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

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Abstract

We examine the role of lending relationships in the demand for accounting conservatism in loan contracts with accounting-based covenants. In the simple theoretical model, private information obtained by relationship lenders allows them to make efficient liquidation decisions, and, as a result, the optimal accounting system should allocate more control rights to relationship lenders to maximize projects' expected payoffs. We derive two testable predictions from the model: 1) the demand for accounting conservatism increases with the intensity of lending relationships, and 2) the relationship between the ex-ante loan spread and accounting conservatism is more negative as the intensity of lending relationships increases. We find empirical evidence that supports both of these theoretical predictions.

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1 Introduction

The demand for accounting conservatism in debt contracting has recently attracted a lot of attention in the accounting literature.[1] 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). In this paper, we consider the role of lenders' private information in renegotiation and liquidation decisions, and investigate, both theoretically and empirically, how lending relationships affect the desirability of conservative reporting in debt contracting. We build on incomplete contract theory and consider the role of accounting-based covenants as transferring control rights and shaping ex-post renegotiation after covenants are violated.[2] Extant research (e.g., Freudenberg, et al (2015); Gorton and Kahn 2000; Garleanu and Zwiebel 2009; Robert and Sufi 2009a) suggests that the main purpose of covenants is not to trigger liquidation, but rather to reset contractible terms when the ex-ante uncertainty is resolved ex post. From this perspective, the contractual role of accounting conservatism is to alter these contingent transfers of control rights to lenders by increasing the set of states of the world in which a transfer takes place. The question is whether the optimal contract should allocate more control rights ex-post to the lender (more conservative accounting reporting) and whether lending relationships affect the optimal level of conservatism of the accounting system.

Lending relationships typically involve multiple loan transactions and monitoring over a relatively long period of time (Boot, 2000), which allow lenders to acquire private firm-specific information about borrowers that outside lenders cannot obtain. This information advantage may either benefit or harm borrowers. Prior studies show that relationship lending

[1]See Armstrong et al., 2010 for a review of the literature.

[2]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-contractable (Hart and Moore, 1989; 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, 2011; Jiang, 2012; Li, 2013; Tan, 2013; Nikolaev 2015; etc). 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.

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 outsider lenders (Sharpe 1990; Rajan 1992). These specific features of relationship lending allow us to examine the exact source of lenders' demand for accounting conservatism in different types of lending relationships.

From a theoretical point of view, the demand for accounting conservatism in relationship lending is not immediately clear for two reasons. First, prior studies argue that conservative reporting provides more timely information about the bad state of the firm (loss), which the lenders care about most because of their asymmetric payoff functions (Watts, 2003). However, in lending relationship, asymmetric information between the lender and the borrower is of less concern due to the superior private information that the relationship lender can acquire through the lending relationship with the borrower. The information-based demand for accounting conservatism is less likely for a relationship lender. Secondly, when covenants are violated, control rights shift to the lender, which suggests that a relationship lender can better utilize her information advantage about the borrower to extract more renegotiation rents after a covenant violation. As a result, the relationship lender may be more likely to demand conservative reporting because it allows her to take full advantage of her information monopoly over the borrower (Rajan, 1992). However, this argument would suggest that accounting conservatism only facilitates rent extraction by relationship lenders, and it is not clear why borrowers would be willing to choose more conservative reporting only to be expropriated later.

In our model, a borrower with a risky project seeks debt financing from a lender who may learn about the firm's project. The project state becomes observable at the interim stage, but not contractable. The accounting system generates a noisy signal about the project state and is used as the basis for a covenant in the debt contract. We find that the conservatism of the accounting system the borrower chooses increases with the intensity of the lending relationship. The intuition is quite simple. Since the borrower has limited liability, she is not willing to liquidate a bad project ex-post. If the covenant is not violated, the borrower has control rights and she wants to continue regardless of the project's state. As a result, the borrower will always continue the project following a good signal; however, the bad project is inefficiently continued. When the covenant is violated upon a bad signal, the control right is transferred to the lender. The lender investigates the project and obtains soft information about the project's state. An informed lender makes a more efficient liquidation decision than an uninformed lender and liquidates the bad project based on her private information about the true state. A lender with a more intense relationship with the borrower is able to become informed through investigative effort at a lower marginal cost. Therefore, the optimal accounting choice is to allocate more state contingent control rights to lenders through more conservative accounting as the lending relationship intensifies. We also show that this result is robust even when considering the ex-ante effort decision by the borrower as in Rajan (1992).

We point out a very simple, yet important channel for the role of lenders' private (and 'soft') information in the incomplete contract setting. When borrowers lack commitment to efficient ex-post liquidation decisions, debt contracts should allocate more control rights to lenders if lenders are better able to make efficient decisions based on their information. Ex-post efficiency in liquidation is transferred to borrowers' ex-ante total payoffs, so financing through a relationship lender brings a benefit that is increasing with accounting conservatism. Therefore, the ex-ante loan spread (debt repayment) decreases with accounting conservatism as the lending relationship intensifies.

Bigus and Hakenes (2014) provide an alternative model about the link between accounting conservatism and the lending relationship. In their model, the firm has a two period project which requires two stage investments, and the first stage has a negative NPV, but may turn to be 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. 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, Bigus and Hakenes (2014) also predict a positive relation between the accounting conservatism and the lending relationship. However, it predicts that lending relationships will have a different impact on the relation between the loan spreads and accounting conservatism.

To distinguish our model from others in the literature on conservatism and loan contracting, we test two main predictions from the model empirically. First, the degree of accounting conservatism increases with the intensity of lending relationship. Second, the relationship between the loan spread 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 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; 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. Both classes of empirical models yield the same statistical and economic result that conservatism is increasing in the existence and intensity of lending relationships, providing support for the first prediction of our model.

To test the second prediction of the model that the conservatism-loan spread relationship is increasing in lending relationship intensity, we expand upon our fixed effects estimator, again mitigating unobservable borrower, lender, and time series variation that might bias our estimates. 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, and distinguishes our model from Bigus and Hakenes (2014).

Our theoretical and empirical results suggest that relationship lenders do not benefit from higher loan spreads through informational rents when accounting is more conservative. Instead, because of relationship lenders' information advantages, borrowing from a relationship lender generates higher expected payoffs for borrowers. Our results imply that lenders that establish close relationships with borrowers are more likely to win future lending business because their information advantage increases expected payoffs from investments through more conservative accounting. This is consistent with Bharath et. al. (2007) who find that banks with stronger past lending relationship have a much higher probability of securing future lending business, but they do not find evidence of increasing future loan spreads for relationship lenders.

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 proposes testable empirical predictions. Section 4 presents the data and empirical methodology to test the predictions of the model, as well as the empirical results. Section 5 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) has a similar conclusion as in Gârleanu and Zwiebel, by assuming that an ex-ante privately informed entrepreneur seeks financing 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 both learn about the project ex-post when the liquidation decision needs to be made. 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 avoid information distortion.

Secondly, we contribute to both theoretical and empirical studies related to role of accounting conservatism in debt contracting. A recent growing theoretical literature examines the role of accounting conservatism in debt contracting and related settings.[3] Several studies examine this question using an incomplete contract framework. An early study by Sridhar and Magee (1997) shows that it can be ex-ante optimal to design a financial contract that admits lender's 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 pretense of the borrower opportunism. Our paper adds to the literature by investigating the role of lender's soft information acquisition during the lending process, and how the lender's ability to acquire information affects the role of accounting conservatism in determining efficient allocation of control rights through debt covenants.[4]

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 et. al. (2008) show that the 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. Zhang (2008) shows that that more conservative accounting (timely loss recognition) leads to more frequent violation of covenants and therefore lower ex-ante loan spread.

[3]For example, Gigler et.al (2009) show that accounting conservatism reduces the efficiency of debt contracting in 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 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. Lin and Wen (2014) study the role of accounting conservatism in investment and financing efficiency when information quality is endogenously determined.

[4]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.

Ball, Bushman and Vasari (2008) show that loan spread decreases with accounting conservatism in syndicated loans. We point out one possible channel that accounting conservatism improves debt contracting efficiency: the efficient allocation of control rights when lenders obtain superior information about the firm. Our empirical evidence therefore extends Zhang (2008) by identifying the lending relationship as a key determinant of the cross-sectional variation of the negative relationship between accounting conservatism and loan spread.

We also contribute to the literature related to the benefit of relationship lending and the role of accounting information in relationship lending. The results about the benefit of relationship lending are mixed.[5] 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. We show a benefit of relationship lending in reducing the loan spread through more conservative accounting choice by the firm. 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 covenants are violated.

3 Model and Results

3.1 Model Setup

Consider a firm with a potential project. At the initial date 0, the borrower has to invest a fixed amount I. 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

[5] 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) document a U-shape relationship between loan spread and 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). Karolyi (2015) finds a negative relation between the lending relationship and loan spreads.

realized at date 1. The state can be good, G, with a probability of θ, and bad, B, with a probability of $1-\theta$. θ is common knowledge at date 0, regardless of the types of lenders. In the good state, the project generates cash flows X with a probability of p_g, and in the bad state, the probability is p_b, with $1 > p_g > p_b > 0$. 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:

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

Furthermore, at date 1, the project can be terminated early. Without loss of generality, assume that the liquidation value is M. We also assume that when the state is bad, the early liquidation is better than continuation, i.e, , $p_b X < M \leq I$.

Financing Choice: Assume that the firm is wealth constrained and must borrow to finance the project at date 0. At date 0, the firm borrows amount I and promises to repay D_r to the lender at date 2, where r indicates the intensity of lending relationship we will discuss shortly. The debt contract at date 0 also includes a covenant based on public accounting signals.[6]

The lender may gain access to the inside information about the project by examining and monitoring of the firm's financials. But the information obtained through close relationship is 'soft' in nature, and cannot be contracted upon ex-ante or credibly communicated to the outsiders. Moreover, the lender's soft information is often acquired when there is bad news about the firm and the covenant is violated. This is because the debt contract gives the lender more decision rights upon a covenant violation, and so the lender has the incentive to investigate to discover the true state of the project in order to make decisions. In the model, we assume that upon a low signal, the lender may spend some costly effort $q \in [0,1]$

[6] We assume that long-term debt financing with accounting based covenants is optimal for the borrower. As shown in Aghion and Bolton (1990), optimal financial contracts should allocate control to the investors only when it is efficient to do so. When the borrower cannot make socially optimal decision upon a bad state (in our model, efficient liquidation), debt contract achieves efficient control allocation by giving the lenders decision rights in the bad state. Long-term debt with covenants achieves the optimal allocation of control right proposed in Aghion and Bolton (1990). while short-term debt is equivalent to give the lender (informed) control rights in all states, because continuing the project critically depends on the extension of credit or rollover of short-term debt.

to investigate the firm's financial performance, and with a probability q the lender discovers the true state of the project. For simplicity, we assume that the lender's investigation cost function $C(q,r) = \frac{q^2}{2r}$, where r in the cost function 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.

Interim Decisions: At date 1, if the accounting signal is good and the debt covenant is not violated, control rights remain with the borrower and the manager makes the decision whether or not to continue the project. When accounting information is noisy, continuation upon a high signal may not be socially efficient. However, the borrower does not have the incentive to renegotiate with the current lender to liquidate the project. The reason is straightforward. For any face value of debt $D < X$, the expected payoff from continuing the bad project is $p_b(X - D) > 0$. But if the borrower liquidates the project, the borrower needs to pay the lender from the liquidation proceeds, and the borrower receives nothing. The lender and the borrower have conflict of interests in the ex-post liquidation decision.[7]

When the accounting signal is bad, and the debt covenant is violated, control rights are transferred to the lender. The lender chooses the effort of investigation to find out the true state of the project with a probability of q. The lender then decides whether or not he would like to liquidate the project given the information set about the project states. In the case of liquidation, the lender claims all proceeds from liquidating value. If, instead, the lender decides to allow the project continue, the lender and the borrower may renegotiate the initial contract, which yields a new contract.

Figure 1 below summarizes the timeline of the model.

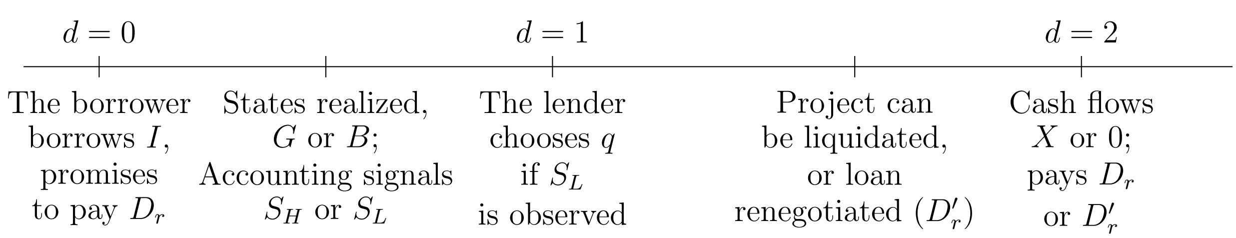

Figure 1: Timeline

[7]A similar conclusion can be made if we simply assume that the borrower manager enjoys private benefit as long as the project continues.

Accounting System: The interim accounting signal at date 1 is generated by the firm's financial reporting system. The signal is binary, S_H or S_L, and is informative about the state of the project. The information structure is defined as following:[8]

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

We can also use $P(S_H|G) + P(S_L|B)$ to denote the total precision of any information system. In the above information system, the total precision is $1 + \lambda$. λ is a measure of baseline measurement error in the accounting system, which cannot be reduced. As λ increases, the overall information system is more precise. δ above is a measure of the degree of bias in the system, i.e., a measure of accounting conservatism. When $\delta = \frac{1-\lambda}{2}$, the information system is a neutral system, with $P(S_H|G) = P(S_L|B) = \frac{1+\lambda}{2}$. In general, when the accounting system is more conservative (a lower δ), a low signal is less informative about the bad state but a good signal becomes more informative about the good state. When $\delta = 0$, the bad type always produces signal S_L and the error of misreporting occurs when the good type also produces a low signal. The accounting system in this scenario is the most conservative. On the other hand, the accounting system is most aggressive when $\delta = 1 - \lambda$ so that the good type always generates a high signal, while the error occurs when the bad type also generates signal S_H. The borrower may choose the degree of conservatism of the accounting system, given any measurement error λ. We assume that the following condition holds for λ so that the accounting system is sufficiently informative regardless of the bias,

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

Let q_h be the posterior probability of success after observing a high signal (S_H), and q_l the probability of success after observing a low signal (S_L), where q_h and q_l are calculated

[8]This information structure has been utilized in several studies such as Venugopalan (2004), Gigler et.al. (2009), Li (2013), Lin and Wen (2014), Bertomeu, et.al. (2014).

as:

$$q_h = p_g P(G \mid S_H) + p_b P(B \mid S_H) \tag{2}$$
$$q_l = p_g P(G \mid S_L) + p_b P(B \mid S_L)$$

It can be shown that upon a good signal, the updated belief about the project's NPV is always positive regardless of the level of conservatism, i.e., $q_h X > I > M$. Upon a low signal, under the assumption A2, we have $q_l X < M$, i.e., the updated belief about the project's NPV upon a low signal is negative, regardless of the level of conservatism. Without the assumption A2, the accounting signal is completely uninformative to the lender if he cannot acquire any private information.

3.2 Analysis and Results

We assume that the borrower maintains full bargaining power at the initial date, so the lender breaks even (with the lender's required rate of return normalized to zero) on the loan. The optimal initial debt contract is set to maximize the borrower's expected payoff from the project after paying the lender promised amount of debt.

3.2.1 First-best payoff

If the borrower has sufficient fund to provide the financing for the project, the liquidation decision ex-post can be made efficiently after the borrower observes the true state of the project at date 1. The borrower will optimally continue in a good state and liquidate the project in a bad state. Thus the first best payoff to the borrower from investing in the project is

$$\pi^{FB} = \theta p_g X + (1-\theta)M - I.$$

When the accounting information is perfectly informative about the state, the borrower's problem to maximize the expected payoff when seeking financing from a lender is the same as the first best payoff. To see this, we solve the following problem for the borrower:

$$\max_{D} \ \theta p_g(X - D)$$
$$s.t. \qquad \theta p_g D + (1-\theta)M - I \geq 0 \quad (IR)$$

Since accounting information is perfect, there is no incentive for the lender to spend costly investigation effort to discover the true state of the project. Given a perfectly informative accounting system, the debt contract allocates control rights to the borrower when the project state is good, and to the lender when the project state is bad. Both the borrower and the lender make the efficient decision about liquidations, and the lender receives the liquidation value at the bad state. When the credit market is competitive, the IR constraint in the above problem is always binding, and, thus, we solve for the optimal debt contract as $D^* = \frac{I-(1-\theta)M}{\theta p_g}$. Substituting this into the borrower's payoff function, we obtain the first best payoff π^{FB} through debt financing as well.

3.2.2 The lender's information acquisition

The accounting information system is inherently noisy due to measurement errors and the complexity of the true states. Therefore, the true states can be specified and captured by the information system perfectly. Long-term debt with a covenant allows the borrower to continue the project without any interruption at date 1 as long as the covenant is not violated. The main analysis below thereby focuses on the case when the covenant is violated and the lender must make a decision about their post-covenant violation investigation effort. When accounting signals represent noisy information about the true states, the lender's information acquisition upon covenant violations plays an important role in the optimal contracting and payoffs. We first discuss the lender's liquidation decision with and without information about the true state.

Suppose the lender does not obtain any information through costly investigation effort, the lender relies on the accounting signal to make the liquidation decision. In this case, any renegotiation attempt to distinguish the good type from the bad type project 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.[9]. Given the assumption in (A2), the expected total continuation payoff conditional on a bad signal is smaller than liquidation. Therefore upon the low signal, the lender without any private information will liquidate the project and receive the proceed of M.

If the lender perfectly observes the true state of project through costly investigation effort, then the lender's decision after covenant violation is based on his private information about the true state. If the true state is bad, the lender will optimally liquidate the project and receive the liquidation value M. If the true state is good, the lender is willing to continue the project, but he can renegotiate the debt contract to a new face value $D_r^{2'}$, which can be any value on $[D_r^2, X]$. The renegotiated new debt payment depends on the bargaining power between the borrower and the lender. In Rajan (1992), the bargaining power is modeled through the willingness of outside lenders provide refinancing to the borrower, assuming that an active outside credit market always exists. However, upon a low signal, the assumption $A2$ implies that without any information, the outside lender's expected payoff from lending is negative by bidding upon a low signal. Thus, the borrower cannot obtain refinancing opportunities upon a bad signal, and the lender who observes the good state may ask for the maximum repayment value, $D_r^{2'} = X$. This is consistent with Rajan (1992) in that the informed lender informationally captures the borrower.

Now we consider the lender's decision about the effort (q) in investigating the project state after covenant is violated. As assumed in the model, with a probability of q, she observes the true states and receives either $p_g X$ or M depending on the states; with a probability of $1-q$, she fails to observes the true states and liquidates the project to receive M regardless. Let $u(q|S_L)$ be the lender's expected payoff after covenant violation when spending cost of

[9] In Li (2013), the lender faces asymmetric information but still achieves efficient renegotiation outcome. The reason is that there is a strong assumption in Li (2013) about the borrower in the sense that when the borrower is indifferent between the monetary payoff, he accepts the socially efficient renegotiation offer. i.e., the only way that the lender can possibly screen the borrower's type is to request the whole payoff from the project regardless the type 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 does receive any benefit (including private benefit) from the project continuation, the screening through renegotiation fails

q. As discussed above, $U(q|S_L)$ is given by

$$\begin{aligned} u(q) &= q(P(G|S_L)p_gX + P(B|S_L)M) + (1-q)M - \frac{q^2}{2r} \\ &= qP(G|S_L)(p_gX - M) + M - \frac{q^2}{2r} \end{aligned} \tag{3}$$

By solving the first order condition $\frac{\partial u}{\partial q} = 0$ from (3), we can obtain the lender's optimal investigation effort $q^*(r)$ after covenant violation, as shown in Lemma 1 below.

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

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

Lemma 1 shows the lender's incentive to spend costly effort to investigate and acquire information comes from the 'rent' she is expected to receive if she finds out the project's state as good and allows it to continue. $p_gX - M$ represents the total efficiency surplus from continuing a good project after covenant is violated, which, by above assumption, is completely grabbed by the lender.[10] Obviously, the lender is more willing to spend costly effort to find out the true state of the project if the surplus is larger. The lender's investigation effort decision is also related to the properties of accounting system (i.e., the bias δ, taking λ as given) and the intensity of 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 effort of investigation increases with both the intensity of lending relationship and the degree of accounting conservatism, i.e.,* $\frac{dq^*}{dr} > 0$, *and* $\frac{dq^*}{d\delta} < 0$.

The lender's ex-post benefit after covenant violation increases with both the intensity of lending relationship and the degree of accounting conservatism, i.e., $\frac{du(q^*)}{dr} > 0$, *and* $\frac{du(q^*)}{d\delta} < 0$.

[10] We may assume instead that the lender doesn't have all the bargaining power in the renegotiation stage, for example, the continuation of project and the payoff from the project depend on the borrower's special technology or skills, without which the project's payoff is lower. Therefore the borrower and the lender splits 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 will not affect the relation between the optimal effort and the lending relationship intensity. Our results still go through.

Intuitively, 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. A lender who develops a close relationship with the borrower through past transactions and interactions may have easier access to firm management about proprietary information, or may have developed and accumulated firm-specific knowledge in evaluating the true state of the project. Notice that the lender still needs to make an effort decision upon the violation of each covenant for individual loans, but the close relationship reduces the marginal cost of doing so each time. Therefore, the lender with a closer relationship is willing to spend more effort in acquiring the information about project state.

The lender's optimal effort also depends on the information properties of accounting system. More conservative accounting system (lower δ) makes the low signal less informative about the true states of the project. 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. Moreover, we can easily see that the marginal effect of accounting conservatism on the optimal investigation effort increases with the intensity of the lending relationship.

The lender's ex-post benefit $u(q^*)$ also increases with the intensity of the lending relationship and the degree of accounting conservatism. Because of the envelope theorem, we can simply focus on the direct effect of lending relationship intensity and accounting conservatism on the lender's payoff $u(q^*)$. Similar to the argument above, conservative accounting increases the likelihood of identifying a good project after observing a bad signal, and increases the payoff to the lender directly through the surplus of continuing the good project. As the relationship lending becomes more intense, the marginal cost of acquiring information decrease, as a result, the lender's payoff increases, all else equal.

3.2.3 Optimal debt contract

Now we solve the borrower's optimal contracting with the lender at date 0. From the borrower's perspective, he receives positive payoff from the project only when a high accounting signal is generated. At date 2, if the project succeeds, he repays the debt amount of D_r, and receives the residual cash flows. Since a high accounting signal can be generated from both good and bad states, the borrower's expected payoff , denoted as $\Pi(D_r, \delta)$, is given by:

$$\Pi(D_r, \delta) = P(S_H)[P(G|S_H)p_g(X - D_r) + P(B|S_H)p_b(X - D_r)] \tag{4}$$

Denote $U(q, D_r)$ as the lender's ex-ante expected payoff from lending given the debt contract D_r and the investigation effort of q. When the high signal is generated, the lender receives the promised payment only when the project succeeds at date 2. When the low signal is generated, the lender receives the payoff $U(q|S_L)$ in (3) as discussed in the above section. $U(q, D_r)$ is given by:

$$U(q, D_r) = P(S_H)[P(G|S_H)p_g + P(B|S_H)p_b]D_r + P(S_L)u(q)$$

The lender's investigation effort after covenant violation is not contractable. 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 compatible constraint in choosing the investigation effort.

$$\begin{aligned} & \max_{D_r} \Pi(D_r, \delta) && (5) \\ s.t. \quad & U(q, D_r) - I \geq 0 \\ & q \in argmax\ u(\tilde{q}|S_L) \end{aligned}$$

In equilibrium, the lender's participation constraint is binding, and the lender receives zero expected payoff (with normalized return of zero) from lending business. Given the optimal investigation effort in Lemma 1, the optimal debt contract can be written as:

$$D_r^* = \frac{I - (1 - \lambda\theta - \delta)u(q^*(r))}{\theta(\lambda + \delta)p_g + (1 - \theta)\delta p_b} \tag{6}$$

The optimal debt repayment decreases with the probability of project success upon a good signal, i.e., the default risk is lower. At the same time, the debt repayment amount is lower when the lender is expected to receive a larger payoff after covenant violation ($u(q)$). The lender's ability to acquire information after 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 ex-ante bargaining power when facing a competitive credit market. In terms of the effect of accounting conservatism on the debt repayment value, we can derive the first order total derivative of debt face value with respect to conservatism parameter as below.

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

Accounting conservatism has two direct effects on the debt repayment amount: more conservative accounting decreases the probability of collecting the face value of debt at time 2, but at the same time increases the probability of receiving the payoff $u(q^*)$ after covenant violation. It also has an indirect effect on the debt repayment through its effect on $u(q^*)$. As shown in Lemma 2, $u(q^*)$ increases with the degree of accounting conservatism ($\frac{\partial u(q^*)}{\partial \delta} < 0$). But a higher $u(q^*)$ decreases the debt repayment amount ($\frac{\partial D_r^*}{\partial u(q^*)} > 0$), therefore the indirect effect of accounting conservatism on the debt repayment value is negative ($\frac{\partial D_r^*}{\partial u(q^*)} \frac{\partial u(q^*)}{\partial \delta} > 0$). Corollary 1 below shows how the relationship lending intensity affects the marginal impact of accounting conservatism on the debt face value.

Corollary 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.

Corollary 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 payoff from violation because the lender is more likely to learn about the true state.

3.2.4 The borrower's payoff

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

$$\begin{aligned}\Pi(D_r^*, \delta) &= \theta(\lambda+\delta)p_g X + (1-\theta)\delta p_b X + (1-\lambda\theta-\delta)u(q^*(r)) - I \\ &= \underbrace{\theta p_g X + (1-\theta)M - I}_{\text{First best payoff}} - \underbrace{(1-\theta)\delta(M - p_b X)}_{\text{Inefficient continuation}} \\ &\quad - \underbrace{(1-q^*(r))\theta(1-\lambda-\delta)(p_g X - M)}_{\text{Inefficient liquidation}} - (1-\lambda\theta-\delta)\frac{q^*(r)^2}{2r}\end{aligned} \tag{7}$$

The expected payoff given the optimal debt contract, $\Pi(D_r^*, \delta)$ in (7), is written as 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 upon a low signal when the lender does not observe the true state, subtracting the expected information acquisition cost incurred by the lender. The lender choose the level of accounting conservatism to minimize these expected losses. A more conservative accounting system (lower δ) identifies the bad state more easily, and reduces the likelihood of inefficiently continuing a bad state, i.e., $(1-\theta)\delta(M - p_b X)$ is lower. But at the same time, a good state is also 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. However, the lender's choice of investigation effort is endogenously determined by accounting conservatism. As shown in Lemma 2, more conservative accounting encourages the lender to spend more investigation effort in acquiring the information about the true state upon covenant violation. Finally, more conservative accounting also increases the expected cost of investigation incurred by the lender (both directly and indirectly through q), which is ultimately born by the borrower because of the binding participation constraint.

Therefore the optimal choice of accounting conservatism depends on the tradeoff of these different effects. It turns out that the intensity of lending relationship is a crucial determinant of the choice of accounting conservatism, as shown in Proposition 1 below.

Proposition 1 *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 conservative accounting system when the intensity of lending relationship is below the threshold, i.e., $\delta^* = 1 - \lambda$ *if* $r < \hat{r}$.

It turns out that the optimal accounting conservatism does not have an interior solution 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.

Furthermore, Corollary 2 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 2 *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 2 suggests that the preference for accounting conservatism $\dfrac{d\Pi}{d\delta}$ is larger as the lending relationship is more intense. If we were to consider a more general equilibrium model, where the demand for conservatism from debt contracting and efficient liquidation decisions in our setup is only a partial equilibrium result, then we can infer that as the preference for conservatism for debt contracting demand increases ($\frac{d\Pi}{d\delta} \downarrow$), the equilibrium choice of accounting conservatism is higher.

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 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 accelerating 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. After the covenant is violated, the lender who develops a close relationship with the firm is able to investigate into the firm's business and find out information about the true value of the firm. The closer the relationship between the lender and the firm is, the less costly for the lender to obtain the necessary information to evaluate the firm's business condition. Although the information monopoly of relationship lenders also gives them higher bargaining power than borrowers in renegotiations, allowing them to extract more benefits following debt covenant violations, the private information acquired by the relationship lender improves the efficiency of liquidation decisions after covenant violations.

We develop two testable hypotheses from our theoretical model and test them using empirical data. The first hypothesis is about the relationship between the demand of accounting conservatism and the intensity of lending relationship. As shown in Proposition 1, when the lending relationship intensity is large, the borrower prefers conservative accounting to maximize his expected payoff. In addition, Corollary 2 suggests that in a more general setup, the demand for accounting conservatism increases as the intensity of relationship lending increases, as presented in Hypothesis 1 below.

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

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 ex-post covenant violation, 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 conservatism on loan spreads when the lending relationship intensity varies. In our model, the lender with more intense relationship with the borrower is more likely to extract benefit from ex-post covenant violations due to their superior information, as a result, the marginal effect of increasing conservatism on ex-ante loan spread is larger when lending relationship is more intense, as shown in Corollary 1. If the relationship lender indeed extracts informational rent in the ex-ante debt contracting stage (the 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 only 23% 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.

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:

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

and

$$\begin{aligned} X_{it} &= \beta_0 + \beta_1 D_{it} + \beta_2 R_{it} + \beta_3 D_{it} R_{it} + \beta_4 1_{[Length>0]it} \\ &\quad + \beta_5 D_{it} 1_{[Length>0]it} + \beta_6 R_{it} 1_{[Length>0]it} + \beta_7 D_{it} R_{it} 1_{[Length>0]it} + \varepsilon_i t \end{aligned}$$

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).

Overall, the results in Table 3 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.

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:

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

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 4 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 (2010), 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 can reach a more efficient renegotiation outcome than a non-relationship lender, especially when the good project may be terminated inefficiently due to noisy accounting signals. 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. In addition, due to limited liability, the ex-post liquidation decisions made by the borrower result inefficient continuation of bad projects more often if the contracts assign more control rights to the borrower. Therefore it is optimal for the borrower to choose more conservative accounting reporting which triggers more frequent covenant violations ex-post and shifts control rights to the lender if the lender has a close relationship with the borrower. Because the relationship lender can extract more benefit from ex-post renegotiation, the ex-ante loan spread is lower when accounting conservatism increases in a relationship lending. We find consistent empirical evidences that support our theoretical predictions.

Reference

Aghion, P. and P. Bolton. 1992. An incomplete contracts approach to financial contracting. Review of Economic Studies 59: 473-94.

Aghion, P., and J. Tirole, 1997, Formal and real authority in organizations, Journal of Political Economy 105: 1-29.

Ahmed, A.; B. Billings; R. Morton; and M. Harris. 2002, The Role of Accounting Conservatism in Mitigating Bondholder-Shareholder Conflict Over Dividend Policy and in Reducing Debt Cost. The Accounting Review 77: 867?90.

Ball, R., R. M. Bushman, and F. P. Vasvari, 2008, The Debt-Contracting Value of Accounting Information and Loan Syndicate Structure. Journal of Accounting Research, 46: 247?287.

Ball, R., A. Robin and G. Sadka, 2008, Is financial reporting shaped by equity markets or by debt markets? An international study of timeliness and conservatism, *Review of Accounting Studies*, 13, 168-205.

Basu, S. 1997. The conservatism principle and asymmetric timeliness of earnings. Journal of Accounting and Economics 24 (1): 3-37.

Beatty, A., J. Weber, and J. Yu. 2008. Conservatism and debt. Journal of Accounting and Economics 45 (1): 154-174.

Benmelech, E., and N. Bergman. 2008. Liquidation values and the credibility of financial contract renegotiation: Evidence from U.S. airlines. Quarterly Journal of Economics 123: 1635-1677.

Berger, A. N., and G. F. Udell. 1995. Relationship Lending and Lines of Credit in Small Firm Finance. Journal of Business 68: 351381.

Bertomeu J., M. Darrough, W. Xue, 2015, Optimal conservatism with earnings manipulation, forthcoming, Contemporary Accounting Research.

Bharath, S., S. Dahiya, A. Saunders, and A. Srinivasan. 2007. So what do I get: A bank's view of lending relationships? Journal of Financial Economics 85: 368-419.

Bharath, S., S. Dahiya, A. Saunders, and A. Srinivasan. 2011. Lending relationships and loan contract terms, Review of Financial Studies 24 (4): 1141-1203.

Darrough, M. N., and M. Deng, 2015, The role of accounting information in optimal debt contracts with informed creditors, working paper, CUNY Baruch.

Bigus, J., and H. Hakenes, 2014, Conservatism and opacity in financial reporting? The role played by insider lending, working paper, University of Bonn.

Caskey, J. and J. Hughes. 2012, Assessing the impact of alternative fair value measures on the efficiency of project selection and continuation. The Accounting Review, 87, 483-512.

Christensen, H., V. Nikolaev, and R. Wittenberg-Moerman, 2015, Accounting Information in Financial Contracting: An Incomplete Contract Theory Perspective, Journal of Accounting Research 2015 Conference.

Dyreng, S., M. Hanlon, and E. Maydew. 2008.Long-run corporate tax avoidance. The Accounting Review 83: 61-82.

Gao, P., 2013, A measurement approach to conservatism and earnings management. Journal of Accounting and Economics 55: 251-268.

Gârleanu, N. and J. Zwiebel, 2009, Design and renegotiation of debt covenants, *Review of Financial Studies*, 22(2), 749-781.

Gox R. and A. Wagenhofer, 2009, Optimal Impairment Rule, Journal of Accounting and Economics, Vol 48, 2-16.

Dessein, W., 2002, Authority and communication in organizations, Review of Economic Studies 69: 811-833.

Dessein, W., 2005, Information and control in ventures and alliances, The Journal of Finance 60 (25): 13-50.

Garlappi, L., T. Shu, and H. Yan. 2006. Default Risk, Shareholder Advantage, and Stock Returns. Review of Financial Studies 21 (6): 2743-2778.

Gigler, F., C. Kanodia, H. Sapra, and R. Venugopalan. 2009. Accounting conservatism and the efficiency of debt contracts. Journal of Accounting Research 47 (3): 767-797.

Ioannidou, V., and S. Ongena. 2010. Time for a change: Loan conditions and bank behavior when firms switch banks. Journal of Finance 65 (5): 1847-1877.

Karolyi, S., 2014. Personal lending relationships, working paper, Carnegie Mellon University.

Khan, M., and R. L. Watts. 2009. Estimation and empirical properties of a firm-year measure of accounting conservatism. Journal of Accounting and Economics 48 (2-3): 132-150.

Li, J. 2013. Accounting Conservatism and Debt Contracts: Efficient Liquidation and Covenant Renegotiation. Contemporary Accounting Research 30, 1082-1098.

Nan, L., X. Wen, 2014. Financing and Investment Efficiency, Information Quality, and Accounting Biases. Management Science 60 (9): 2308-2323.

Nikolaev, V.V. 2010. Debt covenants and accounting conservatism. Journal of Accounting Research 48 (1): 51-89.

Nikolaev, V.V., 2015, Scope for renegotiation in private debt contracts, working paper, University of Chicago.

Nini, G., D. Smith, and A. Sufi. 2009. lender Control Rights and Firm Investment Policy. Journal of Financial Economics 92 (3): 400-420.

Ongena, S., Smith,D.C., 2001.The duration of bank relationships. Journal of Financial Economics 61,449475.

Petersen, M. A., and R. G. Rajan. 1994. The Benefits of Lending Relationships: Evidence from Small Business Data. Journal of Finance 49 (1):337.

Rajan, R. 1992. Insiders and outsiders: The choice between informed and arms length debt. Journal of Finance 47 (4): 1367-1400.

Roberts, M., and A. Sufi. 2009. Renegotiation of financial contracts: Evidence from private credit agreements. Journal of Financial Economics 93 (2): 159-184.

Schenone, C. 2010. Lending relationships and information rents: Do banks exploit their information advantages. Review of Financial Studies 23 (3): 1149-1199.

Sharpe, S. A. 1990. Asymmetric Information, Bank Lending and Implicit Contracts: A Stylized Model of Customer Relationships. Journal of Finance 45 (4): 1069-1087.

Sridhar, S. and , R.P. Magee, 1997, Financial contracts, opportunism and disclosure management, *Review of Accounting Studies*, 1, 225-258.

Tan, L., 2013, lender control rights, state of nature verification, and financial reporting conservatism, Journal of Accounting and Economics 55 (1): 1-22.

Venugopalan, R. 2004, Conservatism in Accounting: Good or Bad? Unpublished dissertation submitted to the University of Minnesota.

Watts, R. 2003. Conservatism in accounting Part I: Explanations and implications. Accounting Horizons 3 (2): 207-221.

Wittenberg-Moerman, R., 2008, The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market, Journal of Accounting and Economics 46 (2-3): 240-260.

Zhang, J. 2008. The contracting benefits of accounting conservatism to lenders and borrowers. Journal of Accounting and Economics 45 (1): 27-54.

Appendix: Proofs

Proof. Lemma 1 and 2

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

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

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

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

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

By envelope theorem, the total derivatives of $u(q^*)$ with respect to r and δ equal the partial derivatives

$$\frac{du(q^*(r))}{dr} = \frac{\partial u(q^*(r))}{\partial r} = \frac{q^*(r)^2}{2r^2)} > 0,$$

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

■

Proof. Corollary 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 take first order derivative with respect to r, we obtain that

$$
\begin{aligned}
&\partial(\frac{dD_r^*}{d\delta})/\partial r = \frac{(1-\lambda-\delta)\theta^2(p_g X-M)^2}{2((1-\lambda\theta-\delta)^2(\delta(1-\theta)p_b+\theta(\lambda+\delta)p_g)^2}K \\
&where\ \ K = p_g\theta(1-\delta-\theta\lambda)+\delta(1-\theta)+\lambda^2(1-\theta))-p_b(1-\theta)(\delta(1-2\lambda+\lambda\theta)-(1-\lambda)(1-\lambda\theta))
\end{aligned}
$$

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 $V > 0$ always holds.

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

■

Proof. Proposition 1

Taking the first order derivative of the borrower's expected payoff in (7) with respect to δ, we have

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

The second order derivative is

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

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 $\delta = 1 - \lambda$.

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

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

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

■

Proof. Corollary 2 From the proof of Proposition 1, we get

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

Taking the partial derivative of $\frac{d\Pi}{d\delta}$ with respect to r, we obtain that $\partial(\frac{d\Pi}{d\delta})/\partial r = -\frac{\theta^2(1-\lambda-\delta)(1-\lambda-\delta+2\lambda\theta)(p_gX - M)^2}{2(1-\lambda\theta-\delta)^2} < 0.$ ■

Table 1. Summary Statistics

This table presents summary statistics 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).

	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
$1_{[Length>0]}$	22.67%	41.87%			
Loan terms:					
Spread	191	145	35	175	365
Maturity	46	34	12	38	84
Amount ($mm)	295	805	6	85	667
Collateral	44.33%	49.68%			
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

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. 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					