Study The benefits of accounting conservatism To lenders

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ABSTRACT: This paper examines the ex post and ex ante benefits of accounting conservatism to lenders and borrowers in the debt contracting process. I expect conservatism to benefit lenders ex post through the timely signaling of default risk, as manifested by accelerated covenant violations, and to benefit borrowers ex ante through lower initial interest rates. Consistent with these predictions, I find that more conservative borrowers are more likely to violate debt covenants following a negative price shock, and that lenders offer lower interest rates to more conservative borrowers.

Key words: benefits, accounting, lenders, conservatism

INTRODUCTION

While positive accounting theory suggests that accounting conservatism enhances efficiency in the debt contracting process (Watts and Zimmerman, 1986; Watts, 2003a, b), there is little empirical evidence on the debt contracting benefits of conservatism. In this paper, I provide evidence on the ex post and ex ante benefits of conservatism to lenders and borrowers. Specifically, I document that conservatism benefits lenders ex post through the timely signaling of default risk, as manifested by accelerated covenant violations, and benefits borrowers ex ante through lower interest rates.

In the debt contracting process, lenders bear downside risk but have no upside potential. Accordingly, lenders favor mechanisms that mitigate their downside risk. Watts and Zimmerman (1986) suggest that accounting conservatism is one such mechanism. An important implication of conservatism is that financial reports recognize bad news on a more timely basis than good news (Basu, 1997; Watts, 2003a, b), suggesting that conservative financial reports are more likely to trigger covenant violations. Accelerated covenant violations benefit lenders ex post by providing them an opportunity to reduce their downside risk by taking protective actions. Thus, I hypothesize that, Ceteris paribus, more conservative borrowers are more likely to violate debt covenants, and to violate them sooner. Since conservatism is expected to benefit lenders at the expense of borrowers, I expect borrowers to share in the lenders’ benefits. While there are many contracting variables over which lenders and borrowers can negotiate to share these benefits (e.g., lower interest rates, increased lending limits, and longer maturities), I examine the effects of conservatism on interest rates while controlling for other contracting variables. Thus, I also hypothesize that, Ceteris paribus, more conservative borrowers obtain lower interest rates.

I test the above hypotheses on a sample of 327 firms that meet the following criteria. First, in order to identify a sample that is likely to include debt covenant violations, sample firms must have experienced at least one negative price shock in 1999 or 2000. Second, in order to control for debt contracting variables, sample firms’ original contracts must be available. Finally, sample firms must have enough time-series data available to compute firm-specific measures of conservatism. Following the definition of conservatism proposed in Basu (1997), I capture conservatism using the following four measures: (1) the sensitivity of earnings to bad news relative to the sensitivity of earnings to good news, (2) the explanatory power of bad news for earnings relative to the explanatory power of good news for earnings, (3) the skewness of earnings, and (4) accumulated nonoperating accruals.

To test the first hypothesis (that more conservative borrowers are more likely to violate debt covenants), I use a probit model that regresses a dummy variable capturing covenant violations on the four conservatism measures and several control variables. Consistent with the first hypothesis, I find that all four measures of
conservatism are positively associated with covenant violations. To test the second hypothesis (that more conservative borrowers are more likely to violate debt covenants sooner), I use a hazard model that regresses the time to covenant violation on the four conservatism measures and several control variables. The analysis does not support the second hypothesis, as only one of the four conservatism measures is negatively associated with the time to covenant violation. Finally, to test the third hypothesis (that more conservative borrowers obtain lower interest rates), I use an ordinary least squares (OLS) model that regresses the interest rate on the four conservatism measures and several control variables. Consistent with the third hypothesis, I find that all four measures of conservatism are negatively associated with interest rates. In addition, I find that these results are robust to several sensitivity tests. This paper’s main contributions are twofold. First, this is the first paper in the literature to directly test the debt contracting benefits of conservatism to lenders. While positive accounting theory clearly predicts that conservatism plays an important role in efficient contracting, there is little empirical evidence to substantiate this claim. One notable exception is Ahmed et al. (2002), who document that conservatism enhances the debt ratings of borrowers and that firms facing more severe debtholder–shareholder conflict are more conservative.

However, given I find an ex ante benefit of conservatism to borrowers (lower interest rates) and a direct ex post benefit of conservatism to lenders (more timely signals of default risk), this paper examines a broader set of benefits from conservatism in debt contracting compared to the prior literature. Second, the evidence in this paper has implications for standard setters when they consider the tradeoff between relevance (which favors fair value) and reliability (which is often associated with conservatism in practice). Historically, the Financial Accounting Standards Board (FASB) tended to issue accounting standards consistent with the conservatism principle. Recently, however, FASB has shifted its focus toward supporting fair values, weakening the asymmetric treatment of bad and good news in financial statements (Watts 2003a, b). The results in this study indicate that both borrowers and lenders value conservatism, as conservatism provides lenders more timely signals of default risk and borrowers lower interest rates.

The rest of the paper proceeds as follows. Section 2 reviews the literature on the debt contracting role of conservatism. Section 3 develops the hypotheses. Section 4 introduces the sample and research design, and Section 5 presents empirical evidence and robustness checks. Finally, Section 6 summarizes and concludes. 2. Background literature While prior research provides strong theoretical guidance on the contracting benefits of conservatism, the empirical evidence is limited. In this section, I briefly review the theoretical and empirical papers that are closely related to my study. The role of accounting information in the debt contracting process is first characterized by Watts and Zimmerman (1986). The voluminous empirical literature building on Watts and Zimmerman (1986) focuses largely on the use of accounting choices to avoid covenant violations (Press and Weinrop, 1990; Duke and Hunt, 1990; DeAngelo et al., 1994; DeFond and Jiambalvo, 1994; Sweeney, 1994; Dichev and Skinner, 2002; Beatty and Weber, 2003). Recently, several papers examine the positive role that accounting information plays in debt contracting. For example, Beatty et al. (2007) show that debt contract modifications do not fully provide lenders with desired level of conservatism. Similar to Beatty et al. (2007), this paper also explores the positive role of accounting in debt contracting by providing evidence that accounting conservatism generates benefits that lenders and borrowers share.

Watts (2003a, b) summarizes the extant theory and evidence on accounting conservatism. He points out that because lenders are concerned with downside risk, they tend to concentrate on the lower ends of the earnings and net assets distributions. In addition, because net assets are more verifiable under conservative reporting than in its absence, conservative reporting allows lenders to make better lending decisions and more efficiently monitor a borrower’s ability to pay. Watts (2003a) therefore argues that “The long survival of conservatism and its apparent resilience to criticism strongly suggests that conservatism’s critics overlook its significant benefits.” However, the literature provides only indirect evidence on the benefits of conservatism to lenders and limited evidence on the benefits of conservatism to borrowers (Ahmed et al., 2002). In Ahmed et al. (2002), the authors document that conservatism reduces the cost of debt for borrowers (i.e., more conservative borrowers receive better debt ratings). This paper complements their study in several ways. First, I examine the extent to which conservatism benefits lenders. Second, while Ahmed et al. (2002) use debt ratings as their proxy for the cost of debt, I use interest rates. Unlike debt ratings, interest rates measure the actual cost of debt and are measured at the debt issuance level (as opposed to the firm level). Third, I employ a more comprehensive set of conservatism measures than those used in Ahmed et al. (2002). Specifically, I use two asymmetric timeliness measures from Basu (1997) and two earnings measures from Givoly and Hayn (2000), whereas Ahmed et al. (2002) use one measure derived from the market-to-book ratio and another measure based on total operating accruals. In another related paper, Moerman (2006) finds that the bid-ask spread in the
secondary loan market is lower for more conservative borrowers. While Moerman (2006) provides evidence that conservatism reduces the information asymmetry component of the cost of debt, it does not explore how conservatism reduces information asymmetry and whether lenders also benefit from such reduction. In summary, the existing literature suggests that conservatism plays an efficiency-enhancing role in the debt contracting process (Watts and Zimmerman, 1986; Watts, 2003a, b). However, to date there is no direct evidence as to whether and how conservatism benefits lenders, and there is only limited evidence that conservatism benefits borrowers (Ahmed et al., 2002; Moerman, 2006). This study adds to the literature by investigating the extent to which conservatism benefits lenders, and in turn, the extent to which lenders share those benefits with borrowers.

**Hypothesis development**

Efficient debt contracting provides an important explanation for conservatism. In the debt contracting process, lenders have an informational disadvantage, bearing downside risk with no upside potential. Absent a mechanism to credibly mitigate their downside risk, lenders would either refuse to lend or require a high rate of return. Accounting conservatism is one such mechanism that allows borrowers to mitigate the downside risk of lenders (Watts and Zimmerman, 1986).

**Definition of conservatism**

Following Basu (1997), I define conservatism as a higher degree of verification to recognize good news than to recognize bad news as losses. An important implication of the asymmetric verification requirement is the understatement of net assets. Given lenders bear downside risk but no upside potential, lenders receive more downside risk protection from, and hence prefer, understated net assets on the balance sheet and a timely report of bad news on the income statement. Note that this definition of asymmetric verification is consistent with FASB’s Statement of Concepts No. 2, which states that “if two estimates of amounts to be received or paid in the future are about equally likely, conservatism dictates using the less optimistic estimate.” By requiring a higher degree of verification to recognize good news than bad news, conservative accounting reports are less optimistic.

**The covenant violation hypothesis: The ex post benefits of conservatism to lenders**

Positive accounting theory predicts that conservatism reduces the moral hazard and adverse selection components of the cost of debt, thereby providing borrowers an incentive to report conservatively in order to reduce the cost of debt. To understand how conservatism reduces the cost of debt, it is important to examine how conservatism benefits lenders. After a debt facility is in place, lenders are concerned about unexpected increases in default risk that result from either exogenous business shocks or borrowers’ opportunistic behaviors. Given their information disadvantage, lenders may not detect increases in default risk in time and thereby bear uncompensated risk. Debt covenants are designed to provide lenders with updated information on default risk. Specifically, covenant violations signal an increase in default risk.

However, a significant number of covenants are written in terms of financial numbers (hereafter, “financial covenants”) that are under the discretion of borrowers. To further ensure lenders of timely signals of default risk, borrowers offer conservative reporting, i.e., reporting a verifiable lower bound estimate of net assets through timely loss recognition and delay in gain recognition. Holding the debt covenant threshold constant, timely loss recognition makes financial covenants more binding by capitalizing bad news. For example, suppose a firm has a covenant that Debt to EBITDA ratio cannot exceed three. Upon a negative shock, if the firm chooses to capitalize the shock, then earnings would drop and Debt/EBITDA ratio would go up, making the covenant more binding. Binding covenants provide lenders a more timely warning of increased default risk, triggering covenant violations when the risk exceeds the threshold set by lenders. In the event of a covenant violation, lenders can take protective actions to reduce their downside risk. For example, lenders can adjust the interest rate to compensate for the increased risk. Lenders can also accelerate the debt maturity, reduce the borrowing base, and/or enhance the security to reduce the potential loss of principal. Appendix A offers two examples of lenders’ protective actions, one written in a debt contract and the other taken in practice. In sum, conservative reporting benefits lenders through the acceleration of covenant violations, with the resulting transfer of control rights from borrowers to lenders enabling lenders to reduce their risk. Accordingly, I operationalize the benefits of conservatism to lenders as accelerated covenant violations. To increase the power of the test, I require that the sample firms experience at least one negative stock price shock so that the sample is likely to include covenant violations. This leads to the following two
**hypotheses**

Hypothesis 1a (H1a). Ceteris paribus, more conservative borrowers are more likely to violate debt covenants than less conservative borrowers.

Hypothesis 1b (H1b). Ceteris paribus, more conservative borrowers are more likely to violate debt covenants sooner than less conservative borrowers.

Since covenants are endogenous, lenders may make covenant thresholds relatively tighter for less conservative firms. If so, this is likely to bias against the two hypotheses above because it suggests that there is a negative relation between conservatism and debt covenant violations. Besides, Beatty et al. (2007) suggest that lenders cannot fully achieve desired level of conservatism by modifying GAAP in debt contracts. Nevertheless, since covenant tightness is expected to be associated with the probability of covenant violation, I include covenant tightness as a control in testing H1a and H1b. Note that the timely signal associated with accelerated covenant violation is only one possible benefit of conservative reporting. By understating net assets, conservative reporting also gives lenders a measure of the lower bound of the collateral’s value and understated collateral might be associated with a higher recovery rate in default.

**The cost of debt hypothesis: The ex ante sharing of the benefits from lenders**

An underlying assumption in this analysis is that lenders are concerned with default risk, i.e., the higher the default risk, the higher the expected return, or in the context of a loan, the higher the interest rate. Thus, if conservative reporting provides lenders more timely signals of default risk, thereby mitigating their default risk, lenders are likely to reduce the interest rates charged to more conservative borrowers in exchange. Moreover, the more conservative the borrower, the greater the benefits to the lender. Thus, I expect interest rates to be negatively related to conservatism. This leads to the following hypothesis:

Hypothesis 2 (H2). Ceteris paribus, interest rates are lower for more conservative borrowers.

Note, however, that the following four assumptions must be true for H2 to hold: (i) lenders do not share the benefits from conservatism with borrowers exclusively through other channels such as relaxed covenants; (ii) lenders prefer an earlier default to a later one; (iii) borrowers can make credible commitments as to their level of conservatism, and they do not deviate from their commitments subsequently; and (iv) there is variation in the level of conservatism among borrowers. With respect to the first assumption, in practice lenders are likely to reward conservatism in a number of ways, for instance, by loosening covenants, increasing lending amounts, lowering collateral, etc. Which channels lenders use or whether they use one channel exclusively is an empirical question. However, if I find that the interest rate is lower for more conservative borrowers, the possibility of other types of rewards for conservatism implies that the extent to which the benefits of conservatism are actually shared might be even larger.

With respect to the second assumption, I argue that lenders are likely to prefer an early default to a later one. A timely default warns a lender about increased default risk, protecting the lender from downside risk; however, excessively frequent defaults may give lenders false alarms that unnecessarily increase monitoring and renegotiation costs. Therefore, there exists an optimal frequency of default that minimizes the sum of default, monitoring, and renegotiation costs. If conservative reporting drives the actual default rate toward this optimal point then lenders value conservatism (consistent with the hypotheses). On the other hand, if conservative reporting drives the actual default rate away from this optimal point, then I do not expect to find support for H2. With respect to the third assumption, I argue that a borrower has incentives to commit to and maintain a given level of conservatism. Borrowing is a repeated game: If borrowers deviate from a commitment, there will be negative reputational consequences. Moreover, borrowers have mechanisms that allow them to credibly commit to a certain level of conservatism, for example, through the use of fixed GAAP in covenants (Mohrman, 1996; Beatty et al., 2002). Thus, both the reputation cost and contracting mechanisms help keep borrowers at a committed level of conservatism.

With respect to the fourth assumption, there is likely to be variation in the degree of conservatism across firms because conservatism is costly. First, conservative firms are more likely to violate their covenants, and the costs associated with covenant violations are economically significant (Beneish and Press, 1993). Second, conservatism imposes explicit costs on managers if their compensation contracts are invariant to accounting choices. Third, conservatism imposes implicit costs on managers if managers believe there might be adverse consequences to their choices in the labor market. Thus, I expect to observe a wide range of conservatism.
Data and research design

Measures of conservatism

Following Basu's (1997) empirical definition of conservatism, i.e., asymmetric verification requirement, I employ the following four measures of conservatism. The first measure, Consv_coeff, is the sensitivity of earnings to bad news relative to the sensitivity of earnings to good news, i.e., \((b_0i+b_1i)/b_0i\). This measure, which comes from Basu (1997), is given by the firm-specific regression \(E_{it}/P_{it-1} = a_0i + a_1iDR_{it} + b_0i + b_1iR_{it} + e_{it}\), where \(E_{it}\) is the earnings per share (Compustat) of firm \(i\) in fiscal year \(t\), \(P_{it-1}\) is the price per share of firm \(i\) at the beginning of fiscal year \(t\), \(R_{it}\) is the 12-month return of firm \(i\) ending 3 months after the end of fiscal year \(t\), and DR is a dummy variable equal to one if \(R_{it}>0\) and zero otherwise. In this regression, the sensitivity of earnings to good news is captured by \(b_0i\) and the sensitivity of earnings to bad news is captured by \(b_0i+b_1i\), thus the sensitivity of earnings to bad news relative to the sensitivity of earnings to good news is given by \((b_0i+b_1i)/b_0i\). The higher this measure, the more conservative the firm.

The second measure, Consv_R2, is the explanatory power of bad news to earnings relative to the explanatory power of good news to earnings. This measure, also from Basu (1997), is given by \(R^2\) (bad news)/\(R^2\) (good news) of the same regression above applied to the corresponding bad news or good news sub-sample. I include this measure to address the difference in the variance of negative versus positive returns. In an earnings–returns regression, \(R^2 \equiv \text{cov}(E_{it}, R_{it})/\text{var}(E_{it})\text{var}(R_{it})\). The difference in the variance of negative versus positive returns is controlled for by the \(\text{var}(R_{it})\) term in the denominator of the \(R^2\). The above two measures capture the essence of the asymmetric verification requirement, which is what reduces lenders' default risk: A high verification standard for gains ensures that the gains are more reliable (less prone to manipulation) than losses, whereas a low verification standard for losses gives lenders a timely signal of default risk and a lower bound for the value of collateral. However, these measures have at least two limitations. First, estimated using single-period earnings and returns, these measures assess the average asymmetric timeliness of earnings for each single-period and do not pick up aggregate conservatism, i.e., cumulative effect of asymmetric timeliness across all previous periods (Roychowdhury and Watts, 2007). Second, when applied to individual firms, the measures are potentially subject to considerable measurement error or a downward bias (Givoly et al., 2007; Roychowdhury and Watts, 2007). Therefore, I use two additional earnings-based measures, both from Givoly and Hayn (2000), to supplement the analysis. The third measure, Consv_negskew, is the time-series skewness of earnings, deflated by the skewness of cash flows, in order to control for the variation in firm performance. When bad news requires a lower verification standard, it is usually capitalized into earnings, generating a large reduction in earnings and thus a negatively skewed earnings series. Appendix B quantifies this intuition through a simple simulation. The simulation shows that if a firm's earnings incorporate bad news immediately but good news gradually, then its earnings are negatively skewed. To make the direction of this measure consistent with the first two measures, I multiply skewness by negative one, so that the higher the Consv_negskew, the more conservative the firm.

The fourth measure, Consv_accrual, is the accumulated nonoperating accruals deflated by accumulated total assets. The accumulation of nonoperating accruals summarizes the actual recording of bad news. Examples include restructuring charges and asset write-downs. Again, to make the direction of this measure consistent with the first three, I multiply accumulated nonoperating accruals by negative one so that the higher the Consv_accrual, the more conservative the firm. The above two earnings-based measures from Givoly and Hayn (2000) also capture the asymmetric verification requirement as reflected in earnings, but they do not rely on whether stock returns are a good proxy for economic gains or losses. However, one limitation with these two measures is that negatively skewed earnings or negative nonoperating accruals are also consistent with “big baths” that result from earnings manipulation rather than accounting conservatism. Another limitation of the Consv_accrual is that operating cash flows may also contain investment accruals if an asset purchased in cash is written off as an operating expense rather than capitalized. Appendix C demonstrates the relation between Basu's measures of conservatism and the two earnings-based measures of conservatism. In particular, Appendix C shows that firms with negatively skewed earnings incorporate bad news in earnings in a more timely fashion than firms with positively skewed earnings. Appendix C also shows that firms with negative nonoperating accruals incorporate bad news in earnings in a more timely fashion than firms with positive nonoperating accruals. Thus, the evidence in Appendix C provides some assurance that the four measures are evaluating a similar underlying construct. Fig. 1 provides a timeline of the measures of conservatism as well as the other main variables. As shown in Fig. 1, I measure conservatism over the period prior to the loan initiation: When lenders and borrowers negotiate the loan, they can only contract on the historical level of conservatism. I assume that borrowers can commit to a certain level
of conservatism and that they do not deviate subsequently due to either a lack of accounting slack or reputation concerns. I also assume that lenders may employ fixed GAAP in debt contracts to reduce accounting slack. Under these two assumptions, if a borrower has been conservative before the loan initiation the borrower is likely to continue to be conservative after the loan initiation, providing the lender a timely signal about changes in default risk.

### Table 1. Sample selection of the negative shock sample

<table>
<thead>
<tr>
<th>Selection criteria</th>
<th>Number of firms left</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRSP firms with at least one monthly return less than (-30%) during year 1999 or 2000</td>
<td>4,339</td>
</tr>
<tr>
<td>Less: firms with long-term debt less than 10% of total assets</td>
<td>2,553</td>
</tr>
<tr>
<td>Less: firms without seven years of earnings and return data to calculate the measures of conservatism</td>
<td>1,271</td>
</tr>
<tr>
<td>Less: firms without original debt contracts</td>
<td>188</td>
</tr>
<tr>
<td>Sample to test H1a and H1b</td>
<td>327a</td>
</tr>
<tr>
<td>Less: firms without interest rates to test H2</td>
<td>13</td>
</tr>
<tr>
<td>Sample to test H2</td>
<td>314b</td>
</tr>
</tbody>
</table>

Among the 327 firms in the negative shock sample, 98 firms disclose the violation of covenants in their 10K, 10Q, or 8K filings. The test of H1a is based on these 327 firms for Consv\_coeff, Consv\_negskew, and Consv\_accrual. The test of H1a for Consv\_R2 is based on 309 (of the 327) firms with at least three positive annual returns and at least three negative annual returns. The test of H1b for Consv\_coeff, Consv\_negskew, and Consv\_accrual is based on the 279 firms whose covenant violation dates can be identified, and the test of H1b for Consv\_R2 is based on the 266 firms with at least three positive annual returns and at least three negative annual returns. bThe test of H2 is based on these 314 firms for for Consv\_coeff, Consv\_negskew, and Consv\_accrual. The test of H2 for Consv\_R2 is based on 297 (of the 314) firms with at least three positive annual returns and at least three negative annual returns.

### Sample selection and descriptive statistics

Table 1 summarizes the sample selection process. I begin with the CRSP universe of firms in years 1999 and 2000. The choice of 1999 and 2000 yields both a bounded 5-year window (1999–2003) over which to search for covenant violations, and sufficient time (1994–1999) over which to search for the original debt contract. As mentioned before, I require that the sample firms experience at least one negative stock price shock to increase the power of the test. Specifically, I extract from CRSP the 4,339 firms with at least one monthly return less than \(-30\%) during 1999 and 2000. The choice of \(-30\%) as the cutoff point identifies those firms with one or more monthly returns that are approximately two standard deviations lower than the mean. To avoid including firms with no debt or immaterial debt, I exclude firms with long-term debt of less than 10\% of total assets, yielding a sample of 1,786 firms.10 The sample is further reduced to 515 firms after I require at least 7 years of earnings and returns data prior to the price shock to calculate firm-specific measures of conservatism. I obtain loan information, including covenants, from Securities Database Corporation (hereafter referred to as “SDC”), Lexis-Nexis, and 10K Wizard. In identifying the original debt contract, I require that all contracts start before the price shock and span the covenant violations for violators. This requirement yields the final sample of 327 firms. I manually collect from firms’ 10K, 10Q, and 8K filings in Lexis-Nexis information regarding violations of financial covenants after a negative price shock.1 Of the 327 firms, 98 disclose violations of financial covenants subsequent to a price shock. I use the full set of 327 sample firms to test H1a. The test of H1b is based on the subsample of firms that report covenant violation dates and that do not report a covenant violation (279 firms). The test of H2 is based on the subsample of firms for which the initial interest rate spread is available (314 firms).

### Research design

#### Test of H1a

H1a hypothesizes that more conservative firms are more likely to violate their financial covenants. I test this hypothesis by estimating the following probit model: \( \text{Violate}_i = a_0 + a_1 \text{Consvi} + a_2 \text{Cumret}_i + a_3 \text{LogSize}_i + a_4 \text{Leverage}_i + a_5 \text{ROA}_i + a_6 \text{Rating}_i + a_7 \Delta \text{Numcovi} + a_8 \text{Escalate}_i + a_9 \text{Otherdebt}_i + a_{10} \text{Loansize}_i + a_{12} \text{Month}_i \cdot \text{maturity}_i + \varepsilon_i \). \( \delta_1 \alpha P \)

The dependent variable \( \text{Violate} \) equals one if the firm discloses a violation of financial covenants after a negative price shock, and zero otherwise. The treatment variable, i.e., level of conservatism, is measured as the rank of each measure discussed in Section 4.1. I use the rank instead of the magnitude to avoid spurious inference. To further mitigate measurement error or noise in each individual conservatism measure, I also combine these four measures into an aggregate summary measure that equals the average rank of the four individual
measures. The individual measures and the summary measure are all constructed so that a higher rank corresponds to a higher level of conservatism. H1a predicts that a140. The control variables are defined as follows: Cumret: The size of the negative price shock(s) that a firm experienced during 1999 and 2000. If a firm observes multiple price shocks, cumret is the buy-and-hold return of all the price shocks. The larger the negative price shock, the more likely a firm will violate its covenants.

Log(Size): The natural log of the total assets of the borrower at the fiscal year-end before the price shock (or prior to the first price shock if there are multiple shocks). A larger firm is usually stronger, better able to negotiate looser terms in covenants, and better able to build more accounting slack. Therefore, a larger firm is less likely to violate its covenants.

Leverage: Long-term debt/total assets of the borrower at the fiscal-year end before the negative price shock (or prior to the first shock if there are multiple shocks). A highly levered firm might have more covenants and tighter covenants, and hence is more likely to violate its covenants. However, a highly levered firm also bears a higher cost of covenant violations and may be more careful either to not violate its covenant or to obtain a waiver more quickly (if a waiver is obtained within the quarter of a covenant violation, the firm has the choice not to disclose the covenant violation).

ROA: Net income/total assets of the borrower in the fiscal year prior to the price shock (or prior to the first shock if there are multiple shocks). A firm with a higher ROA is financially sound and less likely to violate its covenants.

DNW: The net worth of the borrower before the negative price shock minus the net worth before the loan initiation, deflated by the net worth before the loan initiation. I use this variable to capture the net worth covenant slack. A firm with a higher net worth relative to loan initiation is more distant to covenant violations than another firm with a lower net worth. I therefore predict a negative coefficient on this variable.

Rating: Actual S&P debt rating if available; imputed debt rating if the actual rating is not available. I calculate the imputed rating by estimating a regression of available S&P ratings on firm size, leverage, ROA, loan size, and loan maturity and then applying the estimated coefficients to the loans whose actual ratings are not available. The imputed rating is calculated as 19.33+0.23*loansize+0.0026*loannmonth_1.4*revolv_7.26*roa+2.57*lev_1.283*size.

Cumret is the buy-and-hold return of all the price shocks. The larger the negative price shock, the more likely a firm will violate its covenants.

Numcov: Number of financial covenants contained in the original debt contract. The more financial covenants in the loan, the more likely to violate its covenants.

Escalate: Dichotomous variable equal to one if any part of the covenant is escalating, and zero otherwise. An escalating covenant has a moving threshold over time, and usually becomes more binding over time. A firm is more likely to violate an escalating covenant than a nonescalating one.

Otherdebt: Dichotomous variable equal to one if the same borrower has other loans outstanding covering approximately the period between 1999 and 2003 in SDC, or if 10K, 10Q, or 8K filings from Lexis-Nexis mention other debt outstanding, and zero otherwise. If a firm has multiple loan facilities or other forms of debt financing, the firm potentially has other financial covenants and/or a cross-default clause. Also, a firm with other loans might have tighter covenants, and is therefore more likely to violate its covenants.

Loansize: Principal/total assets of the borrower.17 Lenders might impose closer monitoring and tighter covenants to larger loans relative to the size of the borrower. At the same time, the cost of covenant violation is higher for the borrower, and the borrower tries not to violate the covenants for larger loans.

Month_to_maturity: The number of months between the negative price shock and the maturity of the loan. A firm is more likely to violate its covenants if it has a longer effective covenant period.

4.3.2. Test of H1b

H1b hypothesizes that more conservative firms violate their financial covenants sooner. I test this hypothesis by estimating the following hazard model:

\[
\ln h_i(t) = \frac{1}{2} a_{140} + a_{1} \text{Consvi} + a_{2} \text{Cumreti} + a_{3} \text{LogSizei} + a_{4} \text{Leveragei} + a_{5} \text{ROAi} + a_{6} \text{Ratingi} + a_{7} \text{DNWi} + a_{8} \text{Numcovi} + a_{9} \text{Escalatei} + a_{10} \text{Otherdebti} + a_{11} \text{Loansizei} + a_{12} \text{Month_to_maturityi} + \epsilon_i. \\
\delta_{1bP}
\]

The term \( h_i(t) \) represents the instantaneous risk of a covenant violation at time \( t \) for borrower \( i \) conditional on \( i \) surviving to time \( t \), and \( a(t) \) is the baseline hazard. H1b predicts that \( a_{140} \), i.e., the hazard of covenant violations increases with the borrower’s conservatism. Since the variable of interest is the time to covenant violations, I use a hazard analysis that treats time explicitly.18 Specifically, I estimate the widely used Cox proportional hazard model (Cox, 1972), where the
hazard rate does not vary over time and the functional form of the baseline hazard is not required. Compared to the probit regression, the hazard model uses the information in the timing of the covenant violations rather than just the occurrence of the violations, providing more insight about the interaction between conservatism and covenant violations. Compared to a regular OLS regression with the time to violation as the dependent variable, the hazard model corrects for the right-censoring problem, yielding unbiased coefficient estimates of the covariates. To test the hazard model above, I identify the date of the first covenant violation after a negative price shock. If the firm reports a covenant violation, then I define the dependent variable $\text{Num\_quarter}$ as the number of quarters within which the firm reports the covenant violation from the first price shock. If the firm does not report a covenant violation within the search period, I define $\text{Num\_quarter}$ as the number of quarters between the first price shock and the maturity date, or between the first negative price shock and the end of the sample period, i.e., May 31, 2003, whichever is shorter. The control variables are the same as in the probit regression in Section 4.3.1.

**Test of H2**

H23 hypothesizes that more conservative borrowers’ interest rates are lower. I test this hypothesis by estimating the following OLS regression

$\text{Spread}_i = \beta_0 + \beta_1 \text{Consv}_i + \beta_2 \text{Log}\_\text{Size}_i + \beta_3 \text{Leverage}_i + \beta_4 \text{ROA}_i + \beta_5 \text{Rating}_i + \beta_6 \text{Numcovi} + \beta_7 \text{Escalate}_i + \beta_8 \text{Otherdebt}_i + \beta_9 \text{Loansize}_i + \beta_{10} \text{Loanmonth}_i + \beta_{11} \text{Revolver}_i + \beta_{12} \text{PPI}_i + \beta_{13} \text{PPI\_Consv}_i + \epsilon_i.$

The dependent variable Spread is the initial interest rate, i.e., spread over LIBOR, of each loan and the treatment variable is again the level of conservatism. H2 predicts that $\beta_{10} < 0$. In determining the interest rate, lenders consider both firm-specific risk and loan-specific risk. I use Size, Leverage, ROA, and Rating to proxy for firm-specific risk; these variables are measured prior to loan initiation. I use Numcov, Escalate, Otherdebt, Loansize, Loanmonth, Revolver, and PP to proxy for loan-specific risk. Loanmonth, Revolver, and PP are controls that I obtain from either SDC or 10K, 10Q, or 8K filings that further describe the characteristics of the loan. More specifically, Loanmonth: The length of the loan in months. There are two competing hypotheses on the effect of loan maturity on loan pricing. The tradeoff hypothesis argues that lenders are willing to offer long-term loans to risky borrowers at higher spreads. The credit quality hypothesis argues that less risky borrowers signal their credit quality by taking long-term loans. Due to the offsetting effect of these two hypotheses, the sign on this variable is ambiguous. Revolver: A dichotomous variable equal to one for revolving loans and zero otherwise. PP: A dichotomous variable equal to one for performance pricing loans and zero otherwise. Performance pricing has become increasingly popular in corporate loan issuance since the 1990s (Asquith et al., 2005). Under performance pricing, interest rates are directly tied to a pre-specified measure of the borrower’s credit risk, further reducing the lender’s risk. It is still unknown whether performance pricing and debt covenants are substitutes or complements. I include the indicator variable PP to tease out the effect of performance pricing on interest rates. I also include the interaction term PP*Consv to provide additional evidence on how performance pricing affects the sensitivity of interest rates to conservatism.

**EMPIRICAL RESULTS**

This section is organized as follows. Section 5.1 provides descriptive statistics and cross-correlations among variables. Section 5.2 presents test results for the covenant violation hypothesis (H1a and H1b) and the cost of debt hypothesis (H2). Section 5.3 presents robustness checks.

**Descriptive statistics and simple correlations**

Panel A of Table 2 reports descriptive statistics for the negative shock sample of 327 firms. The first three rows of Panel A present the distribution of the dependent variables used to test hypotheses H1a, H1b, and H2. The mean value of Violate indicates that 30% of the sample firms violated their debt covenants. The mean value of Num\_quarter reveals that on average, a covenant violator discloses the violation 5.5 quarters after the shock. The median spread of the sample loans is 150 basis points over LIBOR, 25 basis points higher than
the median spread of the loans in SDC (the SDC sample is discussed in Section 5.3.1). The higher spread indicates that the sample loans might be riskier than the loans in SDC. The next four rows of Panel A present the distribution of the four measures of conservatism. The statistics of the four measures are given in terms of their magnitudes. Recall, however, that the multivariate tests use ranked measures of these variables to avoid spurious inference. The mean values of Consv_coeff and Consv_R2 are greater than one, indicating that on average, the sensitivity of the sample firms’ earnings to bad news is higher than the sensitivity of their earnings to good news, and the explanatory power of bad news to earnings is higher than the explanatory power of good news to earnings. Further, on average the sample firms’ earnings are negatively skewed, as indicated by the positive mean of Consv_negskew. Thus, these three measures of conservatism indicate that the sample firms are conservative prior to loan initiation. In contrast, the last measure, Consv_accrual, suggests that the sample firms accumulate positive nonoperating accruals prior to loan initiation. The next seven rows give the distribution of firm-specific control variables. On average, the size of the shock is significant, amounting to a loss in market capitalization of approximately _54%_. The median total asset of the sample firms is $368 million, higher than that of the median Compustat firm in fiscal year 1998 ($126.75 million). The average long-term debt ratio of the sample firms is 33%, also higher than that of the average Compustat firm (10.24%) by construction. The average ROA of the sample firms is 2%, which is more profitable than the average Compustat firm in the same period (1.1%). Reconciling the fact that firms with an average loss in market capitalization of _54%_ appear more profitable than the average Compustat firm, I find evidence that accounting measures lag stock returns. In particular, the mean ROA of the sample firms drops to _2.4%_ 1 year after, _7.5%_ 2 years after, and _8.9%_ 3 years after a price shock. It therefore appears that ROA catches up with the price shock slowly, over several years. The last four rows of Table 2, Panel A present the distribution of loan-specific control variables. By construction, all loans have at least one financial covenant, and most firms have three covenants (as indicated by the same median); the maximum number of covenants is nine (not reported). The average size of a sample loan is $50 million, about 17% of the average borrower’s total assets. The large size of the loans highlights the economic significance of covenant violations as well as lower interest rates. Finally, the average and median maturity of the loans is 48 months, with a median month_to_maturity of 23 months, indicating that on average the negative price shock occurs in the middle of the loan’s maturity. Table 2, Panel B reports the distribution of the negative shock sample by industry. The sample firms are distributed evenly across all industries as defined by two-digit SIC code, with 29.7% in the Plastic, Glass, & Metal industry, 18.4% in the Wholesale & Retail industry, and 15.9% in the Computers & Electronics industry.
CONCLUSIONS

This paper investigates the contracting benefits of accounting conservatism in the debt contracting process. I find that more conservative borrowers are more likely to violate covenants after a negative price shock, and that lenders lower the interest rates they charge to conservative borrowers. The higher likelihood of covenant violations and the lower interest rates suggest that conservatism benefits both lenders and borrowers, enhancing the efficiency of debt contracting. Additional tests reveal that after controlling for six other earnings attributes (quality, persistence, predictability, smoothness, timeliness, relevance, and conservatism), conservatism is still associated with lower interest rates. In contrast to Francis et al.’s (2004) finding that conservatism does not reduce the cost of equity, the evidence in my paper shows that lenders’ demand for conservative financial reporting differs from that of shareholders. Note that the major conclusions in this paper are based on a restricted sample of firms that experience at least on negative shock and thus cannot be generalized to broader samples. Even though I test the second hypothesis in a broader sample, the debt examined is still restricted to bank loans, rather than public debt or private placements. As such the results herein may not be generalized to all forms of debt. Nevertheless, since accounting conservatism works directly through financial covenants and covenants are rare in both public debt and private placements, bank loans are the appropriate sample with which to test the role of conservatism. One potential avenue for future research is to examine the factors that determine the optimal level of conservatism for each firm. In this paper I document one benefit of conservatism, namely, a reduction in interest rates. According to positive accounting theory, conservatism is also likely to reduce both litigation costs and scrutiny from the tax authorities. However, conservatism is associated with costs. Understanding the determinants of conservatism will help us understand the cost-benefit tradeoffs that firms face in determining their accounting policies.

REFERENCES