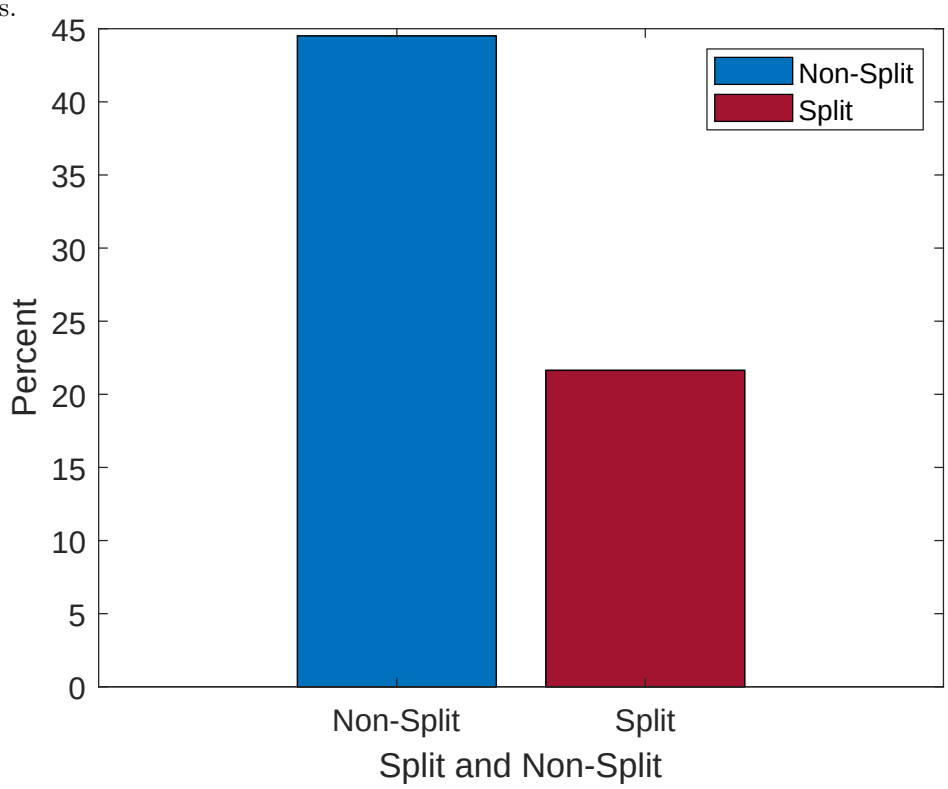


Figure A.4. Percent of Sponsored Loans

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.

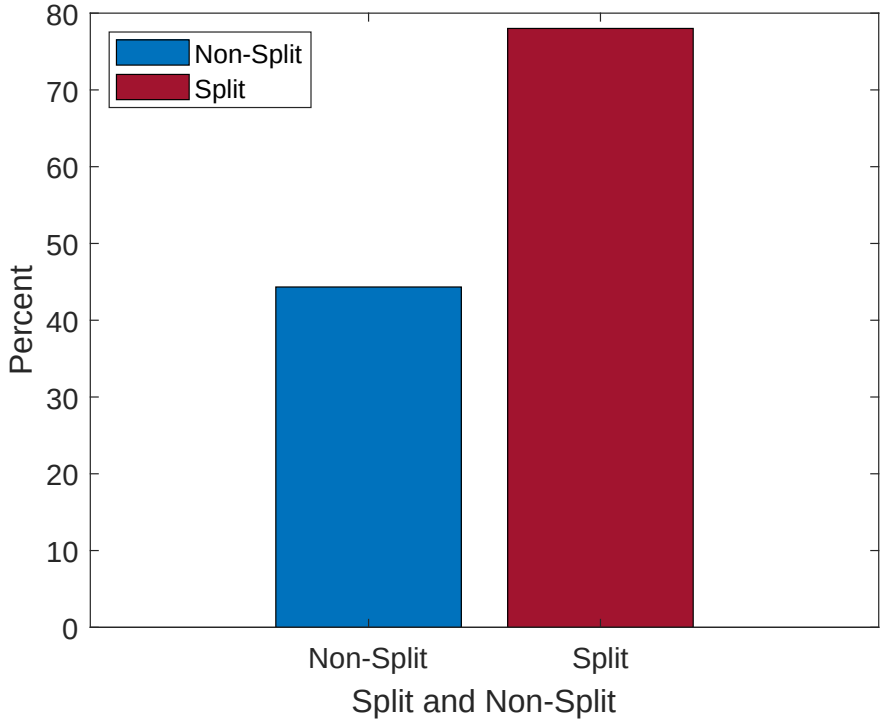


Figure A.5. Industry Distribution by Split Control Deals

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 industry 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.

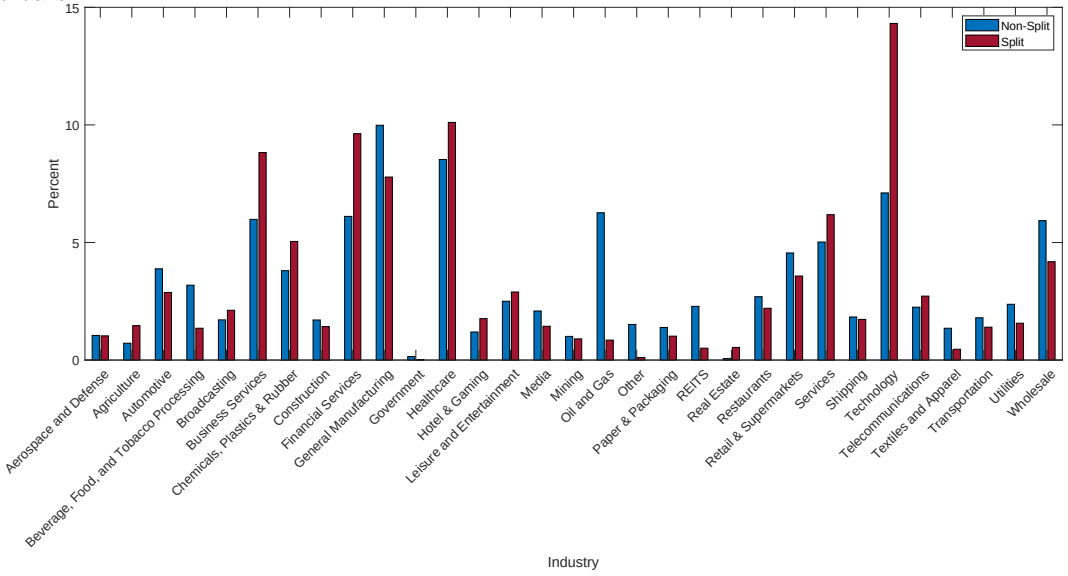


Figure A.6. Asset-Based Lending by Split Control

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.

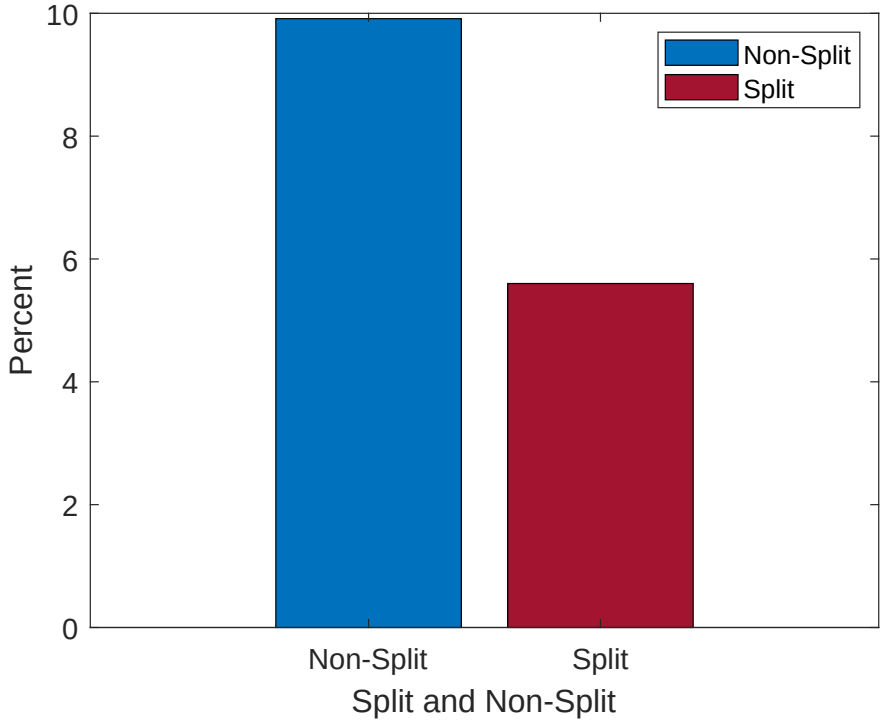
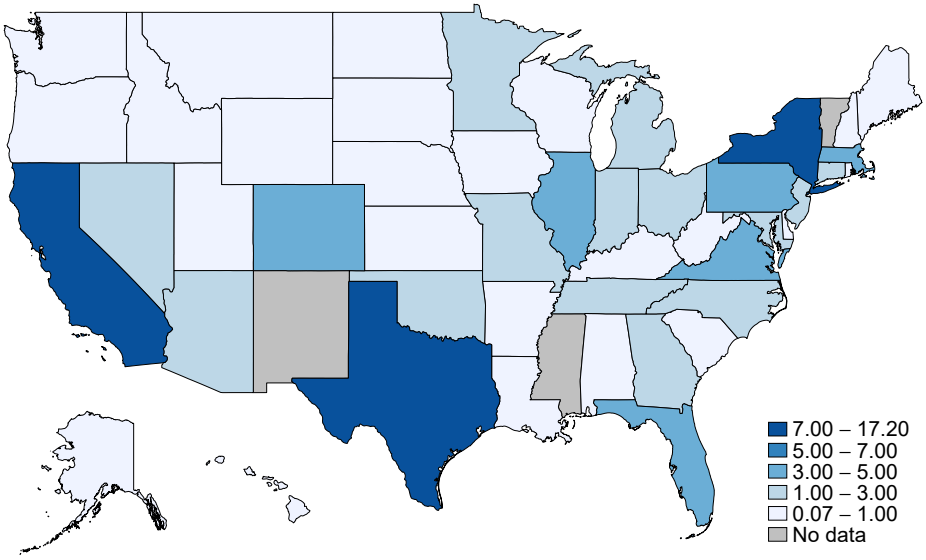
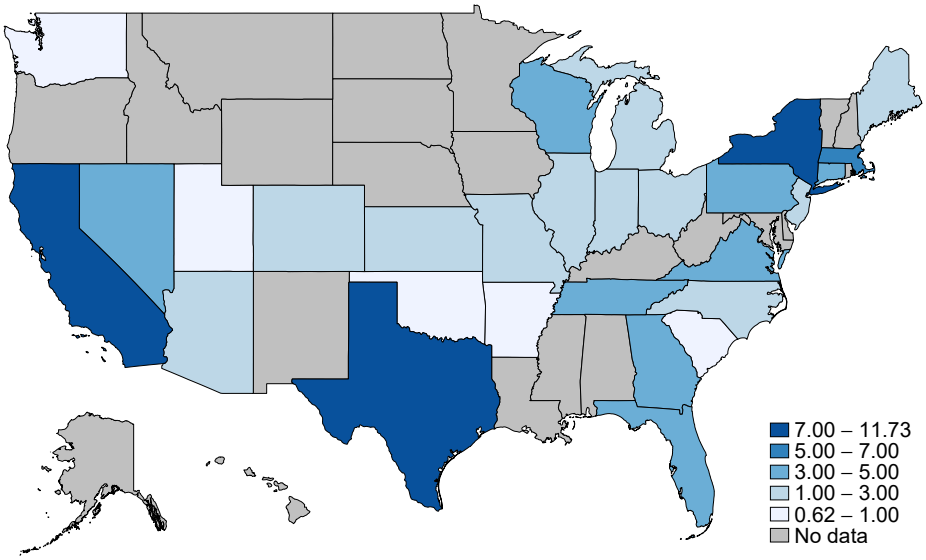


Figure A.7. Geography of Firms by Split Control Borrowers

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



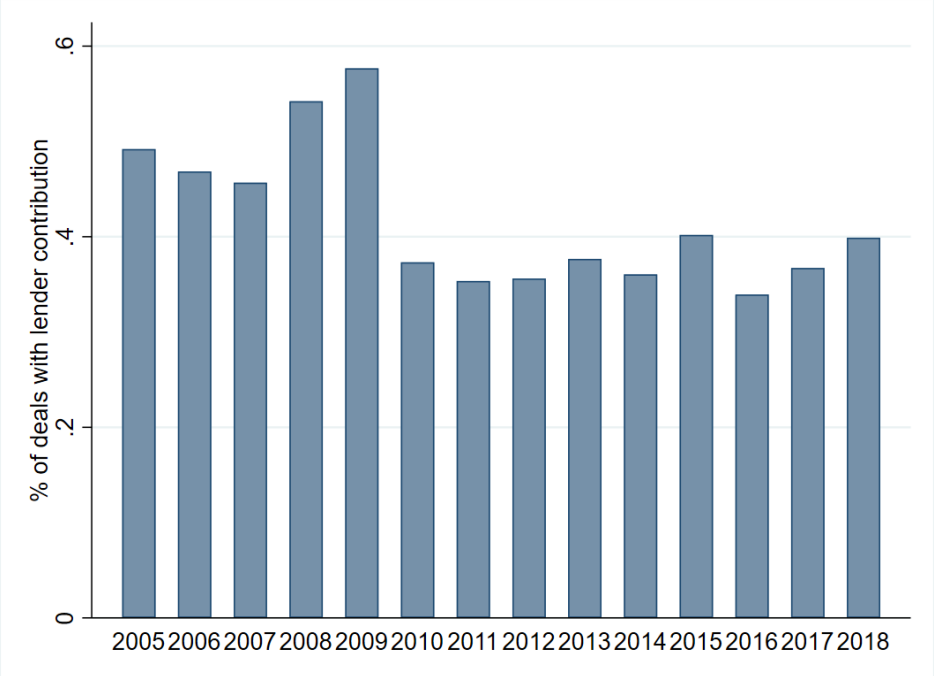
(b) Split Control

Figure A.8. Bank Share in Non-split Control Deals

The figure shows the dollar share of loans made by bank lenders in non-split control deals over time in the leveraged loan market. The red line indicates the activation of TD9599.

Figure A.9. Availability of Bank Share Information in Dealscan

The figures below show proportion of deals in Dealscan that has lenders' share contributed over time and bank lenders' dollar contribution per deal over time. The top panel shows the proportion of deals in Dealscan that is "non-missing" in lenders' share information. For each deal, the deal is defined as "non-missing" in lenders' shares (and dollar amount contributed) if each of the lenders' shares is not "N/A." The bottom panel shows the average dollar contribution of bank lenders per deal over time. The average dollar contribution of bank lenders per deal is calculated by dividing the total amount of dollars contributed by bank lenders in the Dealscan and scaled by the number of deals with non-missing lenders' share information.



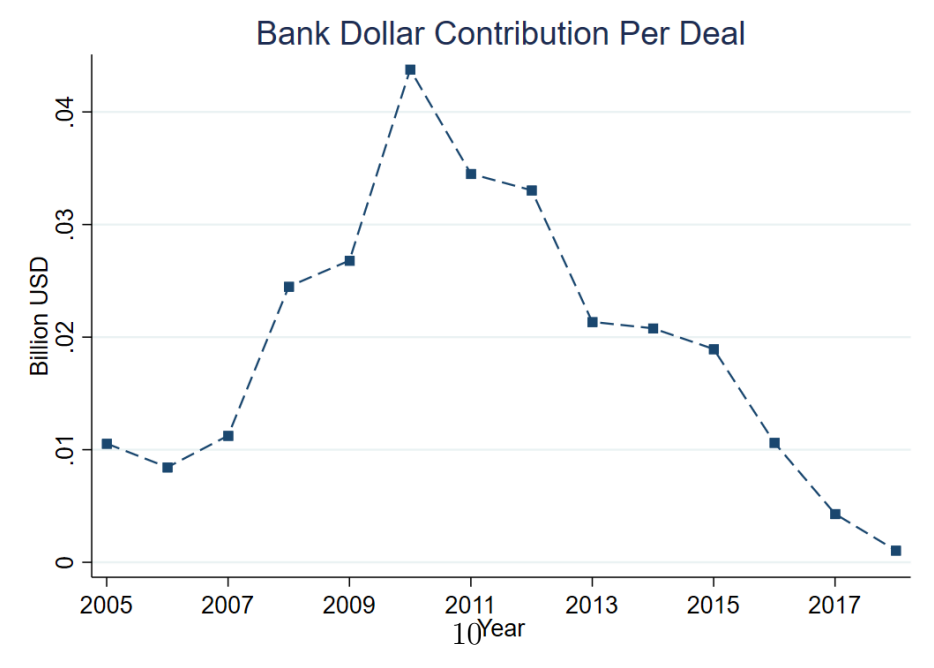


Table A.1. TD9599 and Renegotiation

	1[renegotiation]	Rounds	1[renegotiation]	Rounds
	(1)	(2)	(3)	(4)
Bank share×Post	-0.0772***	-0.0510***	-0.0791***	-0.0523***
	(0.0080)	(0.0053)	(0.0094)	(0.0062)
Bank share	0.0104	0.0069	0.0623***	0.0412***
	(0.0158)	(0.0104)	(0.0188)	(0.0124)
Loan spread			-1.3821***	-0.9137***
			(0.0825)	(0.0545)
ln(Loan amount)			0.2536***	0.1677***
			(0.0147)	(0.0097)
Maturity			0.0083	0.0055
			(0.0145)	(0.0096)
Deal controls	N	N	Y	Y
Industry× Year FE	Y	Y	Y	Y
AdR-squared	0.1153	0.1153	0.1602	0.1602
N	24698	24698	20464	20464

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The table presents the renegotiation outcomes of credit agreements for deals with different banks shares before and after the activation of TD9599. The regression equation is as follows:

$$\text{Renegotiation}_{d,s,t} \quad = \quad \gamma_{s,t} + \beta \times \text{Bank share}_d \times \text{Post}_t + \beta_1 \text{Bank share}_d + X_{d,s,t} + \epsilon_{i,s,t}$$

$\mathbb{1}[\text{Split control}]_i$ is an indicator variable that equals to 1 if deal d is a split control. The dependent variables are indicator variables indicating whether the deal is ever renegotiated and the rounds of renegotiation. Rounds of renegotiation is constructed by counting the maximum number of times a covenant has taken different values for a deal. Industry classification (s) is at 2-digit SIC level. $\gamma_{s,t}$ captures the industry×year fixed effects. The regression is at deal-year level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in in parentheses.

Table A.2. Changes in Contract Features After the Tax Policy

	1[covenants]	Num covenants	1[amended]	1[covenants]	Num covenants	1[amended]
	(1)	(2)	(3)	(4)	(5)	(6)
Bank share× Post	-0.0099**	-0.0253***	-0.0143**	-0.0224***	-0.0270***	-0.0103**
	(0.0043)	(0.0058)	(0.0064)	(0.0049)	(0.0069)	(0.0047)
Bank share	-0.0797***	-0.0267**	-0.0068	-0.0124	0.0083	-0.0694***
	(0.0092)	(0.0109)	(0.0134)	(0.0108)	(0.0133)	(0.0090)
Loan spread				-0.9026***	-0.5201***	-0.6104***
				(0.0484)	(0.0678)	(0.0462)
ln(Loan amount)				0.2574***	0.1386***	0.1082***
				(0.0085)	(0.0120)	(0.0082)
Maturity				0.0079	0.0153	-0.0265***
				(0.0090)	(0.0119)	(0.0081)
Deal controls	N	N	N	Y	Y	Y
Industry× Year FE	Y	Y	Y	Y	Y	Y
AdR-squared	0.1078	0.0952	0.0914	0.2129	0.1119	0.2063
N	24698	24698	24698	20464	20464	20464

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The table presents the heterogeneous changes of deal characteristics for deals with different banks shares in response to the activation of TD9599. The regression equation is as follows:

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

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 number of rounds of renegotiation. Industry-year included. Industry classification (s) is at 2-digit SIC level. Deal control variables (X) include the deal size and maturity. $\gamma_{s,t}$ captures the industry×year fixed effects. The regression is at the deal level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in in parentheses.

Table A.3. Changes in Contract Features After the Tax Policy: Covenant Types

	1[Debt-Ebitda]	1[Int-coverage]	1[Fixed charge cov]	1[Debt issuance]	1[Other]	1[Debt-Ebitda]	1[Int-coverage]	1[Fixed charge cov]	1[Debt issuance]	1[Other]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Bank share × Post	-0.0502***	-0.0419***	-0.0290***	-0.0237***	0.0126***	-0.0518***	-0.0452***	-0.0292***	-0.0223***	0.0138**
	(0.0044)	(0.0041)	(0.0045)	(0.0050)	(0.0048)	(0.0053)	(0.0049)	(0.0054)	(0.0061)	(0.0060)
Bank share	0.0078***	0.0023	0.0040	0.0049	-0.0252**	0.0395***	0.0385***	0.0141***	0.0207***	-0.0201*
	(0.0028)	(0.0028)	(0.0029)	(0.0040)	(0.0099)	(0.0047)	(0.0046)	(0.0044)	(0.0051)	(0.0113)
Loan spread						-0.8941***	-0.6666***	-0.7415***	-0.4000***	-0.0418
						(0.0550)	(0.0513)	(0.0574)	(0.0491)	(0.0483)
ln(Loan amount)						0.1518***	0.1692***	0.0486***	0.0726***	0.0160
						(0.0102)	(0.0104)	(0.0091)	(0.0099)	(0.0105)
Maturity						0.0117	0.0023	0.0166**	-0.0076	0.0161**
						(0.0076)	(0.0073)	(0.0079)	(0.0083)	(0.0065)
Deal controls	N	N	N	N	N	Y	Y	Y	Y	Y
Industry× Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
AdR-squared	0.1167	0.0805	0.0771	0.0717	0.0541	0.1546	0.1211	0.0874	0.0857	0.0598
N	24698	24698	24698	24698.	24698	20464	20464	20464	20464	20464

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The table presents the heterogeneous responses of covenant inclusions deals with different bank shares in response to the activation of TD9599. The regression equation is as follows:

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

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 (s) 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 (X) include the deal size and maturity. $\gamma_{s,t}$ captures the industry×year fixed effects. The regression is at the deal level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported in in parentheses.

Table A.4. 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 A.5. 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 A.6. 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	0.10	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	0.00
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	0.70	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	0.00	0.00	0.03	0.05	0.10
Equity/Assets	281	0.08	0.10	0.12	0.12	0.08
Transactional deposits/Total deposits	281	0.10	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	0.10	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	0.00
Ln(1+assets)	131	14.08	15.44	16.60	15.33	2.23
Loan/Deposits	131	0.69	0.84	0.96	0.80	0.26
C&I loan/Total loan	131	0.10	0.18	0.26	0.22	0.21
Real estate loan/Total loan	131	0.51	0.67	0.80	0.64	0.30
Personal loans/Total loan	131	0.02	0.05	0.12	0.09	0.12
Agriculture loans/Total loan	131	0.00	0.00	0.01	0.02	0.06
Equity/Assets	131	0.08	0.10	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 A.7. 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	✓	✓	✓	✓	✓	✓	✓
Industry×Year FE	✓	✓	✓	✓	✓	✓	✓
Deal Controls	✓	✓	✓	✓	✓	✓	✓
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 A.8. 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.

B 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. Appendix Table A.4 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. Appendix Figure A.5 presents the industry distribution of loans in split and non-split control deals.[40] 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.6 documents that the asset-based lending is almost twice as common in non-split control deals compared to split control deals while Appendix Table A.4 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.

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. Appendix Figure A.2 exhibits the percent of secured loans for non-split and split control deals. Panel a of Appendix Figure A.2 indicates that 64% of loans in non-split control deals

[40] Appendix Figure A.7 shows that the headquarter locations of split control borrowers and non-split control borrowers are similarly geographically distributed.

are secured, while almost 95% of loans in split control deals are secured. Panel b of Appendix Figure A.2 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, 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. Appendix Table A.5 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 Appendix Figure A.4 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. Appendix Table A.7 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.

C Algebraic Proofs

Proof of Proposition 1

First, it is useful to note that in Equation (3) $c''(\theta) > 0$ implies that function $\theta^s(D)$ is increasing in D. Creditor's participation condition is characterized by Eq. (4). Differentiate the LHS of Eq. (4) and comibine with Eq. (3), we get

$$\begin{aligned}
\frac{\partial LHS}{\partial D} &= \frac{\partial \theta^s(D)}{\partial D}\left[\frac{1}{2}D + \frac{1}{2}V_C\right] + \frac{1}{2}\theta^s(D) - \frac{\partial \theta^s(D)}{\partial D}\gamma X_L - c'(\theta)\frac{\partial \theta^s(D)}{\partial D} \\
&= \frac{1}{2}\theta^s(D) + \frac{\partial \theta^s(D)}{\partial D}\left[\frac{1}{2}D + \frac{1}{2}V_C - \gamma X_L - c'(\theta)\right] \\
&= \frac{1}{2}\theta^s(D)
\end{aligned}$$

Hence the financing boundary is determined by evaluating the face value payment D at $D = X_H$ in Eq. (4).

Therefore, the cutoff level of entrepreneur γ^s that can be finance is determined as

$$\gamma^s = \frac{rI + c(\theta^s) - \frac{1}{2}(1+\beta)X_H + \frac{1}{2}\beta X_L \theta^s}{X_L - \frac{1}{2}X_L\theta^s} \tag{C.1}$$

When the monitoring cost $c(\theta)$ is sufficiently low (e.g., $c(\theta) \to 0$ for any θ), the equilibrium detecting rate θ^s can be sufficiently close to 1 (e.g., $\theta^s \to 1$). Thus we have

$$\begin{aligned}
\gamma^s &\to \frac{rI - \frac{1}{2}(1+\beta)X_H + \frac{1}{2}\beta X_L}{X_L} \\
&< \frac{rI - (X_H - X_L)}{X_L} \\
&= \gamma^u
\end{aligned}$$

whenever $\frac{2-\beta}{1-\beta} > \frac{X_H}{X_L}$. ■

Proof of Proposition 2

From Eq. (5), we have the equilibrium monitoring effort θ^B given by

$$\theta^B = \frac{1}{2c}\left[f_B(D - \gamma X_L) + \beta(X_H - X_L)\right] \tag{C.2}$$

Thus the sensitivity of monitoring effort to renegotiation friction β is

$$\begin{aligned}\epsilon_{\theta^B,\beta} &= \frac{\partial\theta^B}{\partial\beta}\cdot\frac{\beta}{\theta^B} \\ &= \frac{\beta(D-\gamma X_L)}{f_B(D-\gamma X_L)+\beta(X_H-X_L)}\end{aligned}$$

Therefore, it is easy to see that this sensitivity is higher for loans in which monitoring creditor has smaller stake, i.e., $\frac{\partial\epsilon_{\theta^B,\beta}}{\partial f_B}<0$. ■

Proof of Proposition 3

First, we can show that $\frac{\partial\theta^B}{\partial f_B}>0$. To see this, note that differentiating Eq. 5 with respect to f_B, we get

$$c''(\theta^B)\frac{\partial\theta^B}{\partial f_B}=\frac{1}{2}(D-\gamma X_L) \tag{C.3}$$

Since $c''(\theta^B)>0$, it thus follows that $\frac{\partial\theta^B}{\partial f_B}>0$. Similarly, it can be shown that $\frac{\partial\theta^B}{\partial D}>0$.

Next by differentiating the left hand side of Eq. (6) with respect to f_B, we get

$$\frac{\partial LHS}{\partial f_B}=\frac{1}{2}(D-\gamma X_L)\frac{\partial\theta^B}{\partial f_B}>0, \tag{C.4}$$

and differentiating with respect to D we get

$$\frac{\partial LHS}{\partial D}=\frac{1}{2}(D-\gamma X_L)\frac{\partial\theta^B}{\partial D}+\frac{1}{2}\theta^B>0. \tag{C.5}$$

Therefore, the credit contract that minimizes monitoring creditor's stake f_B should set $D=X_H$. This implies that the minimum share f_B^* held by the bank, which monitors, is determined by Eq. (7).

Finally, to show that $\frac{\partial f_B^*}{\partial\beta}<0$, note that by differentiating Eq. (5) w.r.t. β, we get

$$c''(\theta^B)\frac{\partial\theta^B}{\partial\beta}=\frac{1}{2}(X_H-X_L). \tag{C.6}$$

Hence given f_B, $\frac{\partial \theta^B}{\partial \beta} > 0$. Applying implicit function theorem to Eq. (7), we have

$$\frac{\partial f_B^*}{\partial \beta} = -\frac{(X_H - \gamma X_L)\frac{\partial \theta^B}{\partial \beta}}{(X_H - \gamma X_L)\frac{\partial \theta^B}{\partial f_B^*}}. \tag{C.7}$$

Hence higher β supports a smaller stake f_B^* held by the monitoring lender. ■