Lending Relationships and the Demand for Accounting Conservatism: Theory and Evidence*

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Abstract

We examine the role of lending relationships as a determinant of accounting conservatism for borrowers with accounting-based covenants. We incorporate the lender's information acquisition in the incomplete contract framework. The lender with more intense relationship is more likely to obtain private information about the project's true states and make efficient liquidation decisions after covenant violations. We show that the lending relationship intensity and accounting conservatism have complementary effects on the lender's information acquisition incentive, as well as on the borrower's total payoff. We derive and test two predictions from the model: 1) accounting conservatism increases with the intensity of lending relationship, and 2) the relationship between the ex-ante loan spread and accounting conservatism is more negative as the intensity of lending relationship increases. Our empirical evidence is consistent with both of these predictions.

*We would like to thank Sudipta Basu, Jeremy Bertomeu, Judson Caskey, Carlos Corona, Mingcherng Deng, Pingyang Gao, Jonathan Glover, Zhaoyang Gu, Pierre Liang, Tong Lu, Jack Stecher, and participants at workshops at Chinese University of Hong Kong, University of Hong Kong, University of Houston, Temple University, and the 2015 Carnegie Mellon University Accounting Mini Conference for helpful comments and suggestions. All errors are our own.

1 Introduction

In this paper, we examine how lending relationships affect the desirability of conservative reporting in debt contracting. We build on the incomplete contract theory which considers the role of accounting-based covenants as the state-contingent allocation of control rights.[1] From this perspective, accounting conservatism alters the contingent transfers of control rights to lenders by increasing the likelihood of violations of accounting-based covenants. The question is whether it is optimal to allocate more control rights to lenders through more conservative accounting. Specifically, we incorporate the lender's information acquisition after covenant violations to study the role of accounting conservatism in lending relationships.

Lenders may develop close relationships with borrowers through multiple loan transactions and monitoring over a relatively long period of time (Boot, 2000). Through close lending relationships, lenders typically acquire firm-specific proprietary information or accumulate firm-specific technologies that allow them to better assess borrowers' default risk. This information advantage may either benefit or harm borrowers. Prior studies show that relationship lending mitigates asymmetric information between borrowers and lenders, making borrowing easier for financially-constrained firms that may not be able to otherwise obtain outside financing (Boot and Thakor 1994; Peterson and Rajan 1994). However, the information advantage over outside lenders also allows relationship lenders to extract rents from informationally captured borrowers because these borrowers cannot credibly convey their true creditworthiness to outside lenders (Sharpe 1990; Rajan 1992). These features allow us to examine the exact source of the demand for accounting conservatism in the lending relationships.[2]

In our model, a borrower with a risky project seeks debt financing. The project states are

[1]Incomplete contract theory suggests that renegotiation is unavoidable when ex-ante optimal contracts under uncertainty may lead to inefficiency ex-post when the true states of the world are non-contractible (Maskin and Moore, 1999; Aghion and Bolton, 1992). Several recent studies in accounting have built on incomplete contract theory to examine the role of accounting information and accounting conservatism in debt contracts (For example, Gao, 2013; Jiang, 2012; Li, 2013). A recent paper by Christensen, et.al. (2015) provides a comprehensive review about the role of accounting information in financial contracting from the incomplete contract theory perspective.

[2]The role for accounting conservatism in debt contracting has recently attracted a lot of attention in the accounting literature (Armstrong et al., 2010) Empirical studies have documented consistent evidence about the demand of accounting conservatism in debt contracting, however, the exact source of the demand of conservatism is not clearly identified. For example, Ball, Robin and Sadka (2008) show that timely loss recognition is more prevalent in countries with a larger size of debt market. Ahmed et al. (2002) document that accounting conservatism reduces the cost of public debt through the higher credit ratings. Ball, Bushman and Vasari (2008) show that loan spread decreases with accounting conservatism in syndicated loans. In the form of timely loss recognition, accounting conservatism allows lenders to take actions to prevent or reduce their potential losses by triggering timely covenant violations (Watts, 2003; Zhang, 2008; Beatty et.al. 2008). However, whether the covenant violations that arise from more conservative accounting are beneficial or detrimental remains controversial (Armstrong, et al. 2010).

realized at the interim stage, but not contractible. The debt contract includes a covenant based on noisy accounting signals about the project state and transfers the control right to the lender when the covenant is violated.[3] Upon the covenant violation, the lender optimally chooses the investigation effort to learn about the project's true state, and then makes the liquidation decision. If a lender discovers that the project's state is good, she is able to extract the surplus from continuing the good project due to the limited outside option available to the borrower upon a bad signal.

More conservative accounting increases the likelihood of "false alarm", and the lender is more likely to discover that the project is rather a good project being misclassified as bad under the conservative accounting system. Therefore the lender's expected rent extraction after information acquisition is greater when accounting is more conservative. Furthermore, this marginal benefit of accounting conservatism increases with the intensity of the lending relationship, as more intense lending relationship decreases the marginal cost of information acquisition. Essentially, accounting conservatism and the lending relationship have complementary effects on the lender's information acquisition incentive after the covenant violation. As the lender becomes better informed about the project's types, the ex-post liquidation decisions are more efficient. This ex-post efficiency is transferred to the borrower's welfare due to the ex-ante competitive credit market. Hence the borrower's preference for accounting conservatism increases with the intensity of lending relationship. At the same time the initial loan spread (debt repayment) decreases with accounting conservatism as the lending relationship intensifies.

We point out a very simple, yet important channel for the role of information acquisition by lenders in the incomplete contract setting. When borrowers lack commitment to make efficient liquidation decisions, it is optimal to set debt covenants to allocate more control rights to lenders who can make more efficient decisions. Bigus and Hakenes (2014) provide an alternative explanation for the link between accounting conservatism and lending relationships in a model with staged investments.[4] Opacity (and conservatism) in the accounting system is good because it facilitates the relationship lender's information rent in the second stage and reduces the firm's financial constraint in the first place. Therefore, they predict a positive relation between the accounting conservatism and the lending relationship, driven by the relationship lender's rent extraction power. However, their model implies that as the lending relationship intensifies, the relationship lender charges higher

[3]We restrict our model to the parameter space in which it is optimal to include the accounting-based covenant in debt contracts.

[4]In Bigus and Hakenes (2014), the firm has a two period project which requires two stage investments. The first stage has a negative NPV, but may become profitable in the second stage. A relationship lender is willing to lend in the first stage only because he is able to capture the rent in the second stage of investment.

interest rates for the same borrower on future loans when accounting is more conservative, which is opposite to our prediction.

To distinguish our model from others in the literature on conservatism and loan contracting, we empirically test two main predictions from the model. First, that the degree of accounting conservatism increases with the intensity of lending relationships. Second, that the relationship between the loan spreads and accounting conservatism is more negative when the lending relationship is more intense. To test the first prediction of the model that conservatism is increasing in the lending relationship intensity, we heed the advice of Khan and Watts (2009) and present empirical evidence from two complementary classes of empirical models for robustness. We employ an augmented cross-sectional Basu (1997) model, where we follow the methodology of Francis and Martin (2010), and a fixed effects estimator in which we seek to eliminate unobservable variation in conservatism and lending relationships that might bias our estimated coefficients. Moreover, we construct these fixed effects to mitigate the concern that other economic factors or mechanisms might influence our results.[5] Both classes of empirical models yield the same statistical and economic result that conservatism is increasing in the existence and the intensity of lending relationships, providing support for the first prediction of our model.

We further test whether the underlying mechanism of our model indeed drives the empirical results. The lender's incentive to acquire information depends on the expected rent she may obtain after discovering the project's true states. Therefore, we expect that the relationship between the demand for conservatism and the lending relationship intensity becomes weaker if there are factors that reduce the lender's information acquisition incentive. We consider three factors including credit market competition, share retention by the lead bank, and the number of creditors in syndicated loans, and test whether the effects of these factors are consistent with the model's prediction. We provide cross-sectional evidence that the magnitude of this observed relationship between lending relationships and conservatism attenuates when the credit market competition and coordination costs in default are high or when the retained share is low, validating the pre-conditions of the model.

To test the second prediction of the model that the conservatism-loan spread relationship is increasing in the lending relationship intensity, we expand upon our fixed effects estimator, again mitigating unobservable borrower, lender, and time series variation that might bias our estimates.

[5]For example, by restricting identifying variation to within borrower-lender pairs and within industry-quarters, we mitigate concerns about the economic factors that may bias the asymmetric timeliness coefficient estimates from Basu (1997) model in recent studies such as Dutta and Patatoukas (2015) and Banker, et al. (2015).

For further robustness, we present results that include lower-level fixed effects incrementally, which separately demonstrate the cross-sectional and time series nature of the empirical relationships between conservatism, lending relationship intensity, and loan spreads. These results provide evidence that the relationship between loan spreads and conservatism is increasing in the existence and length of lending relationships both in the cross-section and the time series. In fact, our empirical models with the most restrictive set of fixed effects provides evidence that, on average, the conservatism-loan spread relationship is increasing within each lending relationship, controlling for differential industry trends in conservatism, lending relationships, and loan spreads. This empirical evidence supports the second prediction of our model.

Our findings support the covenant-based explanation for accounting conservatism in debt contracting. Prior empirical study by Zhang (2008) shows that that more conservative accounting (timely loss recognition) leads to more frequent violations of covenants and therefore lowers the ex-ante loan spread. We consider the role of the lender's information acquisition after covenant violations that may potentially increase the contract efficiency. Our empirical evidence extends Zhang (2008) by identifying the lending relationship as a determinant of the cross-sectional variation of the negative relationship between accounting conservatism and loan spread. This distinguishes from the information-based explanation for accounting conservatism, which argues that accounting conservatism provides timely information about the bad state of the firm (loss) for lenders. However, asymmetric information between the lender and the borrower is of less concern in the relationship lending, because the lender can obtain non-public information easily due to the close relationship with the borrower.

Our results also shed light on the cost and benefit of developing lending relationships. As known from Rajan (1992), a relationship lender may exploit his/or her information advantage to extract rent from a borrower, which implies that conservative accounting may facilitate the rent extraction by the relationship lender by allocating control right more frequently to the lender. We show that although there is ex-post rent extraction from the good project upon the covenant violation, the benefit of efficient liquidation allows the lender to charge a lower interest spread upfront and improves the borrower's welfare. Our empirical results show that relationship lenders charge lower spreads when accounting is more conservative, which suggests that the ex-post efficiency is at least partially shared with the borrower through lower interest spreads. Our results are also consistent with Karolyi (2015) and Bharath et. al. (2007). Both find a negative relation between the lending relationship and loan spreads.[6]

The remainder of the paper is organized as follows. Section 2 reviews related literature. Section 3 outlines the model setup and main results from the theoretical model, and Section 4 proposes testable empirical predictions. Section 5 presents the data and empirical methodology to test the predictions of the model, as well as the empirical results. Section 6 concludes the paper.

2 Related Literature

Our paper makes several contributions to the literature. First of all, our model is related to the incomplete contract literature with regard to the optimal allocation of control rights in the presence of asymmetric information between the contracting parties. Gârleanu and Zwiebel (2009) and Dessein (2005) both show that optimal financial contracts should allocate more control to the less informed investor in the presence of asymmetric information (the entrepreneur who is privately informed about the project). In Gârleanu and Zwiebel (2009), the lenders face informational disadvantage ex-ante about the potential wealth transfer by the entrepreneur, and the less informed lender demands more control rights in order to protect themselves from inefficient actions taken by the entrepreneur. Dessein (2005) reaches a similar conclusion as Gârleanu and Zwiebel (2009), by assuming that an ex-ante privately informed entrepreneur gives up control rights to the uninformed investor (venture capitalist) to signal congruent preferences. Our model predicts the opposite relation as in these models. The main difference is that we assume that ex-ante the lender and the borrower face the same uncertainty about the project outcome, and learn about the project type ex-post when making the liquidation decision. However, our prediction is consistent with the predictions in Dessein (2002) and Aghion and Tirole (1997), which argue that better informed parties receive more control to provide better incentives for information acquisition or to avoid information distortion.

Secondly, we contribute to studies related to the role of accounting conservatism in debt contracting. A recent growing theoretical literature examines the role of accounting conservatism in debt contracting.[7] Several studies examine this question using an incomplete contract framework.

[6]Bharath et. al. (2007) also find that banks with stronger past lending relationship have a much higher probability of securing future lending business. Our results are consistent with this view in the sense that relationship lenders are more likely to win future lending business due to the benefit of efficient liquidation decisions after covenant violations.

[7]For example, Gigler et.al (2009) show that accounting conservatism reduces the efficiency of debt contracting in the absence of debt contract renegotiation. Caskey and Hughes (2010) examine how alternative accounting measures of fair value impact the effectiveness of debt covenants in mitigating asset substitution problem and show that conservative accounting (impairment) may improve efficiency of project selection. Göx and Wagenhofer (2009) show

An early study by Sridhar and Magee (1997) shows that it can be ex-ante optimal to design a financial contract that admits lenders' discretionary waiving of debt covenants and firm's opportunistic investments ex-post. Li (2013) examines the role of accounting conservatism in the presence of ex-post renegotiation of debt contract and liquidation decisions, assuming an exogenous cost of renegotiation. Gao (2013) shows that accounting conservatism in terms of asymmetric verification requirement is optimal in presence of the borrower opportunism. Our paper adds to the literature by investigating the role of lender's information acquisition during the lending process, and how the lender's ability to acquire information affects the role of accounting conservatism in determining the efficient allocation of control rights through debt covenants.[8]

We also contribute to the literature related to the benefit of relationship lending and the role of accounting information in relationship lending. The empirical results about the benefit of relationship lending are mixed.[9] Karolyi (2015) finds a negative relation between the lending relationship and loan spreads, which is consistent with our finding. Petersen and Rajan (1994) show that small business benefits from relationship lending to alleviate its financial constraint. However, some evidence also suggests that relationship lenders may charge a higher loan spread due to hold-up problem. In terms of the role of accounting information in relationship lending, Bharath et al. (2011) find that firms with the lowest accounting quality (most opaque) derive the most benefits (lowest loan spreads) from relationship lending. Though we focus on the impact of lending relationship on the relation between accounting conservatism and loan spreads, our result is consistent with Bharath et al. (2011) in the sense that more conservative accounting represents more opaque information about the borrower's true state after covenant violations.

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the impairment accounting is optimal for assets pledged in debt financing by reducing the financial constraint of the firm. Jiang (2012) examines how accounting conservatism affects the efficiency of debt contracting in the presence of other non-accounting information. Nan and Wen (2014) study the role of accounting conservatism in investment and financing efficiency when information quality is endogenously determined.

[8]Darrough and Deng (2015) also examine the role of creditor's private soft information in debt contracting with asset substitution problem. In their model, the firm sets the debt contract and makes the investment decision after observing both accounting signals and creditor's report regarding his private information.

[9]For example, Ioannidou and Ongena (2010) show a dynamic cycle of loan rate in which banks initially grant loans with lower loan spreads, but start to charge higher rates when they privately observe the firm's quality. Schenone (2010) documents a U-shape relationship between loan spread and the relationship intensity before a firm's IPO, but a negative relationship after IPO. Ongena and Smith (2001) find evidence that borrowers do not become locked into banking relationships as suggested by Rajan (1992) or Sharpe (1990).

3 Model and Results

3.1 Model Setup

Consider a firm who borrows to finance a potential project. The project requires an investment of I at date 0. The borrower promises to repay D_r to the lender at date 2, where r indicates the intensity of lending relationship that we will discuss shortly.[10] In our setup, as explained below, the project state is realized only after the project is undertaken, therefore the lender does not face information asymmetry about the borrower's type at the initial stage. We assume that at date 0, the lending market is competitive. That is, the lender still needs to compete for each individual loan at the initiation stage regardless of the lending relationship.[11] The borrower maintains full bargaining power at the initial date, and the lender breaks even on the loan (with the lender's required rate of return normalized to zero).[12]

The project is risky: in case of success it pays out cash flows of X at date 2, otherwise the project fails with zero cash flows. There are two possible states that are realized at date 1. With a probability of θ, the state is good, G; with a probability of $1-\theta$, the state is bad, B. In the good state, the project generates cash flows X with a probability of p_g; in the bad state, the project generates cash flows X with a probability of p_b. In addition, the project has positive NPV in the good state and negative NPV in the bad state, i.e., $p_g X > I > p_b X$. Ex-ante the project is worth undertaking:

$$(A1) \qquad [\theta p_g + (1-\theta)\, p_b]\, X > I.$$

At date 1, the project can be terminated early when the states are realized. Without loss of generality, we assume that the liquidation value is $M \leq I$. When the state is bad, early liquidation is better than continuation, i.e, , $p_b X < M \leq I$. Therefore, the efficient liquidation decision at the interim stage is to liquidate the bad project and allow the good project to continue.

The lender has priority in claiming the project's cash flows, which can be enforced through creditor protection laws. If he borrower liquidates the project, the lender has priority to claim the

[10] We take long-term debt financing with accounting based covenants as given. We do not model the optimality of debt contract or debt covenant, but both incomplete contract theory (Aghion and Bolton, 1992) and costly state verification (Townsend, 1979) provide some explanations why optimal financial contracts take the form of debt in terms of cash claims and contingent control right allocation to the investors.

[11] Our results later suggest that since the relationship lender is more likely to improve the project's payoff through efficient liquidation decisions, the lender with close relationship is actually more likely to win the business from the borrower.

[12] If the lender faces ex-ante uncertainty about the borrower's type (i.e., the lender needs to screen the bad type from good type at the contracting stage), then the relationship lender who privately obtains information about the firm's type may take advantage of the superior information and have more bargaining power at the contracting stage.

liquidation proceeds.[13] Therefore, if the borrower learns that the project state is bad, he or she does not have incentive to liquidate the project. The reason is that for any face value of debt $D < X$, the borrower's expected payoff from continuing the bad project is always positive $p_b(X - D) > 0$, given the limited liability assumption. But the lender prefers to liquidate the bad project to receive the proceed than continuation, i.e. $p_b D < M$. To resolve the conflict of interests between the borrower and the lender, debt contract often includes covenants that protect the lender's interest and allow the lender to take actions upon covenant violations.

In our model, the true states of the project are not verifiable or contractible, and the borrower observes the true state at the interim stage, but the lender learns about the state only after spending some efforts.[14] At the interim stage, accounting signals are generated by the firm's financial reporting system. The accounting information is inherently noisy due to measurement errors, but might be useful in debt contracting because of its verifiability. An accounting-based covenant transfers the decision right to the lender upon the covenant violation. Therefore an accounting-based covenant achieves a noisy state-contingent allocation of control right to the party who is more likely to make an efficient decision ex-post, consistent with Aghion and Bolton (1992).

Accounting System: In our model, binary accounting signals are generated, S_H or S_L, and are informative about the states of the project. We adopt an information structure utilized in several studies such as Venugopalan (2004), Li (2013), Nan and Wen (2014), Bertomeu, et.al. (2015), and Caskey and Laux (2015). The information structure is defined as following:

$$\begin{aligned} &P\left(S_H \mid G\right) = \lambda + \delta, \\ &P\left(S_L \mid B\right) = 1 - \delta, \\ &\text{for } \lambda \in [0,1] \text{ and } \delta \in [0, 1-\lambda]. \end{aligned} \tag{1}$$

The total precision of information system can be measured by $P(S_H|G)+P(S_L|B)$, as suggested by Bertomeu, et. al (2015). In the above information system, the total precision is $1 + \lambda$. λ is a measure of inherent measurement error of the system. As λ increases, the overall information system is more precise. δ is a measure of the degree of bias in the system. In general, a lower δ

[13] Alternatively we can assume that the borrower enjoys private benefit of control when the project continues, and loses the private benefit completely in the event of liquidation. The private benefit of the borrower also results a similar conflict of interests between the borrower and the lender in liquidation decisions.

[14] The borrower's information is not critical in our model, and the key tension is whether the lender is informed or not. We can assume that the borrower is not informed and only the lender learns about the true state in the second stage, which give the same results.

suggests that the accounting system is more conservative. When accounting conservatism increases, a low signal is less informative about the bad state but a high signal becomes more informative about the good state.[15]

The borrower optimally chooses the degree of conservatism of the accounting system to maximize the expected payoff, given any measurement error λ. The lender observes the level of conservatism before entering the contract.[16] Because of the ex-ante competitive debt market, the borrower chooses the conservatism to maximize the total project's payoff after paying the creditor's expected return (normalized to zero).

Let p_h be the posterior probability of success after observing a high signal (S_H), and p_l the posterior probability of success after observing a low signal (S_L), where p_h and p_l are calculated as:

$$\begin{aligned} p_h &= p_g P(G \mid S_H) + p_b P(B \mid S_H) \\ p_l &= p_g P(G \mid S_L) + p_b P(B \mid S_L) \end{aligned} \tag{2}$$

It can be shown that upon a good signal, the updated belief about the project's NPV is always positive for any $\lambda > 0$, i.e., $p_h X > I > M$. But for the low signal, the updated belief about the project's payoff may not be sufficiently informative to make the liquidation decision. i.e., $p_l X < M$ may not always hold. If $p_l X > M$, then the lender will not liquidate the project even after observing a covenant violation. This essentially makes the accounting-based covenants ineffective since the lender's response after a covenant violation is the same as the case without any covenant. Therefore we assume that the following condition holds for λ so that the accounting system is sufficiently informative,

$$(A2) \qquad \lambda \geq \frac{z}{1+z}, \quad where\ z = \frac{\theta(p_g X - M)}{(1-\theta)(M - p_b X)}.$$

[15]The definition of δ, in the spirit of Gigler et al. (2009), is unconditional conservatism, since the effects of increasing conservatism on the likelihood of generating bad signals are not conditional on the true states, G or B. Gigler et al. (2009) shows that this definition implies that conservatism changes the information content of good versus bad news and is consistent with asymmetric timeliness measures. However, we can also extend our model to incorporate the definition of conditional conservatism as in Gigler et al. (2009) by allowing for differential effects of conservatism on the good versus bad state. For example, let $P(S_L|G) = 1 - \lambda - \delta$ and $P(S_L|B) = 1 - \gamma\delta$, where $\gamma > 1$ indicates that increasing conservatism has a larger marginal effect in identifying bad state than misidentifying the good state. We can show that our analysis about the optimal choice of conservatism δ still goes through in this alternative setting.

[16]In the model, we assume that the borrower commits to the level of conservatism chosen at the initial contract date. Of course, the borrower may have incentive to deviate from the conservative accounting policy, especially when the debt covenants contingent on accounting numbers are about to be violated. However, such deviation is often more costly in a relationship lending, as the borrower is expected to continue the relationship with the lender in the future, and lack of commitment to pre-specified accounting choices may hurt future lending relationships.

The assumption (A2) guarantees that accounting signals are sufficiently informative regardless of the bias, such that it is optimal to include an accounting-based covenant that allows the lender to act upon the covenant violation.

Interim decisions and lending relationships: At date 1, if the accounting signal is good and the debt covenant is not violated, control right remains with the borrower, who decides whether or not to continue the project. As discussed above, the borrower will continue the project regardless of the states. In fact, even though the borrower knows that there is surplus left on the table by continuing the bad project, he does not want to renegotiate with the lender to liquidate the project. Often the creditor's priority in liquidation is protected by the creditor protection laws. Once the borrower attempts to renegotiate with the lender to liquidate the project, the lender may resort to the legal force to ensure the collection of liquidation proceeds.

When the debt covenant is violated upon a bad signal, control right shifts to the lender. Then the lender chooses a costly effort $q \in [0, 1]$ to investigate the firm's financial performance. With a probability q, the lender discovers the true state of the project. For simplicity, we assume that the lender's investigation cost function is $C(q, r) = \frac{q^2}{2r}$, where r indicates the intensity of the lending relationship. By assumption, a lender with a more intense relationship with the borrower has a lower marginal cost of becoming informed about the project's true state.[17]

Suppose the lender does not learn the true states after investigation, he or she relies on the accounting information to make the liquidation decision. In this case, even though the borrower may have observed the true state, any renegotiation attempt by the lender to separate the good type from the bad type cannot succeed, as the bad type borrower always has incentive to mimic the good type by accepting any renegotiation offer that allows the project to continue.[18] Given the

[17] Our assumption about the lower marginal cost from lending relationship suggests that this cost needs to be firm-specific and the marginal impact of lending relationship cannot be transferred to other firms. Banks may also reduce the marginal cost of information production by becoming specialized in certain type transactions without developing relationships. The difference between a specialized lender (only engages in transaction lending) and a relationship lender is that a relationship lender can spend more effort in investigating the project ex-post, while a specialized lender is better in screening the type of borrower ex-ante. The ex-post monitoring and investigation effort to acquire additional information after the covenant violation only matters if the bank engages in relationship based lending. Later on, our empirical test with the lender fixed effect is able to tease out the variation of lender's characteristics such as the speciality of lender.

[18] Li (2013) assumes that when the lender faces asymmetric information, efficient renegotiation outcome is possible in absence of any explicit renegotiation cost. The reason is that Li (2013) makes a relatively strong assumption about the borrower's preference that when the borrower is indifferent between the monetary payoff, he or she accepts the socially efficient renegotiation offer. In Li (2013), the only way that the lender can screen the borrower's type is to request the entire future payoff from the project if it continues. A bad type borrower who is indifferent between continuation and liquidation will not accept the renegotiation offer. However, as long as the bad type borrower receives nonzero benefit (including private benefit) from the project continuation, the renegotiation offer fails to screen the project type, and the lender's best decision is to liquidate the project without any additional information about the project.

assumption in (A2), the expected total continuation payoff conditional on a low signal is smaller than liquidation value. Therefore upon the low signal, the lender without any private information liquidates the project and receives the proceed of M.

If the lender perfectly learns about the true states of project through costly investigation, the lender makes liquidation decision based on private information. When the true state is bad, the lender optimally liquidates the project and receives M. When the true state is good, the lender is willing to continue the project, and he or she renegotiates the debt contract with the borrower. The renegotiated new debt payment ($D_r^{2'}$) depends on the bargaining power between the borrower and the lender. In Rajan (1992), the bargaining power is modeled through the outside refinancing option. But upon a bad signal, the borrower's outside refinancing opportunity is limited as the outsider without any private information infers a negative expected payoff from the project and is not willing to provide financing. The lender who observes the good state essentially has the full bargaining power at this stage and may ask for the maximum repayment value, $D_r^{2'} = X$.[19] The lender's expected payoff from discovering a good project upon a low signal is $p_g X$. The informed lender informationally captures the good borrower after covenant violations, consistent with Rajan (1992).

Figure 1 below summarizes the timeline of the model.

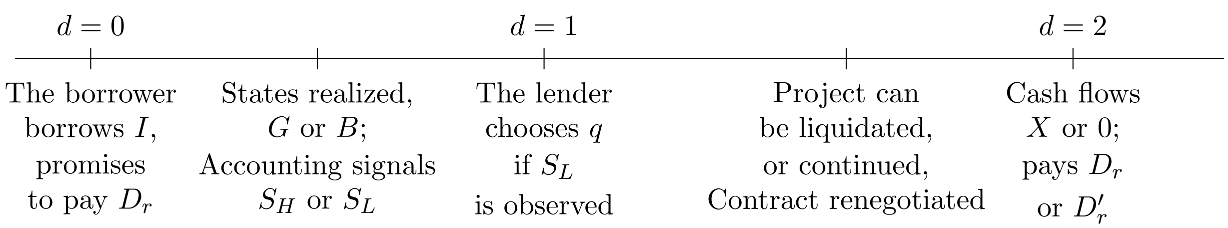

Figure 1: Timeline

[19]We may assume that the lender does not have all the bargaining power in the renegotiation stage, for example, the project requires the borrower specific technology or skills, without which the project's payoff is lower. Therefore the borrower and the lender may split the surplus from continuing the good project. In such case, the lender's incentive to spend costly effort in investigation depends on her share of surplus in renegotiation. However, this does not affect the positive relation between the investigation effort and the lending relationship intensity, though the marginal effect of lending relationship intensity on the optimal effort choice might be weaker. Our results still hold.

3.2 Two Benchmark Cases

3.2.1 Covenants based on contractible states

If the underlying states are contractible, the debt covenant can be contingent on the true states. The lender obtains the control right in the bad state and optimally liquidates the bad project. The borrower retains the control right in the good state and optimally continues the project. The lender receives the debt payment D after the project succeeds at date 2 or the liquidation proceed at date 1. We solve the following problem for the borrower,

$$\begin{aligned} &\max_{D} \ \theta p_g(X - D) \\ s.t. \quad &\theta p_g D + (1-\theta)M - I \geq 0, \quad (IR) \end{aligned}$$

When the ex-ante credit market is competitive, the IR constraint in the above problem is always binding. Thus the optimal debt contract is $D^*_{fb} = \dfrac{I - (1-\theta)M}{\theta p_g}$. Substituting D^*_{fb} into the borrower's payoff function, we obtain the first best payoff $\pi^{fb} = \theta p_g X + (1-\theta)M - I$.

3.2.2 Accounting-based covenants without information acquisition

When the project states are not contractible, debt covenants are contingent on noisy accounting signals. Without information acquisition, the lender always liquidates the project upon covenant violations. The borrower receives payoff only when the project is continued and succeeds after generating a high signal. For the lender, when a high signal is generated, she receives either the liquidation proceed when the project is liquidated, or the debt repayment D when the project succeeds. The borrower chooses the optimal debt repayment by solving the following problem,

$$\begin{aligned} &\max_{D} \ P(S_H)p_h(X - D) \\ s.t. \quad &P(S_H)p_h D + P(S_L)M - I \geq 0, \quad (IR) \end{aligned}$$

The binding IR constraint gives the optimal debt repayment value as

$$D^*_0 = \frac{I - P(S_L)M}{P(S_H)p_h}. \tag{3}$$

D^*_0 decreases with the degree of accounting conservatism as long as the liquidation value is sufficiently large and the accounting information is sufficiently informative, as shown in Li (2013).

The borrower's expected payoff given the optimal debt contract is

$$\begin{aligned}\Pi(D_0^*, \delta) &= P(S_H)p_h(X - D_0^*) \\ &= \underbrace{\theta p_g X + (1-\theta)M - I}_{\text{First best payoff}} - \underbrace{(1-\theta)\delta(M - p_b X)}_{\text{Inefficient continuation}} - \underbrace{\theta(1-\lambda-\delta)(p_g X - M)}_{\text{Inefficient liquidation}}\end{aligned}$$

When the project states are non-contractible, accounting-based covenants may lead to inefficiency in liquidation and continuation decisions. As shown in Gigler, et. al (2009), without any renegotiation after covenant violations, the optimal accounting system should be the least conservative to avoid excess inefficient liquidation of good projects upon a bad signal.

3.3 Analysis and Results with Information Acquisition

3.3.1 The lender's information acquisition

Now we incorporate the lender's active information acquisition effort after covenant violations. When accounting signals are noisy, the lender's information acquisition upon the covenant violation plays an important role in determining the efficiency in ex-post liquidation decisions.

We first consider the lender's decision about the effort (q) in investigating the project states after the covenant violation. With a probability of q, the lender observes the true state and receives either $p_g X$ or M, depending on the realized states as discussed in the last section; with a probability of $1-q$, the lender fails to observe the true state and liquidates the project to receive M regardless. Let $u(q)$ be the lender's expected payoff after the covenant violation for any q,

$$\begin{aligned}u(q) &= q(P(G|S_L)p_g X + P(B|S_L)M) + (1-q)M - \frac{q^2}{2r} \\ &= qP(G|S_L)(p_g X - M) + M - \frac{q^2}{2r}. \qquad (4)\end{aligned}$$

We solve for the lender's optimal investigation effort $q^*(r)$ that maximizes the lender's payoff $u(q)$ in (4), as shown in Lemma 1.

Lemma 1. *The lender with relationship intensity of r optimally chooses to spend effort of $q^*(r)$ after the covenant is violated, where*

$$q^*(r) = \frac{r\theta(1-\lambda-\delta)(p_g X - M)}{1-\lambda\theta-\delta}.$$

Lemma 1 shows that the lender's incentive to acquire information comes from the expected 'rent' to the lender if he or she identifies a good project upon a low signal and allows it to continue. $p_g X - M$ represents the surplus from continuing a good project upon a low signal. Obviously, the larger the surplus, the more effort the lender is willing to spend to find out the true state of the project.

The lender's investigation effort decision is determined by the properties of the accounting system (i.e., the bias δ, taking λ as given) and the intensity of the lending relationship (r). Lemma 2 below characterizes the effects of these two factors on the optimal information acquisition effort.

Lemma 2. *The lender's optimal investigation effort increases with both the intensity of the lending relationship and the degree of accounting conservatism, i.e.,* $\frac{dq^*}{dr} > 0$*, and* $\frac{dq^*}{d\delta} < 0$.

All else equal, as the intensity of lending relationship between the borrower and the lender increases, the marginal cost of the lender's investigation effort is lower. Therefore, the lender with a closer relationship is willing to spend more effort in acquiring the information about the project state. Notice that the lender still needs to make an effort decision upon the violation of each covenant for individual loans, but the close lending relationship reduces the marginal cost in doing so each time.

The lender's optimal effort depends on the information properties of accounting system. More conservative accounting system (lower δ) makes a low signal less informative about the bad state. In other words, a good state is more likely to give "false alarm" when accounting is more conservative, i.e., $P(G|S_L)$ increases with the degree of conservatism. As a result, a conservative system increases the lender's expected marginal benefit from extracting the surplus of continuing the good project. Therefore, the lender's optimal effort increases as the accounting system becomes more conservative.

3.3.2 Optimal debt contract

Now we solve the borrower's optimal contract at date 0. When a high signal is generated, the lender receives the promised payment only when the project succeeds at date 2. When a low signal is generated, the lender receives the payoff of $u(q)$ in (4) as discussed in the above section. The lender's ex-ante expected payoff from lending given the debt contract D_r and the investigation effort of q is thus given by $P(S_H)p_h D_r + P(S_L)u(q)$.

The lender's investigation effort after the covenant violation is not contractible. Therefore the borrower chooses the optimal debt repayment amount D_r to maximize his expected payoff from the investment, subject to the lender's participation and incentive compatibility constraint in choosing the investigation effort.

$$\begin{aligned} &\max_{D_r} P(S_H)p_h(X - D_r) \\ s.t. \quad &P(S_H)p_h D_r + P(S_L)u(q^*) - I \geq 0 \\ &q^* \in argmax_q\ u(q). \end{aligned} \tag{5}$$

In equilibrium, the lender's participation constraint is binding, and the lender receives zero expected payoff from lending business. The optimal debt contract is then given by

$$D_r^* = \frac{I - P(S_L)u(q^*(r))}{P(S_H)p_h}. \tag{6}$$

where $q^*(r)$ is the optimal level of investigation effort from Lemma 1.

The debt repayment amount is lower when the lender is expected to receive a larger payoff after the covenant violation (higher $u(q)$). The lender's ability to acquire information after the covenant violation increases the ex-post payoff by extracting the rent from continuing the good project. But this ex-post efficiency gain reduces the debt repayment amount in the optimal contract because the borrower has full bargaining power ex-ante in a competitive lending market. By further substituting $u(q^*(r))$ with the optimal $q^*(r)$ from Lemma 1 into (6), we obtain that,

$$D_r^* = \frac{I - P(S_L)M}{P(S_H)p_h} - \frac{r[P(G|S_L)(p_g X - M)]^2}{2P(S_H)p_h}. \tag{7}$$

The above expression of optimal debt repayment has two components. The first part is the optimal debt repayment without considering the lender's information acquisition upon the covenant violation, the same as D_0^* in (3). The second part is related to the benefit from the lender's investigation effort and efficient liquidation decisions when the signal suggests a false alarm of the good type, denoted as $D_2 \equiv \frac{r[P(G|S_L)(p_g X - M)]^2}{2P(S_H)p_h}$. The marginal effect of accounting conservatism on the second part of debt face value, D_2, is always positive, i.e., $\frac{dD_2}{d\delta} < 0$. More conservatism (lower δ) increases the benefit from the lender's ex-post investigation effort, and therefore reduces the total debt repayment.

The lender's information acquisition only affects the second part of the debt repayment, D_2. Proposition 1 below presents how the relationship lending intensity affects the marginal impact of accounting conservatism on the debt face value.[20]

Proposition 1. *The marginal impact of accounting conservatism on the debt face value increases as the lending relationship intensity increases. i.e., $\frac{dD_r^*}{d\delta}$ is increasing in r.*

Proposition 1 suggests that if more conservative accounting reduces the debt face value ($\frac{dD_r^*}{d\delta} > 0$), the negative impact on the debt face value is larger when the intensity of lending relationship increases. The intuition follows from above discussions. When the lending relationship is more intense, increasing conservatism has a larger marginal impact on the lender's ex-post payoff because the lender is more likely to learn about the true state.

3.3.3 Optimal choice of accounting conservatism

Substituting the optimal debt contract (D_r^*) in (6) into the borrower's payoff, we get the borrower's expected payoff as

$$\begin{aligned} \Pi(D_r^*, \delta) &= \theta(\lambda+\delta)p_g X + (1-\theta)\delta p_b X + (1-\lambda\theta-\delta)u(q^*(r)) - I \qquad (8) \\ &= \underbrace{\theta p_g X + (1-\theta)M - I}_{\text{First best payoff}} - \underbrace{(1-\theta)\delta(M - p_b X)}_{\text{Inefficient continuation}} \\ &\quad - \underbrace{(1-q^*(r))\theta(1-\lambda-\delta)(p_g X - M)}_{\text{Inefficient liquidation}} - (1-\lambda\theta-\delta)\frac{q^*(r)^2}{2r}. \end{aligned}$$

The expected payoff $\Pi(D_r^*, \delta)$ in (8) is the first-best expected payoff minus the expected losses from inefficiently continuing a bad state upon a high signal and inefficiently liquidating a good state when the lender does not observe the true state upon a low signal, subtracting the expected information acquisition cost incurred by the lender. The borrower chooses the level of accounting conservatism to maximize the expected payoff. A more conservative accounting system (lower δ) identifies the bad state more easily, and reduces the likelihood of inefficiently continuing a bad state. But at the same time, a good state is more likely to be misclassified as a low signal and more conservative accounting increases the likelihood of inefficiently liquidating a good state for any given q. Moreover, more conservative accounting also encourages the lender to spend more investigation

[20] We are not particularly interested in the sign of $\frac{dD_r^*}{d\delta}$, but a sufficient condition for the overall effect of accounting conservatism to be negative is that the benchmark debt repayment value (D_0^*) decreases with the degree of accounting conservatism. In our empirical test in Table 5, the coefficient of conservatism alone captures this effect without interacting with the lending relationship intensity. Our empirical tests show that the conservatism's total effect on the loan spread is overall negative, though sometimes insignificant.

effort in acquiring the information about the true state, which reduces the loss from liquidating a good project after the covenant violation. Finally, more conservative accounting increases the expected cost of investigation incurred by the lender, which is ultimately born by the borrower due to the binding participation constraint for the lender.

The optimal choice of accounting conservatism depends on the tradeoff of these different effects. The intensity of lending relationship is a crucial determinant of the optimal accounting conservatism, as shown in Proposition 2 below.

Proposition 2. *There exists a threshold level of the intensity of lending relationship* $\hat{r}$*, where* $\hat{r} = \frac{2(1-\lambda\theta)(\theta p_g X+(1-\theta)p_b X-M)}{(1-\lambda)\theta^2(p_g X-M)^2}$*, such that*

1) the borrower chooses the most conservative accounting system when the intensity of lending relationship is above the threshold, i.e., $\delta^* = 0$ *if* $r > \hat{r}$*.*

2) the borrower chooses the most aggressive accounting system when the intensity of lending relationship is below the threshold, i.e., $\delta^* = 1 - \lambda$ *if* $r < \hat{r}$*.*

We do not have an interior solution for the optimal level of accounting conservatism in our model. The borrower either chooses the most conservative accounting or the most aggressive accounting system, depending on the marginal cost and benefit of increasing conservatism. A higher relationship intensity between the borrower and the lender reduces the marginal cost of lender's investigation effort, and the lender is more likely become informed about the true states. Therefore as the relationship intensity increases, the expected loss due to inefficient liquidation of good project is smaller when increasing accounting conservatism. When the relationship intensity is sufficiently large, $r > \hat{r}$, the marginal benefit of increasing conservatism (from efficient liquidation of bad project) always outweighs the marginal cost of increasing conservatism (from inefficient liquidation of good project and the expected cost of investigation). The borrower chooses conservative accounting when the relationship intensity is above $\hat{r}$; and vice versa.

Corollary 1 shows explicitly how the lending relationship intensity affects $\frac{d\Pi}{d\delta}$, the marginal effect of accounting conservatism on the borrower's ex-ante expected payoff.

Corollary 1. *The marginal impact of accounting conservatism on the borrower's ex-ante expected payoff increases as the lending relationship intensity increases. i.e.,* $\dfrac{d\Pi}{d\delta}$ *is decreasing in* r*.*

Corollary 1 suggests that the preference for accounting conservatism $\dfrac{d\Pi}{d\delta}$ is larger as the lending relationship becomes more intense. If we were to consider a more general equilibrium model, where the demand for conservatism from debt contracting in our setup is only a partial equilibrium result, then we can infer that as the preference for conservatism due to the debt contracting demand increases ($\frac{d\Pi}{d\delta} \downarrow$), the equilibrium choice of accounting conservatism is higher.

3.4 Credit market competition

3.5 Ex-ante financing choice

4 Empirical Predictions and Hypotheses

Empirical studies examine the role of accounting conservatism in debt contracts and argue that accounting conservatism improves debt contracting efficiency (e.g., Beatty et al., 2008; Zhang, 2008; etc.). Zhang (2008) documents that more conservative accounting leads to more frequent violation of covenants and lower loan spreads. The covenant-based explanation focuses on the agency conflict of interest between creditors and borrowers regarding the liquidating decisions of projects. However, as shown by recent theory works (Gigler et.al, 2009; Li, 2013), more frequent covenant violations induced by more conservative accounting may result in excessively inefficient liquidations of good projects, and decrease debt contracting efficiency. Therefore, it is crucial to identify the conditions under which conservative accounting improves debt contracting efficiency through more frequent covenant violations.

Our theoretical model incorporates specific features of lending relationship using the incomplete contract framework, and allows us to test the the source of the demand for accounting conservatism in debt contracts. The first hypothesis is about the relationship between accounting conservatism and the intensity of lending relationship. As shown in Proposition 2, when the lending relationship intensity is large, the borrower prefers conservative accounting to maximize his expected payoff. In addition, Corollary 1 suggests that in a more general setup, when increasing conservatism is costly to the firm due to other factors than debt contracting, we expect the observed equilibrium level of conservatism of the firm is higher when the lending relationship intensity is larger. Hypothesis 1a below presents the first testable empirical prediction.

Hypothesis 1a. *Accounting conservatism is positively related to the intensity of lending relationship.*

Next we want to test more specifically about whether the lender's information acquisition and renegotiation around the covenant violation (as shown in our model) are indeed the underlying mechanisms for the demand of conservatism in relationship lending.[21] We consider ex ante factors that may affect the renegotiation process, including the credit market competition, the number of creditors in syndicated loans, and the retained share by the lead arranger, and test whether the effects of these factors are consistent with the model's pre-conditions.

When the credit market becomes more competitive, the outside creditors are more aggressive in bidding for new business despite the negative accounting signal, which reduces the bargaining power of the informed lender in extracting the rent from the borrower (Petersen and Rajan, 1995). Therefore the informed lender's incentive to spend costly effort is reduced due to the lower expected rent. We expect that the marginal effect of the lending relationship intensity on the demand for conservatism is weaker when the credit market is more competitive. Secondly, the ex-post renegotiation requires coordination among creditors, and usually it is more costly to reach an efficient renegotiation outcome when there are more creditors involved in the loan increases (Bolton and Scharfstein, 1996). The possible failure in renegotiation reduces the expected rent that the informed lender (the lead arranger in syndicated loans) may receive even when she discovers the project true states after investigation. Hence we also expect the impact of lending relationship on the demand for conservatism is weaker when the number of creditors in the syndicated loan increases. Similarly, when the lead arranger retains less share in a syndicated loan, his incentive to acquire information is reduced because of the lower ex-post benefit he may receive. Hypothesis 1b below summarizes the testable predictions on these factors.

Hypothesis 1b. *The impact of lending relationship intensity on accounting conservatism decreases with credit market competition and the number of creditors involved in the loan, and increases with the share retention by the lead arranger.*

A second empirical hypothesis we examine is the effect of accounting conservatism on loan spreads. Several studies have documented the negative relation between the accounting conservatism and the loan spreads (Ball, Bushman, and Vasvari (2008), Wittenberg-Moerman (2008), Beatty, Weber, and Yu (2008), Zhang (2008)). Zhang (2008) suggests that more conservative accounting leads to more frequent covenant violations, and as a result, the lender is willing to accept a lower ex-ante interest rate. Our theoretical model allows us to test the effect of accounting con-

[21] An ideal direct test about the mechanism is to test the efficiency of renegotiation outcome after the covenant violation, and to see whether the renegotiation efficiency is related to the amount/quality of private information of the lender in renegotiation process. However, we do not observe the lender's information acquisition effort in data, and the efficiency of renegotiation outcomes is difficult to measure because covenant waiver data is limited and instances of negative covenant slack transfer into covenant violations at the discretion of lead arrangers.

servatism on loan spreads when the lending relationship intensity varies. In our model, the lender with more intense relationship is more likely to extract benefit from ex-post covenant violations due to their superior information. The marginal effect of increasing conservatism on ex-ante loan spread is larger when the lending relationship is more intense, as shown in Proposition 1. If the relationship lender indeed is able to extract informational rents in the ex-ante debt contracting stage (the ex-ante competitive debt market assumption fails), then more conservative accounting only facilitates the relationship lender's rent extraction without benefiting the borrower. The marginal effect of increasing conservatism on the loan spread should not increase with the intensity of lending relationship. Again we test our second hypothesis below to validate our model's prediction.

Hypothesis 2. *As the intensity of lending relationship increases, the relationship between accounting conservatism and the interest spread becomes more negative.*

5 Data, Empirical Methodologies and Results

5.1 Data

We collect a panel of firm characteristics and stock return data from Compustat and CRSP, respectively, and a loan-level panel of loan terms and lender identities from Loan Pricing Corporation's (LPC) Dealscan database. After conditioning on having non-missing loan terms, lender identities, and the pertinent firm characteristics for our empirical constructs, our final merged data set includes 28,346 loans between 1995 and 2012.

We estimate our empirical tests using this loan level sample to avoid removing important within firm-year variation in loan terms and lending relationship length. This choice is especially important in our loan spread tests of the model's second prediction; that the relationship between conservatism and loan spreads is increasing in lending relationship length. By keeping all loan-firm-year level observations, we avoid potential bias in our estimated coefficients that would result from ad hoc assumptions about which loan terms and lending relationship should apply to a given firm-year.

Table 1 presents summary statistics at the lending relationship, firm, and loan level. The loan level summary statistics reveal that the average loan in our sample has a spread of 191 bps, maturity of 46 months, and a loan amount of \$295mm. Additionally, 44% of our loans are secured by some form of collateral.

To measure conservatism at the firm-year level, we calculate $CScore$ as in Khan and Watts (2009). $CScore$ is a conditional conservatism measure that is based on the Basu (1997) asymmetric timeliness earnings-return relationship. Following Khan and Watts (2009), we use contemporaneous firm-specific characteristics to estimate $CScore$ because our model predictions are about the asymmetric timeliness of earnings in a news-dependent, conditional conservatism sense. Formally, we construct $CScore$ as follows. We first estimate a firm-year cross-sectional regression:

$$\begin{aligned} X_i &= \beta_0 + \beta_1 D_i + R_i(\mu_1 + \mu_2 Size_i + \mu_3 M/B_i + \mu_4 Lev_i) \\ &\quad + D_i R_i(\varphi_1 + \varphi_2 Size_i + \varphi_3 M/B_i + \varphi_4 Lev_i) \\ &\quad + (\gamma_1 Size_i + \gamma_2 M/B_i + \gamma_3 Lev_i + \gamma_4 D_i Size_i + \gamma_5 D_i M/B_i + \gamma_6 D_i Lev_i) + \varepsilon_i, \end{aligned}$$

where X is earnings scaled by lagged market value of equity, R is the annual cumulative stock return, D is an indicator equal to one if the $R < 0$, $Size$ is the market value of equity, M/B is the market value of equity divided by book value of equity, Lev is the leverage ratio. We drop firm-year observations with negative total assets or book value of equity or with price per share less than \$1.

We then use the estimated coefficients from the above cross-sectional regression to construct a firm-year specific $CScore$, which we calculate as $\varphi_1 + \varphi_2 Size_i + \varphi_3 M/B_i + \varphi_4 Lev_i$. For ease of inference and presentation, we multiply $CScore$ by 100. Table 1 reveals that the average $CScore$ in our sample is 5.89, but because $CScore$ varies in time and in the cross-section, the standard deviation is more than twice the mean at 12.70.

For our primary measure of lending relationship intensity, we follow Schenone (2009), Bharath et al (2010), Berger and Udell (1995), and Petersen and Rajan (1994) in using the number of years since the first loan between a given borrower and lender. For ease of inference and to remove the impact of outliers, we take the natural logarithm of relationship length in the tests we present, though the results are robust to using unadjusted length. Our second measure, to distinguish between borrowers with a lending relationship and those without, we construct an indicator equal to one if the loan is not the first loan between the borrower-lender pair. Table 1 shows that the average relationship length is half a year, but this masks the amount of variation in relationship length in our sample because 77% of our loans are between borrower-lender pairs with prior loans. Among borrower-lender pairs with prior loans, relationship length varies between 1 year and 17 years.

5.2 Empirical Methodology and Results

To test the first prediction of the model that conservatism is increasing in the lending relationship length, we utilize two complementary empirical models. We use these two empirical models for robustness in keeping with the recommendation of Khan and Watts (2009). Our first empirical model is an augmented Basu (1997) model, where we follow Francis and Martin (2010) in constructing theoretically appropriate interaction terms. Our second empirical model is a fixed effects estimator in which we seek to eliminate unobservable variation in conservatism and lending relationship length that might bias our estimated coefficients. We construct these fixed effects to mitigate the concern that other economic factors or mechanisms might influence our results.[22]

To test the second prediction of the model that the conservatism-loan spread relationship is increasing in lending relationship length, we expand upon our fixed effects estimator, again mitigating unobservable borrower, lender, or time series variation that might bias our estimated coefficients. For further robustness, we present results that include lower-level fixed effects incrementally, which demonstrates the cross-sectional and time series nature of the relationships between conservatism, lending relationships length, and loan spreads.

5.3 Lending Relationships and Conservatism

5.3.1 Basu (1997) Panel Models

Basu (1997) identified conservatism in financial reporting by analyzing the asymmetric relationship between earnings and stock returns in cross-sectional regressions. Subsequent work has sought to identify cross-sectional and time series variation in this asymmetry. We follow this literature, and Francis and Martin (2010) in particular, by augmenting the Basu (1997) model by including interaction terms with our variables of interest as follows:

$$\begin{aligned} X_{it} &= \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} R_{it} + \beta_4 lnLength_{it} \\ &\quad + \beta_5 D_{it} lnLength_{it} + \beta_6 R_{it} lnLength_{it} + \beta_7 D_{it} R_{it} lnLength_{it} + \varepsilon_{it}, \end{aligned}$$

[22] For example, Dutta and Patatoukas (2015) suggest that asymmetric timeliness coefficient estimates from Basu (1997) model is influenced not only by conditional conservatism, but also expected returns, asymmetric cash flow news, and cash flow persistence. Banker, et al. (2015) suggest that cost stickiness is an important confounding factor for asymmetric timeliness estimation, which may lead to upward bias in inferring both the average conservatism and cross-sectional variation tests of conservatism.

and

$$X_{it} = \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} R_{it} + \beta_4 1_{[Length>0]it} + \beta_5 D_{it} 1_{[Length>0]it} + \beta_6 R_{it} 1_{[Length>0]it} + \beta_7 D_{it} R_{it} 1_{[Length>0]it} + \varepsilon_{it},$$

where all variables are as defined previously. Our coefficient of interest is β_7 in each regression model. Positive coefficient estimates (i.e., $\beta_7 > 0$) suggests that (i) the asymmetric timeliness of the earnings-return relationship is increasing in relationship length, or (ii) the asymmetric timeliness of the earnings-return relationship is larger for firms with an existing lending relationship.

We estimate these panel regression models using all loan-firm-year observations in our sample and report the results in Table 2. For inference, standard errors are clustered at the firm level, and for brevity of presentation, we exclude the firm-level characteristics that we include as control variables (i.e., *Size*, *Lev*, *M/B*). To confirm that the Basu (1997) result holds in our sample of firms that access the private loan market, we present estimates of the Basu (1997) regression in columns (1) and (2). These columns show consistent coefficient estimates for β_1, β_2, and β_3 to those in Basu (1997). In particular, the coefficient β_3 is positive and statistically significant, suggesting that, on average, firms that access the private loan market exhibit the same asymmetric earnings-returns relationship as other public firms. Columns (3) and (4) present the conditional regression models that include interaction terms with our variable of interest, *lnLength*. The regressions show two important results. First, β_3 remains statistically significant, suggesting that the interaction with lending relationship length does not subsume the asymmetric earnings-returns relationship. Second, β_7 is positive and statistically significant in all specifications. These results suggest that the asymmetric timeliness of the earnings-returns relationship is increasing in lending relationship length, consistent with the first prediction of our model.

5.3.2 CScore and Fixed Effects Empirical Models

The central identification challenge in this study is the potential for managers to change their financial reporting policies in response to factors irrespective of their lending relationship incentives. To isolate the effect of the existence and intensity of lending relationships on changes in conservatism, we first focus on mitigating observable firm characteristics, including the market value of equity, leverage, and the market-to-book ratio, that have previously been shown to influence conservatism and financial reporting policies. However, we are concerned that unobservable differences across firms or trends in financial reporting and the propensity to borrow from a relationship lender may still confound our inferences.

To that end, we construct our next set of tests around a firm-year measure of conservatism, $CScore$, and a set of incrementally more restrictive fixed effects that flexibly control for observable and unobservable factors that might influence our estimates. In our most restrictive set, we include both Borrower-by-Lender and Industry-by-Year fixed effects. The Borrower-by-Lender fixed effects ensure that the only variation that identifies the effect of lending relationship length on $CScore$ comes from change in lending relationship length and $CScore$ within a borrower-lender pair. This is crucial because it eliminates the potential for differences in the propensity to have a lending relationship and other unobservable time-invariant lender and borrower characteristics from contaminating our inferences. Similarly, rather than controlling for aggregate unobservable trends, we recognize that industries vary in their access to the private loan market, cultivation of lending relationship, and conservatism in financial reporting, so we include Industry-by-Year fixed effects to control for unobservable trends at the 2-digit SIC industry level.

We implement these empirical models by incrementally adding fixed effects to the following natural OLS specification:

$$CScore_{it} = \beta_0 + \beta_1 lnLength_{it} + \beta_2 Controls_{it} + \varepsilon_{it},$$

and

$$CScore_{it} = \beta_0 + \beta_1 1_{[Length>0]it} + \beta_2 Controls_{it} + \varepsilon_{it}.$$

where all variable definitions are as previously defined and $Controls$ includes loan terms (i.e., $lnSpread$, $Maturity$, $lnAmount$, and $Collateral$) as well as firm characteristics (i.e., M/B, $Earnings$, $Leverage$, and $lnMVEquity$). Table 3 presents the estimation results. Columns (1)-(3) present results on the effect of lending relationship intensity on conservatism using $lnLength$, and columns (4)-(6) present results on the effect of having a prior lending relationship on conservatism using $1_{[Length>0]}$.

Columns (1) and (4) present results that include industry, year, and lender fixed effects. These fixed effects mitigate the concern that unobservable differences in conservatism and lending relationships across industries, across lenders, and over time might explain the positive coefficient estimates on $lnLength$ and $1_{[Length>0]}$. For example, the lender fixed effects eliminate the concern that specific lenders have a strong preference for borrowers that exhibit reporting conservatism.

Similarly, industry fixed effects eliminates the concern that certain industries rely more on private loans and, hence, lending relationships, and also exhibit more conservative reporting. Estimates in columns (1) and (4) suggest that not only do borrowers with existing lending relationships exhibit more conservative reporting, but also that conservatism is increasing in the intensity of these lending relationships. Moreover, these estimates are economically large. Our column (4) estimate suggests that borrowers with an existing lending relationship have a $CScore$ 36% smaller than the $CScore$ of the average borrower without an existing lending relationship. And our column (1) estimate suggests that a 1% increase in lending relationship intensity is associated with a 6.8% increase in conservatism.

Columns (2) and (5) include year, lender, and borrower fixed effects. Year and lender fixed effects operate as before, but borrower fixed effects now eliminate alternative explanations that involve omitted firm characteristics that are positively correlated with both conservatism and lending relationships. Furthermore, borrower fixed effects also subsume industry fixed effects because we force firms to retain the same primary industry over our sample period. Our column (2) and (5) estimates are statistically indistinguishable from our column (1) and (4) estimates, suggesting that unobservable firm characteristics are not likely to explain the relationship between conservatism and lending relationship existence or intensity.

Columns (3) and (6) of Table 3 present estimates that incorporate our most restrictive set of fixed effects. We include Industry-by-Year fixed effects to eliminate correlated trends in conservatism and lending relationships at the industry level. We also include Borrower-by-Lender fixed effects, which eliminate the effect of matching lenders and borrowers according to their preference for and adherence to reporting conservatism. In particular, if specific lenders have stronger preferences for borrowers that exhibit reporting conservatism, then we would expect to observe relationships arise between these sets of lenders and borrowers. This is exactly the variation that Borrower-by-Lender fixed effects remove, allowing us to focus only on changes in conservatism that occur as lending relationships intensify. Again, our coefficient estimates in columns (3) and (6) remain economically and statistically significant, yet statistically similar to those in columns (1) and (4). We provide evidence that these findings are robust to including additional control variables, including ROA volatility, which we measure as the twelve quarter standard deviation of return-on-assets, and Covenants, which we measure as the number of covenants in the associated loan package, as well as to excluding loans that represent the first interaction between borrowers and lenders. The results in Table 6 suggest that controlling for higher moments of accounting earnings and covenant intensity or excluding arms-length transactions do not affect our inferences.

Overall, the results in Table 3 and Table 6 are consistent with those from our augmented Basu (1997) empirical model. They provide further evidence that the dynamic relationship between conservatism and lending relationships is consistent with the cross-sectional one identified in the Basu (1997) specification.

In Table 4, we investigate hypotheses 1b, which predicts that the effect of lending relationship length on conservatism is decreasing in bank competition and lender coordination costs in default. To measure coordination costs, we draw on the banking literature (Guner (2006), Sufi (2007), Paligorova and Santos (2016)) and use the number of participant banks in the loan syndicate and the retained share of the lead bank. Intuitively, coordination costs should be increasing in the number of participants and decreasing in the loan share retained by the lead bank. Motivated by the literature on distance and lender choice (Petersen and Rajan (2002), Agarwal and Hauswald (2010), Degryse and Ongena (2005), Mian (2006)), we count the number of other lenders operating in the same state as the borrower's headquarters to measure bank competition. Presumably, these lenders provide outside options for the borrower because they are geographically close.

To test hypothesis 1b, we estimate empirical models similar to those estimated in columns (1) and (4) in Table 3, but we add participants, retained share, competition, and their interaction terms with $lnLength$ and $1_{[Length>0]}$. Broadly, the results in Table 4 provide evidence in favor of the model's cross-sectional predictions. We find evidence that the effect of lending relationships on conservatism, here measured as $CScore$, are mitigated by creditor competition and by coordination costs in default. In particular, these results provide evidence that the preconditions for observing a relationship between lending relationships and conservatism are related to both the existence and magnitude of the observed relationship.

5.4 Lending Relationships, Conservatism, and Loan Spreads

The second prediction from our theoretical model of conservatism and lending relationships suggests that the relationship between conservatism and loan spreads should be increasing in lending relationship intensity. We turn to our proxy for reporting conservatism, $CScore$, and our fixed effects strategy from the previous section to estimate the joint effects of conservatism and lending relationships on loan spreads. We estimate the following empirical model with incrementally more restrictive fixed effects:

$$lnSpread_{it} = \beta_0 + \beta_1 lnLength_{it} + \beta_2 CScore_{it} + \beta_3 lnLength * CScore_{it} + \beta_4 Controls_{it} + \varepsilon_{it},$$

and

$$lnSpread_{it} = \beta_0 + \beta_1 1_{[Length>0]it} + \beta_2 CScore_{it} + \beta_3 1_{[Length>0]} * CScore_{it} + \beta_4 Controls_{it} + \varepsilon_{it}.$$

where all variables are as defined previously and $Controls$ includes loan terms (i.e., $Maturity$, $lnAmount$, and $Collateral$) and firm characteristics (i.e., M/B, $Earnings$, $Leverage$, and $lnMVEquity$).

Table 5 presents the results. Columns (1) and (4) present results that include industry, year, and lender fixed effects. These fixed effects mitigate the concern that unobservable differences in loan spreads, conservatism, and lending relationships across industries, across lenders, and over time might explain the positive interaction coefficient estimates. These tests are most similar to those in the lending relationship and accounting conservatism literatures that examine the relationships between loan spreads and lending relationship length and loan spreads and conservatism, respectively. As such, we can more easily compare the coefficients on $lnLength$, $1_{[Length>0]}$, and $CScore$ with those from prior work. Consistent with the existing literature, we find statistically significant and economically large coefficients on all three of these variables, suggesting that loan spreads are decreasing in lending relationship intensity (Berger and Udell (1995), Bharath et al (2011), Karolyi (2015)) and loan spreads are decreasing in conservatism (Ball, Bushman, and Vasvari (2008), Wittenberg-Moerman (2008), Beatty, Weber, and Yu (2008)). This consistency gives us confidence in our estimation approach and sample selection. Most importantly, and consistent with the second prediction of our theoretical model, we estimate a negative coefficient on the $CScore$ and $lnLength$ and $CScore$ and $1_{[Length>0]}$ interactions.

Columns (2) and (5) include year, lender, and borrower fixed effects, and columns (3) and (6) include Industry-by-Year and Borrower-by-Lender fixed effects. Because these sets of fixed effects limit the identifying variation to within borrowers or within borrower-lender pairs, the effects of lending relationships on loan spreads and from columns (1) and (4) deteriorate slightly. These results suggest that certain types of borrowers are predisposed to entering lending relationships and receive lower loan spreads and that better matched borrower-lender pairs are more likely to continue transacting with lower loan spreads. The cross-sectional relationship between loan spreads and conservatism from columns (1) and (4) is more robust to focusing on within borrower or borrower-lender pair variation. This suggests that, at the borrower and borrower-lender pair level, changes in conservatism are associated with lower loan spreads. Most importantly, in all of these tests with more restrictive fixed effects, the interaction term coefficients on our proxies for conservatism and lending relationships are negative and statistically significant. This is consistent with our theoretical model's second prediction that the relationship between conservatism and loan spreads is increasing in the existence and intensity of lending relationships.

6 Conclusion

In this paper we examine the role of lending relationships in the demand of accounting conservatism in lending contracts with accounting-based covenants. The key feature of relationship lending is the private information advantage obtained by the relationship lender through its close monitoring and frequent interactions with the borrower. When the ex-ante uncertainty exists and the debt contract can only be contingent on the noisy accounting signals, ex-post inefficiencies may occur when accounting signals do not reflect the true states of the world. We show that the private information obtained by relationship lender plays an important role in the ex-post renegotiation and allow lenders making efficient liquidation decisions after covenants are violated. Regardless of the ex-post bargaining power in extracting the surplus from renegotiation, a relationship lender is more likely to obtain information about the project's true states and makes a more efficient liquidation decision. This ex-post efficiency in liquidation decision improves the borrower's ex-ante welfare from investing and financing, and as a result, the optimal accounting system should delegate more control rights to relationship lenders ex-post in order to benefit from the ex-post efficiency. Because the relationship lender can extract more benefit from ex-post renegotiation, the marginal impact of accounting conservatism on the ex-ante loan spread increases with the intensity of lending relationship. We find consistent empirical evidences that support our theoretical predictions.

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Appendix B: Proofs

Proof. **Lemma 1**

Taking the first order derivative of the lender's payoff $u(q)$ with respect to q, we get

$$\frac{\partial u(q)}{\partial q} = P(G|S_L)(p_g X - M) - \frac{q}{r} = \frac{\theta(1-\lambda-\delta)}{1-\lambda\theta-\delta}(p_g X - M) - \frac{q}{r}.$$

From the first order condition, $\frac{\partial u(q)}{\partial q} = 0$, we obtain that

$$q^*(r) = \frac{r\theta(1-\lambda-\delta)(p_g X - M)}{1-\lambda\theta-\delta}.$$

□

Proof. **Lemma 2**

Taking the first order derivative of $q^*(r)$ with respect to r and δ respectively, we get

$$\frac{dq^*(r)}{dr} = \frac{\theta(1-\lambda-\delta)(p_g X - M)}{1-\lambda\theta-\delta} > 0,$$

$$\frac{dq^*(r)}{d\delta} = -\frac{r\lambda\theta(1-\theta)(p_g X - M)}{(1-\lambda\theta-\delta)^2} < 0.$$

□

Proof. **Proposition 1**

The total derivative of optimal debt face value in (6) with respect to δ is given by

$$\frac{dD_r^*}{d\delta} = \frac{\partial D_r^*}{\partial \delta} + \frac{\partial D_r^*}{\partial u(q^*)}\frac{\partial u(q^*)}{\partial \delta}.$$

Where

$$\begin{aligned}
\frac{\partial D_r^*}{\partial \delta} &= \frac{u(q^*)}{\theta(\lambda+\delta)p_g + (1-\theta)\delta p_b} - \frac{(I-(1-\lambda\theta-\delta)u(q^*))(\theta p_g + (1-\theta)p_b)}{(\theta(\lambda+\delta)p_g + (1-\theta)\delta p_b)^2}, \\
\frac{\partial D_r^*}{\partial u(q^*)} &= -\frac{1-\lambda\theta-\delta}{\theta(\lambda+\delta)p_g + (1-\theta)\delta p_b}, \\
\frac{\partial u(q^*)}{\partial \delta} &= -\frac{q^*\theta(1-\theta)\lambda(p_g X - M)}{(1-\lambda\theta-\delta)^2}.
\end{aligned}$$

Substituting q^* and $u(q^*)$ into the derivatives above, and then taking first order derivative with respect to r, we obtain that

$$\partial(\frac{dD_r^*}{d\delta})/\partial r = \frac{(1-\lambda-\delta)\theta^2(p_gX-M)^2}{2((1-\lambda\theta-\delta)^2(\delta(1-\theta)p_b+\theta(\lambda+\delta)p_g)^2}K,$$
$$where\ \ K = p_g\theta(1-\delta-\theta\lambda)+\delta(1-\theta)+\lambda^2(1-\theta))-p_b(1-\theta)(\delta(1-2\lambda+\lambda\theta)-(1-\lambda)(1-\lambda\theta)).$$

By the assumption that $1 > p_g > p_b > 0$, $0 < \theta < 1$, $0 < \lambda < 1$, and $0 < \delta < 1-\lambda$, we can prove that $K > 0$ always holds.

Therefore $\partial(\frac{dD_r^*}{d\delta})/\partial r > 0$.

□

Proof. **Corollary 1**

Taking the first order derivative of the borrower's expected payoff in (8) with respect to δ, we have

$$\begin{aligned}
& \frac{d\Pi}{d\delta} = \frac{\partial\Pi}{\partial\delta} + \frac{\partial\Pi}{\partial u(q)}(\frac{\partial u(q)}{\partial\delta} + \frac{\partial u(q)}{\partial q}\frac{\partial q}{\partial\delta}) \\
\Rightarrow\quad & \frac{d\Pi}{d\delta}|_{q=q^*} = \frac{\partial\Pi}{\partial\delta} + \frac{\partial\Pi}{\partial u(q^*)}\frac{\partial u(q^*)}{\partial\delta}\quad \text{(envelope theorem)} \\
& = \theta p_gX + (1-\theta)p_bX - u(q^*) - \frac{\theta(1-\theta)\lambda q^*(p_gX-M)}{1-\lambda\theta-\delta} \\
& = \theta p_gX + (1-\theta)p_bX - M - \theta q^*(p_gX-M) + \frac{q^{*2}}{2r}.
\end{aligned}$$

Substituting the optimal choice of $q^*(r)$ into the first order derivative above, we obtain that

$$\begin{aligned}
\frac{d\Pi}{d\delta} &= \theta p_gX + (1-\theta)p_bX - M - \theta q^*(p_gX-M) + \frac{q^{*2}}{2r} \\
&= \theta p_gX + (1-\theta)p_bX - M + \frac{r\theta^2(1-\lambda-\delta)^2(p_gX-M)^2}{2(1-\lambda\theta-\delta)^2} + \frac{r\theta^2(1-\lambda-\delta)(p_gX-M)^2}{1-\lambda\theta-\delta}.
\end{aligned}$$

Taking the partial derivative of $\frac{d\Pi}{d\delta}$ with respect to r, we obtain that

$$\partial(\frac{d\Pi}{d\delta})/\partial r = -\frac{\theta^2(1-\lambda-\delta)(1-\lambda-\delta+2\lambda\theta)(p_gX-M)^2}{2(1-\lambda\theta-\delta)^2} < 0.$$

□

Proof. **Proposition 2**

As shown in the proof of Lemma 1, the first order derivative of the borrower's expected payoff in (8) with respect to δ is given by

$$\frac{d\Pi}{d\delta} = \theta p_g X + (1-\theta)p_b X - M - \theta q^*(p_g X - M) + \frac{q^{*2}}{2r}.$$

The second order derivative is

$$\begin{aligned}
\frac{d^2\Pi(q^*)}{d\delta^2} &= (\frac{q^*}{r} - \theta(p_g X - M))\frac{\partial q^*}{\partial \delta} \\
&= (\frac{q^*}{r} - \theta(p_g X - M))\frac{-r\lambda\theta(1-\theta)(p_g X - M)}{(1-\lambda\theta-\delta)^2} \\
&= \frac{r\lambda^2\theta^2(1-\theta)^2(p_g X - M)^2}{(1-\lambda\theta-\delta)^3} > 0.
\end{aligned}$$

Since $SOC > 0$, there is no interior solution of δ to maximize the borrower's payoff. We thereby compare the expected payoffs for two corner solutions $\delta = 0$ or $\delta = 1-\lambda$.

$$\begin{aligned}
\Pi|_{\delta=0} - \Pi|_{\delta=1-\lambda} &= (1-\lambda)(1-\theta)(M - p_b X) - \frac{r(1-\lambda)^2\theta^2(p_g X - M)^2}{2(1-\lambda\theta)} \\
&\quad -\theta(1-\lambda)(p_g X - M)(1 - \frac{r(1-\lambda)\theta(p_g X - M)}{1-\lambda\theta}).
\end{aligned}$$

Given the assumptions that $1 > p_g > p_b > 0$, $0 < \theta < 1$, $0 < \lambda < 1$, $0 < \delta < 1-\lambda$, and $\theta p_g X + (1-\theta)p_b X > M$, we get

$$\Pi|_{\delta=0} - \Pi|_{\delta=1-\lambda} > 0 \ \text{ if and only if } \ r > \hat{r} \equiv \frac{2(1-\lambda\theta)(\theta p_g X + (1-\theta)p_b X - M)}{(1-\lambda)\theta^2(p_g X - M)^2}.$$

□

Table 1. Summary Statistics

This table presents summary statistics and correlations for the main regression variables of interest for the main sample of 28,346 loans to nonfinancial firms in LPC's Dealscan database between 1995 and 2012. *CScore* is measured as in Khan and Watts (2009).

Panel A. Summary Statistics

	Mean	SD	P10	P50	P90
Variables of interest:					
CScore	5.89	12.70	-4.89	7.76	13.10
Length	0.54	1.38	0	0	2
max*Length*	1.06	1.94	0	0	4
$1_{[Length>0]}$	77.33%				
Loan terms:					
Spread	191	145	35	175	365
Maturity	46	34	12	38	84
Amount ($mm)	295	805	6	85	667
Collateral	44.33%				
Firm characteristics:					
M/B	2.46	4.36	0.55	1.83	5.03
Earnings	-0.02	0.38	-0.17	0.05	0.13
Leverage	0.99	1.21	0.06	0.51	2.98
ln*MVEquity*	6.57	2.30	3.51	6.68	9.76

Panel B. Correlations

	CScore	*Length*	$1_{[Length>0]}$	*Spread*	*Maturity*	*Amount($)*	*Collateral*	*M/B*	*Earnigns*	*Leverage*	$\ln MVEquity$
CScore	1										
Length	0.0863	1									
$1_{[Length>0]}$	0.2242	0.7372	1								
Spread	-0.0102	-0.0762	-0.0900	1							
Maturity	0.0026	-0.0397	-0.0618	0.0132	1						
Amount($)	0.0258	0.0467	0.0301	-0.2010	-0.0140	1					
Collateral	-0.0674	-0.0381	-0.0553	0.4347	0.0443	-0.1175	1				
M/B	-0.1442	0.0421	0.0225	-0.0891	0.0321	0.2387	-0.0576	1			
Earnings	-0.0005	0.0387	0.0278	-0.1645	-0.0479	0.3617	-0.1329	0.0001	1		
Leverage	-0.0090	0.0072	0.0107	-0.0563	-0.0172	0.1132	0.0814	-0.0001	-0.0148	1	
$\ln MVEquity$	0.2457	0.1233	0.1964	-0.3624	0.0204	0.4371	-0.0143	0.0082	0.0129	-0.0164	1

Table 2. Asymmetric Timeliness and Lending Relationships

This table presents cross-sectional panel regression estimates from our augmented Basu (1997) model of the asymmetric timeliness of loss recognition. *NEG* is an indicator that equals one if the firm-year has negative earnings. *R* is the cumulative annual stock return. ln*Length* is the natural log of the number of years since the first loan for each borrower-lender pair. *Controls* include loan terms (i.e., ln*Spread*, *Maturity*, ln*Amount*, and *Collateral*) and firm characteristics (i.e., *M/B*, *Leverage*, and ln*MVEquity*). Standard errors are robust to heteroskedasticity and clustered at the firm level. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
NEG	0.002	0.004	0.001	0.002
	(0.010)	(0.008)	(0.006)	(0.004)
R	0.047***	0.052***	0.045***	0.048***
	(0.009)	(0.011)	(0.009)	(0.011)
R x *NEG*	0.250***	0.222***	0.287***	0.229***
	(0.027)	(0.030)	(0.031)	(0.037)
ln*Length*			-0.027**	-0.032**
			(0.012)	(0.015)
NEG x ln*Length*			0.005	0.003
			(0.009)	(0.012)
R x ln*Length*			0.046**	0.053**
			(0.021)	(0.024)
R x *NEG* x ln*Length*			0.166***	0.149**
			(0.057)	(0.063)
$Controls_{it}$	No	Yes	No	Yes
R^2	0.2484	0.2489	0.2491	0.2508
Obs.	28,346			

Table 3. Conservatism and Lending Relationships

This table presents fixed effects regression estimates of *CScore*, our proxy of conservatism as in Khan and Watts (2009), on the existence and intensity of lending relationships. ln*Length* is the natural log of the number of years since the first loan for each borrower-lender pair. $1_{[Length>0]}$ is an indicator that equals one if the borrower-lender pair has previously initiated a loan. *Controls* include loan terms (i.e., ln*Spread*, *Maturity*, ln*Amount*, and *Collateral*) and firm characteristics (i.e., *M/B*, *Leverage*, and ln*MVEquity*). Standard errors are robust to heteroskedasticity and clustered at the firm level. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

	CScore					
	(1)	(2)	(3)	(4)	(5)	(6)
ln*Length*	0.406***	0.456***	0.356**			
	(0.157)	(0.153)	(0.154)			
$1_{[Length>0]}$				2.094**	1.926*	1.733**
				(1.263)	(0.978)	(0.708)
$Controls_{it}$	YES	YES	YES	YES	YES	YES
Fixed effects:						
Industry	YES	NO	NO	YES	NO	NO
Year	YES	YES	NO	YES	YES	NO
Lender	YES	YES	NO	YES	YES	NO
Borrower	NO	YES	NO	NO	YES	NO
Industry x *Year*	NO	NO	YES	NO	NO	YES
Lender x *Borrower*	NO	NO	YES	NO	NO	YES
R^2	0.2236	0.4769	0.7187	0.2235	0.4754	0.7098
Obs.	28,346					

Table 4. Conservatism and Lending Relationships: Mechanisms

This table presents fixed effects regression estimates of *CScore*, our proxy of conservatism as in Khan and Watts (2009), on the existence and intensity of lending relationships. ln*Length* is the natural log of the number of years since the first loan for each borrower-lender pair. $1_{[Length>0]}$ is an indicator that equals one if the borrower-lender pair has previously initiated a loan. *Participants* is the number of syndicate participants in the loan. *Competition* is the number of other lenders contemporaneously operating in the same state as the borrower's headquarters. *RetainedShare* is the fraction of the loan amount held by the lead arranger at loan issuance. *Controls* include loan terms (i.e., ln*Spread*, *Maturity*, ln*Amount*, and *Collateral*) and firm characteristics (i.e., *M/B*, *Leverage*, and ln*MVEquity*) and all lower order interaction terms. Standard errors are robust to heteroskedasticity and clustered at the firm level. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

	CScore					
	(1)	(2)	(3)	(4)	(5)	(6)
ln*Length*	0.539***	0.467**	0.359**			
	(0.144)	(0.182)	(0.153)			
$1_{[Length>0]}$				2.013**	1.824**	1.486**
				(0.917)	(0.787)	(0.885)
ln*Length* x *Participants*	-0.054*					
	(0.032)					
ln*Length* x *Competition*		-0.092*				
		(0.053)				
ln*Length* x *RetainedShare*			0.012*			
			(0.007)			
$1_{[Length>0]}$ x *Participants*				-0.083		
				(0.096)		
$1_{[Length>0]}$ x *Competition*					-0.155*	
					(0.087)	
$1_{[Length>0]}$ x *RetainedShare*						0.023*
						(0.013)
$Controls_{it}$	YES	YES	YES	YES	YES	YES
Fixed effects:						
Industry	YES	YES	YES	YES	YES	YES
Year	YES	YES	YES	YES	YES	YES
R^2	0.7471	0.7189	0.7264	0.7455	0.7100	0.7183
Obs.	28,346					

Table 5. Loan Spreads, Conservatism, and Lending Relationships

This table presents fixed effects regression estimates of ln*Spread* on *CScore*, our proxy of conservatism as in Khan and Watts (2009), the existence or intensity of lending relationships, and the interaction of *CScore* and the existence or intensity of lending relationships. ln*Length* is the natural log of the number of years since the first loan for each borrower-lender pair. $1_{[Length>0]}$ is an indicator that equals one if the borrower-lender pair has previously initiated a loan. *Controls* include loan terms (i.e., ln*Spread*, *Maturity*, ln*Amount*, and *Collateral*) and firm characteristics (i.e., *M/B*, *Leverage*, and ln*MVEquity*). Standard errors are robust to heteroskedasticity and clustered at the firm level. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

	ln*Spread*					
	(1)	(2)	(3)	(4)	(5)	(6)
ln*Length*	-0.071***	0.003	0.008			
	(0.018)	(0.014)	(0.019)			
$1_{[Length>0]}$				-0.084***	0.004	-0.006*
				(0.024)	(0.003)	(0.004)
CScore	-0.019***	0.001	0.001	-0.018***	-0.008**	-0.004*
	(0.002)	(0.001)	(0.001)	(0.004)	(0.004)	(0.002)
ln*Length* x *CScore*	-0.003*	-0.003**	-0.002**			
	(0.002)	(0.001)	(0.001)			
$1_{[Length>0]}$ x *CScore*				-0.006*	-0.009**	-0.012**
				(0.003)	(0.005)	(0.006)
$Controls_{it}$	YES	YES	YES	YES	YES	YES
Fixed effects:						
Industry	YES	NO	NO	YES	NO	NO
Year	YES	YES	NO	YES	YES	NO
Lender	YES	YES	NO	YES	YES	NO
Borrower	NO	YES	NO	NO	YES	NO
Industry x *Year*	NO	NO	YES	NO	NO	YES
Lender x *Borrower*	NO	NO	YES	NO	NO	YES
R^2	0.3520	0.5121	0.7784	0.3515	0.5116	0.7773
Obs.	28,346					

Table 6. Conservatism and Lending Relationships: Robustness

This table presents fixed effects regression estimates of *CScore*, our proxy of conservatism as in Khan and Watts (2009), on the existence and intensity of lending relationships. ln*Length* is the natural log of the number of years since the first loan for each borrower-lender pair. $1_{[Length>0]}$ is an indicator that equals one if the borrower-lender pair has previously initiated a loan. *Controls* include loan terms (i.e., ln*Spread*, *Maturity*, ln*Amount*, and *Collateral*) and firm characteristics (i.e., *M/B*, *Leverage*, and ln*MVEquity*). Standard errors are robust to heteroskedasticity and clustered at the firm level. ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

	CScore				
Robustness condition:	ROAvol	ROAvol	Covenants	Covenants	Length>0
	(1)	(2)	(3)	(3)	(3)
ln*Length*	0.349**		0.370***		0.456***
	(0.153)		(0.148)		(0.153)
$1_{[Length>0]}$		1.689***		1.796***	
		(0.701)		(0.683)	
$Controls_{it}$	YES	YES	YES	YES	YES
Fixed effects:					
Industry	NO	NO	NO	NO	NO
Year	NO	NO	NO	NO	NO
Lender	NO	NO	NO	NO	NO
Borrower	NO	NO	NO	NO	NO
Industry x *Year*	YES	YES	YES	YES	YES
Lender x *Borrower*	YES	YES	YES	YES	YES
R^2	0.7188	0. 7098	0.7189	0.7098	0.6938
Obs.	28,346	28,346	28,346	28,346	21,920