Accounting conservatism and efficient project continuation revisited

Abstract

Financial debt covenants depend on imperfect accounting signals, which can lead to false alarms or overstatement errors. False alarms may result in inefficient liquidations, while overstatement errors can imply inefficient business continuation. Higher levels of accounting conservatism tend to increase the likelihood of false alarms but decrease the chances of overstatement errors. Theoretical studies have suggested that maximally liberal accounting minimizes the total expected losses from both inefficient liquidation and continuation. However, this perspective contradicts a growing body of empirical evidence indicating that accounting conservatism is strongly associated with debt contracting.

This paper argues that accounting conservatism can be efficient when the lender possesses sufficiently accurate private information, as seen in relationship lending. A well-informed lender is more likely to overlook debt covenant violations that could result in inefficient liquidations, thus reducing the costs associated with false alarms. This finding aligns with evidence showing that most covenant violations are indeed waived. We posit that accounting conservatism can be efficient even when we set aside concerns related to agency problems in debt, managerial earnings management, or the costs of renegotiation.

JEL classification: G21, G32, M41

1. Introduction

A borrowing firm's earnings can provide lenders with insights into potential financial distress. However, these earnings figures may also serve as the basis for certain contractual provisions (Christensen & Nikolaev, 2012). Debt contracts require borrowing firms to adhere to specific requirements known as covenants (Smith & Warner, 1979). Financial covenants often mandate that borrowers meet earnings-related thresholds, such as maintaining certain debt-to-EBITDA ratios or not reporting losses (Dichev & Skinner, 2002). If a financial covenant is violated, the lender may have the right to terminate the loan early (Gigler et al., 2009). This paper focuses on the role of financial reporting in debt contracting.

Reported performance can often be biased, leading to Type-1 errors—inefficient liquidation due to an understatement of earnings—or Type-2 errors—inefficient continuation due to an overstatement of earnings. Research by Gigler et al. (2009), Gao (2013), and Li (2013) indicates that a maximally liberal financial reporting system minimizes the combined expected losses from both inefficient liquidation and inefficient continuation. However, this theoretical finding contrasts with growing empirical evidence suggesting that accounting conservatism, rather than liberal accounting practices, is more strongly associated with debt contracting (Penalva & Wagenhofer, 2019).

This paper aims to address the existing gap without assuming agency costs or renegotiation costs (Caskey & Hughes, 2012; Li, 2013). Unlike the studies by Gigler et al. (2009), Gao (2013), and Li (2013), I propose that a lender is not necessarily required to call the loan when the accounting report indicates an unfavorable signal. Instead, the lender has the option to liquidate the firm but may also choose to waive the violation entirely. Roberts and Sufi (2009) found that in 63% of debt covenant violations reported in SEC 10-K filings, existing creditors granted a waiver without any further action.

In addition, I assume that the lender has private but non-contractible information on the

borrower's default risk, possibly due to relationship lending. With private information, the lender is more likely to detect false alarms and waive debt-covenant violations, thereby decreasing the expected costs of accounting conservatism that result from inefficient liquidation. However, inefficient continuation due to overstated performance is still possible, resulting in a need for accounting conservatism.

This paper contributes to the theoretical discussion regarding the optimality of accounting conservatism by demonstrating that it can be beneficial, even when we exclude factors such as renegotiation costs (Li, 2013), asset substitution issues (Caskey & Hughes, 2012), managerial incentives for earnings management (Gao, 2013), and the motivations of managers to gather information to avoid false alarms (Laux & Laux, 2024). Similar to the approach taken by Gigler et al. (2009), we concentrate on the efficient continuation of projects. In this context, accounting conservatism will be efficient if private lender information significantly *reduces* the expected costs associated with conservatism, particularly the costs of inefficient liquidation. In the models proposed by Li (2013), Caskey and Hughes (2012), and Gao (2013), accounting conservatism proves efficient because the issues of renegotiation costs, asset substitution, and managerial earnings management, respectively, *increase* the costs associated with inefficient project continuation.

Other literature addresses various issues. For instance, Bigus & Hakenes (2014) addressed the question whether lending relationships are only set up when the borrower's financial reporting is sufficiently opaque and conservative. They did not investigate the issue of efficient project continuation. Göx & Wagenhofer (2009) demonstrated that lenders are more likely to finance viable projects when the value of pledged assets is measured by lower-of-cost-or-market approach rather than an unbiased measure. A significant body of research has focused on the value of accounting conservatism in incentive contracts, particularly when financial reports are used to evaluate managerial performance (Kwon, Newman & Suh, 2001; Kwon, 2005; Bertomeu, Darrough & Xue, 2017). This aspect of conservatism is also explored in terms

of how it reduces managerial incentives to manipulate earnings (Chen, Hemmer & Zhang, 2007; Gao, 2013; Bertomeu, Darrough & Xue, 2017; Caskey & Laux, 2017). Additionally, Kronenberger and Laux (2022) investigated the effect of accounting conservatism on a firm's litigation risk.

The paper aims to bridge the gap between theoretical findings and empirical evidence while also proposing new hypotheses for testing or offering fresh explanations for existing evidence. For example, in the context of relationship lending, we might anticipate higher levels of accounting conservatism compared to arm's-length lending.

The structure of the paper is as follows: Section 2 summarizes the key insights from Gigler et al. (2009) in a simplified manner. Section 3 presents a model analysis that assumes the lender may not liquidate even when the accounting signal is unfavorable. Section 4 examines the scenario in which a lender possesses private information. Finally, Section 5 provides the conclusion.

2. The Basic Model

2.1 Model Assumptions

I present a simplified version of the model by Gigler et al. (2009), similar to Gao (2013). There are two risk-neutral parties: a wealth-constrained owner-manager of a limited liability firm, and a lender. The owner-manager raises debt from the lender to finance a new project. I assume a zero discount rate.

There are three dates. At $t = 0$, the owner-manager chooses the properties of the accounting system and then raises debt to finance and implement the project. At $t = 1$, the accounting system generates a biased report about the prospects of the project. According to the report, the lender may liquidate or continue the project. At $t = 2$, payoffs are realized and distributed according to the debt contract. Figure 1 shows the structure of the model.

--Insert Figure 1 about here--

Project. At t = 0, there is a project which requires an investment of I. At t = 2, the firm is doing well with probability q and not so well with probability $1-q$. Given that the firm is doing well (good state of nature), there is a probability of p that the cash flow is $X > 0$, with a probability $1-p$ the cash flow is zero. In the bad state of nature, the cash flow is zero. At t = 0, the project has a positive NPV:

(1) $qpX - I > 0.$

Accounting system. At t = 1, the accounting system produces an accounting report y. The accounting report is correlated with the state of nature at t = 2 and is either favorable ($y = y_h$) or unfavorable ($y = y_l$). I denote the good and bad state of nature with θ_G and θ_B, respectively, and assume the following information structure of the report, consistent with Kwon (2005) (see Figure 2):

(2) $\Pr(y_l|\theta_B) = n + c,\ \ \Pr(y_l|\theta_G) = 1 - n + c,$

$\Pr(y_h|\theta_G) = n - c,\ \ \Pr(y_h|\theta_B) = 1 - n - c.$

--Insert Figure 2 about here--

This information structure is commonly known. To have non-negative conditional probabilities, I assume

(3) $n \geq |c|$

Further, in order to ensure that the report is informative, I assume

(4) $0.5 < n \leq 1$ and $\begin{cases} n - 1 \leq c < n - 0.5, & c < 0 \\ 0.5 - n < c \leq 1 - n, & c \geq 0 \end{cases}$.

Accounting conservatism implies $c > 0$ while liberal reporting requires $c < 0$. If $c = 0$ and $n = 1$, there will be no noise at all: a high (low) report perfectly reflects the good (or bad, respectively) state of nature. If $c = 0$ and $n < 1$, there is noise in the reporting system;

however, there is no bias. Thus, Type-1 and Type-2 errors are equally likely to occur. We call this a noisy but neutral system.

With $c > 0$ and $n < 1$, Type-1 errors are likely to occur more often than Type-2 errors; that is, an unfavorable report in a good state of nature is more likely to be produced than a favorable report in a bad state of nature. This reflects accounting conservatism. Analogously, with $c < 0$ and $n < 1$, we have liberal accounting.

Debt financing. Since I focus on debt contracting, I assume that the project is entirely financed by debt in a competitive lending market. Debt is retired at t = 2. The assumption $qpX - I > 0$ in (1) ensures that the lender's participation constraint can be satisfied and the owner-manager finds it optimal to realize the project. I denote the face value of debt D.

There is a covenant in the debt contract that is violated if the accounting report is unfavorable, $y = y_l$. With a favorable report at t = 1, the owner-manager retains control. With a covenant violation, the lender gains control and decides whether to liquidate the project. The proceeds from liquidation amounts to L with

(5) $$0 < pD < L < I < qpX.$$

Following the literature (Li, 2013: 1088; Gao, 2013: 254), the liquidation proceeds exceed the expected payment at t = 1.

Owner-manager incentives. At t = 2, the owner-manager receives any cash flow exceeding the face value of debt. Moreover, she earns a private non-monetary utility $B \geq 0$ from running the project, which she loses if the project is liquidated. B reflects managerial reputation effects, prestige, career opportunities, or other benefits that cannot be used to repay the debt.[1] I assume $0 < B < L$ because otherwise, liquidation would never be socially desirable.

[1] The corporate governance literature refers to the important role of private managerial benefits of running the

Table 1 summarizes the expected payoffs at t = 1 in different states of nature and with different accounting reports:

--Insert Table 1 about here—

2.2 Optimal reporting system

The firm manager benefits personally from managing the firm and does not face any consequences from continuing inefficient operations. As a result, her dominant strategy is to continue, regardless of the accounting report. On the other hand, the lender will prefer to continue only if the report is favorable; however, she has a dominant strategy to liquidate if the report is unfavorable, due to the assumption $pD < L$.

It's important to note that the accounting report is not a perfect signal of the firm's financial health at time t = 2. Consequently, there is a risk that the report may be unfavorable, leading the lender to liquidate the project even when the firm is actually performing well. This situation results in what is known as a Type-1 error, where inefficient liquidation occurs. The expected loss from this Type-1 error can be quantified as follows:

(6) Loss (Type-1) $= q(1 - n + c)(pX - L + B)$.

The term $q(1 - n + c)$ reflects the probability of a Type-1 error occurring, namely when a unfavorable report is indicated given the good state of nature is to be expected. The term $(pX - L + B)$ shows the social loss from inefficient liquidation. Analogously, a Type-2 error reflects the risk of inefficient continuation, implying a favorable accounting signal even though the firm is in financial distress. The expected loss from this error is reflected by:

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firm, see e.g., Aghion and Tirole (1997) and Francis and Martin (2010). Related accounting conservatism models assume managerial private benefits as well, see, e.g., Gao (2013) and Laux and Laux (2024).

(7) Loss (Type-2) = $(1-q)(1-n-c)(L-B)$.

Recall that inefficient continuation yields a zero return at t = 2, while immediate liquidation implies a net social benefit of $L-B$. The joint expected loss in social welfare resulting from both Type 1- and Type 2-errors amounts to:

(8) Total Loss: $TL = q(1-n+c)pX - [(2q-1)(1-n)+c](L-B)$

with $\frac{\delta TL}{\delta n} = -qpX + (2q-1)(L-B) < 0$ since $q < 1, pX > L > B > 0$.

with $\frac{\delta TL}{\delta c} = qpX - L + B > 0$ since $qpX > I > L > B > 0$.

Result 1

A biased accounting report affects social welfare in the following ways: the loss from Type-1 and Type-2 errors decreases as the informativeness of the report increases (n), but it increases with a higher level of conservatism (c). For any given level of informativeness, maximally liberal accounting minimizes expected social loss.

Result 1 has already been established by Gigler et al. (2009), Li (2013), and Gao (2013). It seems reasonable to assume that the decision to liquidate or continue operations will improve as the accounting system becomes more informative. However, it is less clear why a liberal accounting system is preferable to a conservative one. If the expected loss from inefficient liquidation exceeds the expected loss from inefficient continuation, the accounting system should provide the most accurate information possible regarding unfavorable conditions. In a liberal accounting system, negative reports are rare, and when they do occur, they provide valuable insights into the firm's financial difficulties. Conversely, a conservative accounting system is more likely to issue unfavorable signals even for a healthy firm, making those signals

less informative. This reasoning supports the idea of linking liquidation covenants to a highly liberal accounting system (Gigler et al., 2009).

3. The lender's option to liquidate with an unfavorable accounting report

The assumption $pD < L$ stated above suggests that a project will automatically be liquidated based on a negative accounting report, regardless of the actual state of nature or the features of the accounting system. However, this assumption contradicts the evidence, which shows that most financial covenant violations are often waived without any significant consequences (Roberts & Sufi, 2009; Dichev & Skinner, 2002; Christensen et al., 2016; Griffin et al., 2024).

We therefore relax assumption (5) as follows:

(5.1) $0 < L < I < qpX.$

The liquidation value at t = 1 might be higher than the expected debt repayment at time t = 2; however, it could also be lower, $L < pD$. In this situation, the lender may choose not to liquidate the firm even if the accounting report is unfavorable. Instead, the lender will update her beliefs on the firm's bankruptcy status based on the characteristics of the accounting system:

(9) $Pr(\theta_B|y_l) = \pi = \frac{(1-q)(n+c)}{(1-q)(n+c)+q(1-n+c)} < 1$ with $\frac{\delta\pi(n,c)}{\delta c} < 0$ and $\frac{\delta\pi(n,c)}{\delta n} > 0.$

The reliability of an unfavorable accounting report as an indicator of financial distress increases when the report is more informative (higher n) and provides more detailed insight into the bad state of nature (lower c). Consequently, a lender will only call in the loan if the proceeds from liquidation are greater than the expected debt repayment, given an unfavorable report at time t = 1.

(10) $L > (1-\pi)pD \quad \leftrightarrow \pi > \pi^* = 1 - \frac{L}{pD}.$

Hence, if $pD > L$ holds, the accounting report needs to be sufficiently informative on the financial distress scenario θ_B, such that the lender will liquidate the project. However, with $pD \leq L$, the lender will liquidate regardless of the informativeness of the accounting report.

If $\pi \leq \pi^*$ holds, the accounting report is sufficiently noisy about the financial distress scenario, that is, either sufficiently uninformative ($n \leq n^*$) and/or sufficiently conservative ($c \geq c^*$). Considering Equation (9), n^* and c^* can be derived from the following equations:

(11) $\pi^* = \frac{(1-q)(n^*+c)}{(1-q)(n^*+c)+q(1-n^*+c)}$ and $\pi^* = \frac{(1-q)(n+c^*)}{(1-q)(n+c^*)+q(1-n+c^*)}$, respectively.[2]

With conservatism levels exceeding the threshold c^*, the lender will not call the loan. Hence, there is no longer a loss from inefficient liquidation; any expected Type-1 loss depends on the level of c:

(12) $$\text{Loss (Type-1)} = \begin{cases} q(1-n+c)(pX-L+B), \text{if } c \leq c^*(\pi \geq \pi^*;\ n \geq n^*) \\ 0 \qquad\qquad\qquad\qquad\qquad\quad , \text{if } c > c^*(\pi < \pi^*;\ n < n^*) \end{cases}$$

However, the expected loss from a Type-2 error (inefficient continuation) also changes when there is no longer any liquidation. If the project is bad and $c > c^*$ holds, it still will be continued, regardless of the accounting report:

(13) $$\text{Loss (Type-2)} = \begin{cases} (1-q)(1-n-c)(L-B), \text{if } c \leq c^*(\pi \geq \pi^*;\ n \geq n^*) \\ (1-q)(L-B) \qquad\qquad\quad , \text{if } c > c^*(\pi < \pi^*;\ n < n^*). \end{cases}$$

Consequently, expected total loss amounts to:

(14) $$TL = \begin{cases} q(1-n+c)pX - [(2q-1)(1-n)+c](L-B), \text{if } c \leq c^*(\pi \geq \pi^*;\ n \geq n^*) \\ (1-q)(L-B) \qquad\qquad\qquad\quad , \text{if } c > c^*(\pi < \pi^*;\ n < n^*) \end{cases}$$

[2] It holds: $c^* = \frac{(1-q)n-\pi^*[(1-q)n+q(1-n)]}{\pi^*-(1-q)}$ and $n^* = \frac{q\pi^*-c(1-q-\pi^*)}{q\pi^*+(1-\pi^*)(1-q)}$.

For $c \leq c^*$, the total loss function increases under conditions of accounting conservatism; see Equation (8). Thus, the local cost minimum under conditions of maximally liberal accounting is ($c_{min} = n - 1$). This also represents the global cost minimum because:

(15) $TL(c = c_{min}) = (1-q)2(1-n)(L-B) < TL(c > c^*) = (1-q)(L-B)$

$\leftrightarrow 0.5 < n.$

Hence, the loss from inefficient continuation with maximally liberal accounting is smaller than with strict conservatism (and no project liquidation) even when we abstract from an "automatic" liquidation given an unfavorable accounting report. However, the *option* to liquidate will become important when the lender has private information.

4. Relationship lending

Let us consider a relationship lender who has a close connection with the borrowing firm, allowing her to access private information. This private information can be classified as either hard or soft (Boot, 2000; Kysucky & Norden, 2016). Examples of this information include assessments of management quality, insights into changes in strategy, or even rumors about personal issues faced by the owner-manager. This private information becomes relevant only when the lender does not have a dominant strategy that involves liquidating the firm upon receiving an unfavorable accounting report. Therefore, I assume $pD > L$.

Additionally, I assume that the relationship lender receives a biased private signal y^i that is simultaneously generated and uncorrelated with the accounting report. This private information is non-verifiable and therefore non-contractible. The information structure resembles that of the accounting report, where n_i reflects the informativeness of the private information (the index i stands for private (inside) information). I assume that private information is more informative than the accounting report; thus, $n_i > n$ with $0.5 < n_i < 1$. To my knowledge, there is no convincing theoretical argument or compelling evidence as to why

private information should be conservatively or liberally biased. Therefore, the conditional probabilities are as follows:

(16) $\Pr(y_l^i|\theta_B) = \Pr(y_h^i|\theta_G) = n_i$

$\Pr(y_l^i|\theta_G) = \Pr(y_h^i|\theta_B) = 1 - n_i$, with $n_i > n$ and $0.5 < n_i < 1$.

Figure 3 displays the information structure with relationship lending.

--Insert Figure 3 about here--

Relationship lending helps reduce Type-1 errors that imply inefficient liquidation. Because the private information is more accurate, a relationship lender will only decide to liquidate if both the accounting report *and* the private information are unfavorable. If the accounting report is negative but the private information is positive, liquidation will not take place. Conversely, if the accounting report is positive but the private information is negative, the project cannot be liquidated since the private information is not included in the covenant. Consequently, the expected loss stemming from this Type-1 error is as follows:

(17.1) Loss (Type-1) $= q(1 - n + c)(1 - n_i)(pX - L + B)$.

The loss from a Type-1 error is decreasing with a higher precision of the private signal n_i. With $n_i = 1$, there will be no inefficient liquidation and thus, a zero loss.

While the likelihood of Type 1 errors can be reduced with private information, the probability of Type 2 errors may actually increase. This occurs because the relationship lender might choose to continue a "bad" project when the private signal is favorable, even if the accounting signal indicates otherwise. Table 2 summarizes the possible scenarios:

--Insert Table 2 about here--

Additionally, a Type-2 error from a misleading *accounting* signal persists, as the relationship lender cannot liquidate based on her more informative yet non-contractible private information. In summary, the loss resulting from a Type-2 error amounts to:

(17.2) Loss (Type-2) = $(1-q)(1-n-c)(L-B) + (1-q)(n+c)(1-n_i)(L-B)$.

It's important to note that the loss from a Type-2 error decreases as the precision of the private information increases. Additionally, when private information is noisy, the relationship lender is more likely to continue supporting the project compared to an arm's-length lender. This theoretical finding aligns with evidence suggesting that relationship banks are more likely to support their borrowers during times of financial distress (Bolton et al., 2016). The total loss can be calculated as follows:

(18) $TL = q(1-n+c)(1-n_i)(pX-L+B) + (1-q)(1-n-c)(L-B)$

$+(1-q)(n+c)(1-n_i)(L-B)$.

with

(19.1) $\frac{\delta TL}{\delta n} = -q(1-n_i)(pX-L+B) - (1-q)n_i(L-B) < 0$

due to $pX > L > B > 0$; and with

(19.2) $\frac{\delta TL}{\delta c} = q(1-n_i)(pX-L+B) - (1-q)(L-B) + (1-q)(1-n_i)(L-B)$

$$\begin{cases} \geq 0, & \text{if } n_i \leq n_i^* = \dfrac{q(pX-L+B)}{q(pX-L+B)+(1-q)(L-B)} \\ < 0, & \text{if } n_i > n_i^* = \dfrac{q(pX-L+B)}{q(pX-L+B)+(1-q)(L-B)} \end{cases}.$$

Result 2

The lender's private information about future states of nature reduces the expected loss from inefficient liquidation (Type-1 error). When the lender has favorable private information, violations of debt covenants will be waived. However, if the lender possesses negative private

information, it does not prevent inefficient continuation of a failing project. Social welfare increases with the informativeness of the accounting report, but this effect is offset as the informativeness of private information (n_i) increases. Social welfare may decrease *or* increase in conservatism. Maximum conservatism becomes desirable when the private information is sufficiently precise, ensuring that $n_i > n_i^*$ holds.

The lender's access to private information enhances the quality of liquidation decisions, resulting in a lower social loss compared to arm's-length lending. The more accurate the private information or – put differently – the stronger the lending relationship, the less significant the accounting report becomes. Consequently, the social loss from inefficient liquidation decisions diminishes as well. However, the financial covenant remains valuable because even a weak accounting signal provides the option to liquidate the project (Demerjian, 2017). Recall that Gao (2013) and Li (2013) assumed "automatic" liquidation with a poor report.[3]

On the other hand, the likelihood of a Type-2 error in the accounting signal persists and even increases due to relationship lenders' imperfect private information. Therefore, as the quality of private information improves, a more detailed accounting report becomes necessary to minimize Type-2 errors. This report must clearly define the "good" state of nature, which can only be achieved through a conservative reporting regime.

Result 2 leads to several empirical predictions: 1. Firms that borrow from a relationship lender or have more intense lending relationships are more likely to agree to performance-based (earnings-based) financial covenants compared to borrowers with arm's-length lenders. 2. When a financial covenant is in place, firms with a relationship lender or more intense lending

[3] The face value of arm's-length debt resulting in a zero expected profit in a competitive market with a zero interest rate amounts to $D = \frac{I-[(1-q)(n+c)+q(1-n+c)]L}{q(n-c)p}$ and to $D_i = \frac{I-[q(1-n+c)(1-n_i)+(1-q)(n+c)n_i]L}{[q(n-c)+q(1-n+c)]p}$ with relationship lending.

relationships tend to: a. exhibit lower financial reporting quality, and b. demonstrate greater accounting conservatism than other firms.

Breuer et al. (2018), Bigus and Hillebrand (2017), and Bigus and Weicker (2024) have provided evidence that supports prediction (2a). Regarding prediction (1), Prilmeier (2017) found that covenant tightness tends to relax over the duration of a bank relationship. However, he did not compare relationship lending with arm's-length lending nor did he differentiate between performance-based and capital-based covenants (Christensen & Nikolaev, 2012). Additionally, the meta-study conducted by Kysucky and Norden (2016) did not address the relationship between lending status and the prevalence of financial covenants. In relation to prediction (2b), Erkens, Subramanyam, and Zhang (2014) discovered that firms with a banker on their board displayed lower levels of accounting conservatism. They argue that this occurs because monitoring reduces lenders' demand for conservative measures that facilitate control transfers through debt covenants. However, they did not examine the Type-1 and Type-2 errors associated with these debt covenants.

Private lender information may help explain why many covenant violations are waived (Dichev & Skinner, 2002; Roberts & Sufi, 2009; Christensen et al., 2016; Griffin et al., 2024), and why financial covenants are frequently observed in private debt arrangements but not in public bonds. The existing literature suggests that the costs associated with renegotiating financial covenants in public debt are prohibitively high (Christensen et al., 2016).

If covenant violations do not lead to automatic liquidations, they create an opportunity for lenders to gather additional private information about the borrowing firm's default risk or to renegotiate the debt contract. In this sense, debt covenant violations possess both informational and option value. Although we haven't specifically modeled this conjecture related to option value, it aligns well with Demerjian's (2017) findings that higher financial covenant intensity is positively associated with increased uncertainty regarding future economic performance.

The model suggests that accounting conservatism can be efficient even when there are no agency problems or managerial incentives (Caskey & Hughes, 2012; Gao, 2013; Laux & Laux, 2024), as long as the lender possesses sufficiently accurate private information about the borrower's default risk.

5. Conclusion

The theoretical literature on accounting conservatism has demonstrated that a highly liberal accounting approach minimizes the overall expected costs associated with false alarms and overstatements. Overstatements can lead to the continuation of inefficient projects, while false alarms may result in the unnecessary liquidation of viable projects.

This literature assumes that lenders will always choose to liquidate when a negative accounting signal is revealed. In this paper, I relax this assumption by allowing lenders the *option* to liquidate but suggesting that they may choose not to do so if the accounting report is sufficiently unclear. Additionally, we have examined a scenario where the lender possesses private information about the project's prospects, which may be the result of relationship lending.

When lenders have access to sufficiently reliable private information, they can better detect false alarms. This ability reduces the costs associated with accounting conservatism and inefficient liquidation. As a result, lenders often choose to waive debt covenants without facing additional consequences, which aligns with empirical evidence. While this waiver decreases the costs of accounting conservatism, conservative accounting practices still help prevent inefficient continuation due to inflated performance reports. This paper demonstrates that accounting conservatism can be efficient, even when we set aside issues related to asset substitution (Caskey & Hughes, 2012), managerial earnings management (Gao, 2013), or renegotiation costs (Li, 2013).

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Figure 1: Timeline

t = 0	• Firm with owner-manager chooses the properties of an accounting system • Firm gains access to a project • Lenders bid for the loan and one lender finances it • Lender and firm agree on debt covenant, implying the lender's option to liquidate at t = 1 if the accounting report is low
t = 1	• Firm produces accounting report, indicating state of nature at t = 2 • In case of a high report: continuation of the project • In case of a low report: lender decides on the option of liquidation
t = 2	• Payout *X* or zero

Figure 2: Noise in the accounting system

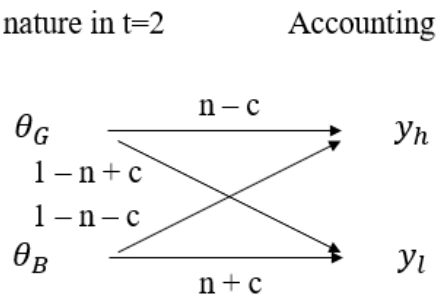

Figure 2 shows how the outcome of the accounting report (favorable:y_h; unfavorable: y_l) is associated with the underlying financial condition of the borrowing firm (good state of nature: θ_G, or bad state of nature: θ_B). The financial reporting system is noisy ($n < 1$), and might be conservatively or liberally biased ($c > 0$ and $c < 0$, respectively).

Figure 3: Information structure with relationship lending

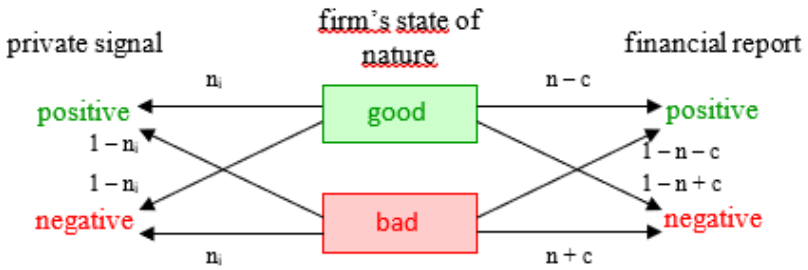

Figure 3 shows how a favorable or unfavorable accounting report (y_h and y_l, respectively) and how the relationship banks' private signals are associated with the underlying performance of the borrowing firm (either in a good or bad state of nature). The financial reporting system is noisy ($n < 1$), and might be conservatively or liberally biased ($c > 0$ and $c < 0$, respectively). The relationship bank's private signal is less noisy than the financial report ($n_i > n$) and is not conservatively or liberally biased.

Table 1: Expected payoffs at t = 1 with arm's-length lending

State of nature	Accounting signal	probability	Action taken	Lender's payoff	Entrepreneur's payoff
Solvency (θ_G)	Good (y_h)	$q(n-c)$	Continuation	pD	$p(X-D)+B$
Solvency (θ_G)	Bad (y_l)	$q(1-n+c)$	Liquidation	L	0
Bankruptcy (θ_B)	Good (y_h)	$(1-q)(1-n-c)$	Continuation	0	B
Bankruptcy (θ_B)	Bad (y_l)	$(1-q)(n+c)$	Liquidation	L	0

L: revenues from liquidation at t = 1; D: Face value of debt at t = 2; pX: Expected project payoff in t = 2 in good state of nature; B: private benefit of entrepreneur running the firm

Table 2: Expected payoffs at t = 1 with relationship lending

State of nature	Accounting signal	Probability	Private signal	Conditional probability	Action taken	Lender's payoff	Entrepreneur's payoff
Solvency (θ_G)	Good (y_h)	$q(n-c)$	Good (y_h^i)	n_i	Continuation	pD	$p(X-D)+B$
	Good (y_h)	$q(n-c)$	Bad (y_l^i)	$1-n_i$	Continuation	pD	$p(X-D)+B$
Solvency (θ_G)	Bad (y_l)	$q(1-n+c)$	Bad (y_l^i)	n_i	Liquidation	L	0
	Bad (y_l)	$q(1-n+c)$	Good (y_h^i)	$1-n_i$	**Continuation**	pD	$p(X-D)+B$
Bankruptcy (θ_B)	Good (y_h)	$(1-q)(1-n-c)$	Good (y_h^i)	n_i	Continuation	0	B
	Good (y_h)	$(1-q)(1-n-c)$	Bad (y_l^i)	$1-n_i$	Continuation	0	B
Bankruptcy (θ_B)	Bad (y_l)	$(1-q)(n+c)$	Bad (y_l^i)	n_i	Liquidation	L	0
	Bad (y_l)	$(1-q)(n+c)$	Good (y_h^i)	$1-n_i$	**Continuation**	0	B

L: revenues from liquidation at t = 1; D: Face value of debt at t = 2; pX: Expected project payoff at t = 2 in good state of nature; B: private benefit of the entrepreneur running the firm. Actions are marked in bold when they are taken differently from the arm's-length scenario.