COST-BENEFIT TRADE-OFF
OF
ACCOUNTING CONSERVATISM FOR BOND INVESTORS

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I’m grateful to God for succeeding me, with my own highest efforts, in all that I ever sought.

(Hafez, 321:2)

Dedication

To my parents, who have been there for me from day one.

Abstract

I analyze the costs and benefits of accounting conservatism for debtholders by examining its effect on bond pricing. Contractual benefits of conservatism arise because it accelerates the triggering of tripwires built into earnings covenants. On the other hand, conservatism can also give rise to informational costs. The requirement of higher verification threshold for good news relative to bad news results in the pooling of some good news with bad news disclosures, increasing uncertainty when low accounting reports are observed (Gigler, Kanodia, Sapra, and Venugopalan 2009). Consistent with contractual benefits, I find that conservatism reduces bond spreads by making covenants more effective. In contrast, the increased uncertainty due to conservatism leads to higher bond spreads. Overall, I find that the informational cost of increased uncertainty exceeds the contractual benefits of conservatism resulting in higher bond spreads when accounting is conservative.

Table of Contents

List of Tables

List of Figures

1. Introduction

The role of conservatism as a prominent feature of accounting practice is extensively studied in the literature. Following the argument in Watts (2003) that accounting conservatism improves debt-contracting efficiency, prior studies investigate the implications of conservatism for the borrower-lender relationship. Several studies focus on the contractual benefits of conservatism in mitigating agency conflicts between shareholders and debtholders (e.g., Ahmed et al. 2002, Beatty et al. 2008, Ball and Shivakumar 2005), particularly in enhancing the effectiveness of debt covenants (e.g., Zhang 2008, Nikolaev 2010). While prior research documents the benefits of conservatism for debtholders, empirical evidence of the potential costs of conservatism is scarce. In this paper, I analyze the costs as well as the benefits of accounting conservatism by examining its effect on bond pricing at both the initiation stage and in the secondary market.

In private lending, Zhang (2008) shows that accounting conservatism has an overall positive effect on interest spreads (i.e., results in lower interest spreads) because of the timely signaling of default risk through acceleration of covenant violations. It is not clear that the overall positive effect of conservatism observed in private lending extends to the bond market in which investors are widely dispersed and lack access to managerial private information. I expect that accounting conservatism will lead to more informational inefficiency relative to contractual benefits for bond investors in contrast with its effect on private lenders. As such, accounting conservatism may not lead to lower interest spreads in the bond market. I jointly investigate both the informational and the contractual effects of accounting conservatism to understand how conservatism affects bond interest spreads overall.

Theoretical work by Gigler et al. (2009) shows that conservatism can reduce the informational efficiency of debt contracts under plausible conditions. Since conservatism requires higher verification threshold for the reporting of good news relative to bad news, these authors show that conservative accounting results in the pooling of some good news with bad news disclosures, thereby reducing the information content of low accounting reports. Using the Gigler et al. (2009) framework, I first analytically show that the lower information content of bad news disclosures leads to increase in uncertainty due to conservatism and adversely impacts interest spreads. The bond market is an ideal setting to test this prediction of the potential cost of conservatism because the reliance on public information is stronger among bond investors than private lenders who have informational advantage due to their access to inside information (Fama 1985, Nikolaev 2010). In my empirical analyses, I begin by testing the theoretical prediction that higher conservatism increases uncertainty for bond investors especially when accounting reports convey bad news. I then test whether this informational cost due to the uncertainty induced by conservatism increases the cost of debt as reflected in yield spreads of new bond issuances.

The contractual benefits of conservatism arise because it accelerates the triggering of tripwires built into covenants and facilitates the early transfer of control rights to creditors. I test whether this contractual benefit of covenants coupled with conservatism results in lower bond spreads. While conservatism increases the effectiveness of covenants for bond investors, the impact of this benefit on bond spreads is not expected to be that strong. Due to the dispersed nature of arms-length lenders, invoking contractual rights under a bond agreement is costlier and less feasible than in private loans (Myers 1977, Bolton and Scharfstein 1996). As such, in bond agreements relative to private debt, fewer covenants are included, thresholds are set looser, and renegotiation and loan termination following covenant violations are less common (e.g., Smith and Warner 1979, Begley and Freedman 2004, Li 2013). Thus, overall, I expect the informational cost of conservatism to exceed its contractual benefits for bond investors resulting in higher bond spreads.

I use data for a sample of 8,017 U.S. public bonds issued between 1988 and 2016 as reported in the Mergent Fixed Income Securities Database (FISD). My primary measure of firm-quarter conservatism is defined as the difference between the skewness of cash flows from operations and the skewness of income before extraordinary items following Givoly and Hayn (2000) and Beatty et al. (2008). This measure also captures the characterization of conservatism in Gigler et al. (2009) as a stochastic shift in accounting reports. Prior studies have shown that this measure captures the effect of both conditional and unconditional conservatism on accounting reports (e.g., Zhang 2008).[1]

To test the hypothesis that conservatism increases uncertainty among bond investors especially when reports reflect low performance, I regress firms' bond return volatility as a measure of uncertainty on the lagged measure of conservatism, its interaction with a negative earnings indicator, and other determinants of return volatility. Consistent with my prediction, I find that conservatism is associated with higher bond return volatility. Moreover, I find a significantly positive coefficient on the interaction term indicating that conservatism reduces the informativeness of low reports in particular, likely because low reports are more important to bond holders due to their asymmetric payoff functions.

Relying on this finding, I define the informational cost of conservatism as the predicted value of bond return volatility based on the combined effect of conservatism and conservatism interacted with negative earnings. Since conservatism is expected to benefit bond investors by accelerating covenant violations, I capture the contractual benefits of conservatism by using the intensity of earnings-based covenants and the interaction of covenant intensity with conservatism. From a regression explaining bond yield spreads of new issuances, I find that initial bond spreads increase with conservatism-induced uncertainty and decrease with covenant intensity coupled with conservatism. I find that each of the two effects – informational and contractual – remains significant in the presence of the other, which highlights the importance of both channels through which conservatism can affect bond yields. However, when I regress bond yield spreads on the overall measure of conservatism (rather than its cost and benefit), I find that conservatism significantly increases the yield spreads on new bonds. Moreover, this positive association is

[1] Unconditional (or news independent) conservatism refers to the conservative reporting of the book value of assets and liabilities at their inception (e.g., immediate expensing of most R&D outlays, LIFO inventory valuation, accelerated depreciation), whereas conditional (or news dependent) conservatism refers to the accounting of adverse circumstances faster than favorable circumstances (e.g., asset impairment, lower of cost or market of non-financial assets). See Beaver and Ryan (2005) for a comprehensive discussion.

significantly stronger when earnings are negative, supporting my prediction that overall, the informational cost of conservatism exceeds its contractual benefits in the bond market.

To further understand the association between conservatism-induced uncertainty and the cost of bonds, I perform a series of cross-sectional tests. First, I expect that investors of firms with better information environment will have more access to other sources of information and place less reliance on public accounting reports. Consequently, the negative impact of uncertainty due to conservatism on bond investors should be attenuated leading to a lower demand for high interest rates. Conversely, when the information environment of a firm is poor, the increased reliance of bond investors on public reports should lead to a higher demand for uncertainty price protection. Consistent with this prediction, for firms in the highest tercile of analyst following and firm size and the lowest tercile of analysts' forecast dispersion, I find a significantly lower association between bond yield spreads and conservatism-induced uncertainty. Second, due to their asymmetric payoff functions, bondholders will be less concerned about the uncertainty induced by conservatism when borrowers are financially strong or have secured bonds with their assets. Consistently, I find that the informational cost of conservatism has a significantly lower effect on bond interest rates for investment grade, higher rated, and asset-backed bonds.

I also examine the informational role of conservatism in the secondary bond market. Focusing on the secondary market has the advantage that bond agreement terms, such as covenants or stated yields that are the contracting parties' choice variables, are already set at the time of issuance and thus are less likely to influence the bond yields-to-maturity which are mainly based on the market's available information. Moreover, unlike for initial bond issuances, underwriters with access to private information do not play a role in the secondary market. I construct a large sample of 120,612 bond-quarters in the secondary market covering the period 2004-2016 obtained from Trade Reporting and Compliance Engine (TRACE) as well as WRDS (a new data set of bond returns based on TRACE data). Using bid-ask spreads as the measure of uncertainty, I first show that conservatism is positively associated with bid-ask spreads especially in the presence of negative earnings. Consistent with my findings for the new bond issues sample, I find that the conservatism-induced uncertainty is associated with higher yield spreads of traded bonds.

In their joint conceptual framework, the IASB and the FASB appear to downplay the benefits of conservatism as suggested by their statement that "*The board…no longer recognizes accounting conservatism as a desirable quality of accounting*" (FASB 2010 and IASB 2010). Yet, the majority of research studies document the benefits of conservatism (Ball and Shivakumar 2006, Ahmed et al. 2002, Zhang 2008, Callen et al. 2015, LaFond and Watts 2008, Lara et al. 2011, Donovan et al. 2015, among others) and very few focus on the potential downside of reporting conservatively (e.g., Gigler et al. 2009, Guay and Verrecchia 2006, Dyreng et al. 2017). My paper attempts to close this gap by examining the benefits as well as the potential costs of conservatism. My analysis is based on the premise that the relative costs and benefits of accounting conservatism can vary across different stakeholders due to structural differences in their payoffs, information access, monitoring abilities, and renegotiation cost (Bharath et al. 2008, Li 2013, Armstrong et al. 2010, Nikolaev 2010). While prior studies have documented benefits of conservatism in private lending, I find conservatism to impose net costs in the bond market due to the increase in uncertainty generated by the lower information content of bad news (Gigler et al. 2009).

My paper is perhaps the first to explore the effect of conservative reporting on uncertainty as well as bond pricing in the secondary bond market. The secondary bond market provides a powerful setting to test the informational effect of conservatism, because investors' reliance on public reports is arguably stronger than at the bond issuance stage as well as in initial and secondary private loan markets. My findings reveal that conservatism exacerbates information asymmetry in the secondary bond market - in contrast with its marginal impact on the secondary loan market (Wittenberg-Moerman 2008). Overall, my paper contributes to the literature by highlighting that conservatism benefits for bond investors may not be as significant as documented for shareholders or private lenders.

The remainder of this paper is organized as follows. Section 2 discusses the institutional background and related literature. Section 3 develops the hypotheses. Section 4 describes data and variable measurement and presents empirical specifications. Section 5 presents empirical results for the new bond issuance sample as well as the secondary bond market. Section 6 concludes.

2. **Background and Related Literature**

2.1 Bond market setting

Global corporate bond markets have almost tripled in size since 2000 reaching $49 trillion of principal outstanding in 2013, comprising 24% of total corporate financing. The U.S. bond market has played an increasingly important role in corporate borrowing in the past 20 years. During 2016 alone, nearly 1,400 companies issued a total of $1.55 trillion in corporate bonds to fund their operations, amounting to an annual growth rate of 7.5% since 1996.[2] Investment grade bond issuance set an all-time record for the fifth straight year in 2016, with $1,270 trillion raised across 1,065 issues. At the end of 2016, the total value of U.S. corporate bonds outstanding amounted to $8.5 trillion compared to $2.1 trillion in 1996. Moreover, the volume of trade in the secondary corporate bond market has reached $30.0 billion in 2016 exhibiting growth of 68.5% since 2003.[3]

Despite the growing importance of bonds relative to other means of financing, bond investors face several disadvantages relative to equity investors and private lenders. First, unlike shareholders and private lenders, bondholders typically cannot participate in the decision making process of borrowing firms. Stock investors can influence and monitor executives via several channels such as selecting board members, providing compensation and dismissal incentives to

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[2] During the same period, new private corporate loans increased from $1.0 trillion in 1996 to $2.3 trillion in 2016, an annual growth rate of 4.04%. New equity issuances (sum of IPOs and SEOs) at the end of 2016 totaled $197.6 billion, growing at an annual rate of 0.05% since 2000.

[3] Sources: Sifma.org statistics, Thomson Reuter's 2016 "Debt Capital Market Review" and "Global Syndicated Loans Review," Iosco 2014 report on "Corporate Bond Markets," Bloomberg 2016 report on "Global Syndicated Loans".

managers (Jensen and Meckling 1976, Fama 1980, Smith and Watts 1982), posing exit threats (Hirschman 1970), or via proxy fights and takeovers (Shleifer and Vishny 1986). Similarly, private lenders, particularly banks, have extensive means to influence firms' decisions. Not only can these lenders take over control subsequent to default (Diamond 1984, Grossman and Hart 1982, Bolton and Scharfstein 1990), but they can also intervene in corporate decisions by threatening to accelerate or terminate short-term loans in the event of covenant violations. Moreover, in countries with bank-oriented financial systems such as Germany, Japan, and France, bankers have even more power over corporate policies because they act as both lenders and block holders who directly sit on boards of most firms.[4]

Second, bond investors are also at an informational disadvantage relative to both equity investors and private lenders. Private lenders' existence depends upon their ability to efficiently monitor borrowers (Diamond 1984). To achieve this goal they acquire and process a wide range of public and non-public information of their borrowers which places them in a superior informational position relative to bondholders.[5] While both equity and bond investors have access only to publicly available information, the informational disadvantage of bond investors is greater. Board members, as representatives of shareholders, have access to the same insider information as private lenders, so that shareholder rights are better protected. Moreover, the considerably lower liquidity of the secondary bond market relative to the stock market may impede the price discovery process in the bond market.[6]

In this paper, I study the informational and contractual effects of conservatism in the bond market. Since bond investors rely on public information more than firms' other major claimants

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[4] Ownership of common stock by banks and other financial institutions was 12.1%, 10.5%, 9.0% and 2.3% of total shares outstanding in France, Germany, Japan and the U.S., respectively, in 2002 (Tirole 2006).
[5] Consistently, Altman, Grande and Saunders (2010) find the secondary loan market to be informationally more efficient than the secondary bond market prior to a loan default.
[6] Kwan (1996), Gebhardt, Hvidkjaer and Swaminaathan (2005) and Downing, Underwood and Xing (2009) find that the corporate bond market is less informationally efficient than the stock market. Hotchkiss and Ronen (2002), however, find that both markets are equally efficient in incorporating news.

while having the least influence on corporate decisions, including accounting choices, I expect the bond market to provide an ideal setting for investigating the informational effects of accounting conservatism. This is consistent with Bharath et al. (2008) and Nikoleav (2010) who posit that accounting quality attributes could have a more pronounced effect on bond investors compared to private lenders.

2.2 Accounting regulation and conservatism

In recent years, there appears to be a gap between the accounting standard-setters' view of conservatism and the accounting empirical literature as regards the potential costs of conservative reporting. The IASB/FASB joint conceptual framework excludes both conservatism and prudence from the list of desirable qualities of accounting information. In their joint discussion, the two boards agree that neutrality of accounting has higher importance than conservatism or prudence: "*The boards concluded that describing prudence or conservatism as a desirable quality or response to uncertainty would conflict with the quality of neutrality.*" (IASB, 2006, BC2.22). The vote to exclude conservatism and prudence was not a unanimous one; some respondents to the "Discussion Paper and Exposure Draft" disagreed with this view and suggested that the framework should include either conservatism or prudence because bias should not always be assumed to be undesirable, especially in circumstances when bias produces information that is more relevant to some users (BC3.27). Moreover, others stated that conservative estimates of assets, liabilities, income, or equity could counteract the effects of managerial tendency to report optimistic estimates (BC3.28).

Ultimately, the final draft excluded conservatism and prudence from the list of desirable attributes of accounting, since they could lead to understatement of assets or overstatement of liabilities in one period and overstatement of financial performance in subsequent periods - a result that the IASB and the FASB did not view as either prudent or neutral. As reflected in their discussions, the standard-setters were considering both benefits and costs of conservatism as well as their differential importance for different users. In line with the IASB/FASB's reasoning, Lambert (2010) calls for future research to address the important question of how the costs and benefits of conservatism weigh up against each other and what degree of accounting conservatism is optimal, rather than viewing conservatism as what he phrases as "zero-one or all-or-nothing". This study examines the effect of potential costs as well as benefits of conservatism for bond investors as a response to the call for further research in Lambert (2010).

2.3 Prior research

2.3.1 Contractual benefits of conservatism

Accounting information provides valuable inputs to enforceable contractual arrangements, facilitating outsiders of a firm to monitor and discipline insiders who enjoy informational advantage and controlling rights. Following the argument in Watts and Zimmerman (1986) and Watts (2003a, 2003b) that conservatism can enhance the efficiency of debt contracting, the beneficial role of conservatism for debt holders has been extensively studied.

The contractual benefit for debt holders arises because conservatism accelerates the triggering of tripwires built into covenants which provide a timely signal of default risk and facilitate the early transfer of control right to creditors (Ball and Shivakumar 2005). In line with this argument, Zhang (2008) finds that the frequency of covenant violations for borrowers that experienced severe negative shocks increases with the degree of reporting conservatism. Furthermore, Ahmed et al. (2002) find that firms with greater bondholder–shareholder conflicts over dividend policy have higher levels of conservatism, supporting the beneficial role of conservatism in mitigating agency problems inherent in debt contracting. More recently, Tan (2013) finds that financial reporting conservatism increases immediately after covenant violations. Similarly, Donovan et al. (2015) document that creditors of firms with more conservative accounting prior to default have significantly higher recovery rates and speedier bankruptcy resolution. Moreover, they show that these benefits are stronger if the borrower violated covenants before the default.

Beatty et al. (2008) also state that the inclusion of income escalator provisions in private lending agreements is consistent with lenders requiring conservative modifications to the contracts. However, Li (2010) documents that conservative adjustments to private debt contracts (i.e., including certain types of negative earnings but excluding the corresponding positive earnings), are not common in the negotiated measurement rules and all such conservative (one-sided) adjustments are aimed at removing transitory earnings. In contrast, using a sample of actual realizations of earnings used for determining covenant compliance in loan contracts, Dyreng, Vashishtha, and Weber (2017) find that these adjusted earnings are less conservative than GAAP earnings.

Another line of research investigates the complementarity effect of accounting conservatism and creditors' protection via covenants. The debt covenant hypothesis (Watts and Zimmerman 1986) predicts that managers of borrowing firms have incentives to make accounting decisions that prevent the violation of covenants thereby impairing their effectiveness in reducing agency conflicts. Sweeney (1994) finds results consistent with this prediction. Beatty et al. (2008) and Nikolaev (2010) argue that conservatism could address this problem by undoing management's positive bias, thus accelerating the violation of covenants. In a sample of private loans, Beatty et al. (2008) document that the use of income escalators and tangible net worth covenants in credit agreements increases with reporting conservatism. Nikolaev (2010) states that covenants protect creditors only if the accounting system is conservative. In a sample of bond issuances, he documents that reliance on different groups of covenants increases with conservatism. These studies suggest that conservatism and covenants have complementary effects in reducing agency costs of debt. In sum, some prior studies find evidence that conservative accounting helps to mitigate agency conflicts between shareholders and debtholders.

2.3.2 Conservative accounting and the cost of debt

Very few prior studies examine the effect of accounting conservatism on the cost of debt. Since conservatism reinforces the contractual protection of creditors against borrowers' wealth appropriation, we would expect to observe a positive impact of conservatism on interest spreads. Ahmed et al. (2002) provide indirect evidence by showing that, for a sample of firms facing bondholder-shareholder conflict over dividend policy, accounting conservatism improves bond-issuers' credit ratings. For a sample of 314 private loans of firms that experienced severe negative shocks during 1999-2000, Zhang (2008) finds a negative association between yield-spreads and accounting conservatism.[12] More recently, Callen et al. (2015) show that when information asymmetry over payouts is high, high levels of conservatism coupled with tight covenants reduce private loan spreads, whereas no such relationship exists when the extent of information asymmetry is low.

2.3.3 Informational impact of conservatism

Direct empirical evidence on the informational impact of conservatism on creditors is rather limited. Watts (2003a) argues that although conservatism is a means to offset managers' positive earnings bias, in practice, it more than offsets managerial bias resulting in deferral of earnings and understatement of net assets and cumulative earnings. Ball and Shivakumar (2005), on the other hand, state that timely loss recognition benefits creditors by providing more accurate ex-ante information for loan pricing. Guay and Verrecchia (2006) distinguish between potential contractual benefits and informational inefficiencies of timely loss recognition. They emphasize that for timely loss recognition to represent an efficient contracting mechanism, its contracting benefits must more than compensate its informational inefficiencies. Similarly, emphasizing the

[12] In contrast with multivariate analyses, univariate analyses in both Ahmed et al. (2002) and Zhang (2008) show that the sign of the relation between credit ratings and conservatism varies depending on the measure of conservatism used.

potential costs and benefits of conservative reporting, Lambert (2010) argues that conservatism has been a necessary response to measurement problems but not a desired attribute of accounting per se.

Empirically, Ball et al. (2008) investigate the effect of conservatism on the structure of syndicated loans. These authors find that arrangers of syndicated loan agreements hold a smaller proportion of new loans when borrowers' accounting reports capture credit deterioration in a timely fashion, indicating lower information asymmetry among syndicate members. Wittenberg-Moerman (2008) documents that timely loss recognition lowers the information asymmetry (as measured by the bid-ask spread) among the players of the secondary loan market. On the theory side, the statistical characterization of conservatism in Gigler et al. (2009) highlights that both conditional and unconditional types of conservatism will increase the information content of high earnings values and decrease that of low earnings values. Similarly, Beja and Weiss (2006) theoretically demonstrate that the type of conservatism that requires reporting less optimistic estimates (e.g., lower of cost or market) reduces upside estimation errors at the cost of increased downside errors.

The studies discussed above collectively suggest that lenders have an asymmetric demand for timely loss recognition and that higher verification thresholds for gains relative to losses will result in more release of bad news than good news. Nonetheless, to what degree the benefits of increased timeliness of losses are offset by the costs of asymmetric reporting remains an unresolved question; the answer will likely vary across different markets and stakeholders as I discuss below.

3. **Hypothesis Development**

3.1 Informational costs of conservatism

As discussed above, accounting conservatism could affect yield spreads of debt via contractual and informational channels. Gigler et al. (2009) argue that, by requiring stricter verifiability standards for disclosing good news compared to bad news, conservatism results in more disclosure of income decreasing events relative to income increasing events. These authors characterize the statistical properties of conservatism and demonstrate that the variation in the degree of conservatism leads to the variation in the information content of financial reports. They argue that, despite the increase in the frequency of bad news disclosure due to conservatism, such reports would have lower information content. These authors expect conservatism to increase the information content of good news reports and reduce the information content of bad news reports.

I extend the analysis in Gigler et al. (2009) by constructing a simple two-period model presented in Appendix I. In this section, I discuss the intuition behind the model and its predictions. At the beginning of the first period, a creditor and a borrower write a lending agreement in which the creditor's payoff is determined by the realization of cash flows at the end of the second period. At an interim date, the accounting system generates a high or low report based on news about future cash flows and the degree of accounting conservatism. If the report reflects poor performance, a covenant included in the lending agreement transfers control rights to the creditor who will liquidate the firm at a low value. Consistent with Gigler et al. (2009), I capture the effect of conservatism on the mapping between the input to the accounting system and the output (i.e., report), by assuming that the accounting system reports bad news immediately with probability one, but holds good news disclosure to a higher verification threshold. The stricter verifiability requirement for good news results in good news being reported as good with a probability less than one. This reporting regime will result in the immediate disclosure of all bad news but it pools it with some good news which temporarily is misclassified as bad news. This pooling effect increases the creditor's uncertainty about the borrower's true cash flows when low reports are observed.[14]

Consistent with the model, I expect conservatism to increase bondholders' uncertainty about the borrowers' future cash flows especially when accounting reports reflect low performance. My first hypothesis tests this prediction:

[14] In a similar vein, Bertomeu, Darrough, and Xue (2017) show that conservatism, by increasing the quality of high earnings reports, provides more useful information in eliciting effort which enhances the efficiency of pay-for-performance contracts. On the other hand, the increased frequency of unfavorable reports due to conservatism incentivizes managers to manipulate earnings upwards.

H1a: Conservatism increases bondholders' uncertainty.

H1b: Conservatism increases bondholders' uncertainty significantly more when issuers report losses.

Gigler et al. (2009) predict that while conservatism decreases the information content of low reports, it increases that of high reports. Due to their asymmetric payoff functions, creditors are less concerned about the quality of high accounting reports than low ones. Therefore, I do not expect the higher informativeness of positive reports to offset the costs associated with the reduction in the informativeness of negative reports. Accordingly, my model predicts that bond investors will price protect themselves ex-ante against the increase in uncertainty due to conservatism by demanding higher yield spread on new bonds. My second hypothesis is stated as follows:

H2: The uncertainty induced by accounting conservatism increases bond yield spreads.

3.2 Contractual benefits of conservatism

Debt covenants play a central role in mitigating the agency problems between debtholders and shareholders. When companies approach financial distress, covenants govern the transfer of control rights from shareholders to debtholders to limit firms' opportunistic expropriation of wealth from debtholders. (Jensen and Meckling 1976, Myers 1977, Smith and Warner 1979) In their seminal paper, Jensen and Meckling (1976) predict that firms voluntarily forfeit their flexibility in order to lower bondholders' agency risk and reduce the cost of debt financing.[16] Therefore, I expect more restrictive earnings performance triggers to increase lenders' expected payoffs and thus reduce bond yield spreads.

[16] In contrast, Miller (1977) discusses the co-presence of covenants and convertibility in debt contracts. He calls covenants as the "neutral mutation" of security design and including them in contracts as habitual with no clear cost or benefit.

However, as the "debt covenant hypothesis" predicts, managers have incentives to make reporting choices that reduce the likelihood of violation of accounting-based covenants (Watts and Zimmerman 1986 and 1990, Sweeney 1994, Dichev and Skinner 2002, DeFond and Jiambalvo 1994). As prior literature documents, conservatism addresses this agency problem by accelerating the triggering of tripwires built into covenants and facilitating the early transfer of control rights to creditors, thereby reducing the wealth appropriation risks that creditors would bear otherwise (Watts and Zimmerman 1986, Watts 2003a, Zhang 2008, Nikolaev 2010). Therefore, I capture the contractual benefits of conservatism as the combined effect of conservatism and the intensity of earnings covenants. I focus on earnings covenants as opposed to a broader set of covenants because the effect of conservatism is typically captured by its effect on reported earnings. My third set of hypotheses summarizes the above discussion:

H3a: The intensity of earnings covenants reduces bond yield spreads.

H3b: The intensity of earnings covenants reduces bond yield spreads significantly more when accounting conservatism is high.

3.3 Overall effect of conservatism on bonds yield spreads

Having identified the two separate channels through which accounting conservatism affects bond yield spreads, I next make predictions about the overall association of conservatism and yield spreads for bonds. Prior studies have documented that conservatism reduces the cost of borrowing in private loans (Zhang 2008). However, due to structural differences between bonds and private loans, it is not clear that the same effect would be observed in the bond market.

I expect the contractual benefits of conservatism to be less significant for bonds because prior literature highlights that contractual benefits for bondholders are in general weaker than for private lenders. Myers (1977), Diamond (1984), Bolton and Scharfstein (1996) predict that the dispersion of outside creditors can make invoking of contractual rights costly and less feasible.[18] Even though bond contracts give control rights to bondholders via inclusion of covenants, following a technical default, the dispersed bondholders must overcome costs of collective action, such as information processing costs, before their control rights can be exercised. Moreover, the coordination of successful renegotiation and effective collective action against borrowers suffers from information and free-rider problems (Rajan 1992).

Consistent with minimal benefits of control rights transfer and high cost of recourse in the event of technical default for bonds, prior studies document that on average bond agreements include fewer and less restrictive covenants compared to loan contracts (e.g., Smith and Warner 1979, Begley and Freedman 2004, Nini et al. 2009). As a result, technical defaults are more common in private loan issues (Kahan and Tuckman 1995, Verde 1999, Chen and Wei 1993)[19]. In the event of bond covenant violations, renegotiation and loan termination are less common (Chava and Roberts 2008). Also, since the U.S. legal system includes the "Doctrine of Waiver," if bondholders waive their right against a violation once, they effectively could give up that right in the future as well (Rajan and Winton 1995). Additionally, while private loan contracts mostly include maintenance covenants which require borrowers' continued compliance, bond covenants typically are incurrence covenants which only require compliance when the borrower intends to take certain actions. As such, even when borrowers' financial ratios fall below incurrence covenants thresholds, it may not trigger a technical default for an extended period of time. Therefore, since

[18] The discussion about the fundamental differences between bond investors and private lenders goes back to Dewing (1914) who states in his book "Corporate Promotions and Reorganizations" that: "[banks] have been more alert to the situation than bondholders because they are in closer touch with the business."
[19] Verde (1999) finds that restrictions in bond contracts relative to loans are "generally loose and add little value in protecting bondholders". Similarly, Kahan and Tuckman (1993) who also compare bond and loan agreements report that typically private lending contracts "more aggressively control the actions of shareholders by setting various covenants more tightly".

the contractual protection of bondholders tends to be weak, I do not expect the contractual benefits of conservatism (via acceleration of covenant violations) to be that strong for bond investors.[20]

On the other hand, the informational cost of conservatism is likely to be more significant for bond investors than for private lenders. This is because, while private lenders have access to extensive information during the course of the lending agreement, a typical arm's-length bondholder receives only public information. Fama (1985) argues that for firms with high information asymmetry it would be cheaper to grant one agent (loan arranger) direct access to inside information than to produce a wide range of public information to make bond issuance a viable method of financing for such firms.

During the process of lending, private lenders receive a large set of information, including information on firm's projections, ability to meet targets, reliability and competence of personnel, which are sometimes generated and communicated even in real-time (Rajan 1992). Additionally, subsequent to signing credit agreements, private lenders have an ongoing raft of confidential correspondence with issuers which includes periodic financial disclosures, advance warnings of earnings results, covenant compliance information, amendment and waiver requests, financial projections, as well as plans for acquisitions or dispositions (Wittenberg-Moerman 2008). Note that Regulation Fair Disclosure (Reg FD), which prohibits selective disclosure of nonpublic information, exempts issuers to disclose such information if the offering is not required to be registered under the Securities Act of 1933 (e.g., private loans).[21] Much of the information that private lenders receive is material financial information that may remain out of the public domain for a long period until it is publicly disclosed or revealed via bank mark-to-market pricing services

[20] Note that bondholders' protection is generally achieved by granting them higher seniority relative to private loans rather than by including state-contingent terms in contracts. Private loans, especially bank loans, usually stand last or close to last in priority among firms' fixed payment contracts (Fama 1985).

[21] Initially, credit agencies were also exempted from Reg FD. However, Section 939B of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 amended Reg FD to eliminate this exemption. Following this amendment, firms can disclose material information to credit agencies only if an agreement between the issuer and the credit rating agency imposes a confidentiality obligation or establishes the requisite fiduciary duty.

or CDS trades. In contrast, bondholders, as outsiders, can only rely on publicly available information that borrowers disclose or information from other public sources such as independent audits and bond ratings (Fama 1985).

In addition to access to privileged information, private lenders also have more incentive to collect information about borrowers (Bushman et al. 2010, Li et al. 2016, Prilmeier 2017, Dichev and Skinner 2002). For example, Rajan and Winton (1995) demonstrate that banks, due to higher intensity of covenants included in loan agreements, have higher incentives to monitor and gather information about borrowers than public bond lenders.[22] Collectively, prior evidence shows that privileged access and independent information acquisition enhances the information environment in the private lending setting.

Consistent with significant contractual benefits and low informational costs, Zhang (2008) shows that accounting conservatism overall leads to lower interest spreads for private lenders. In contrast, bond investors are informationally disadvantaged as discussed above leading to higher informational costs of accounting conservatism (Gigler et al. 2009). Since the informational cost of conservatism is expected to be high and the contractual benefits of conservatism are expected to be weak for bond investors, I predict that, overall, accounting conservatism increases bond yield spreads. Thus, in contrast with the prior finding that accounting conservatism reduces interest spreads of private loans (Zhang 2008), my fourth hypothesis is as follows:

H4a: Accounting conservatism increases the yield spreads of bonds.

H4b: Accounting conservatism increases the yield spreads of bonds significantly more when issuers report losses.

4. **Data, Sample and Variable Definitions**

[22] The theoretical explanation for the value of information acquisition after a covenant violation was first studied in Townsend's (1979) costly state verification (CSV) model.

4.1 Data and sample

The primary data for this study is compiled from different sources. I use the Fixed Income Securities Database (FISD) to obtain data for new bond issuances including covenants and bond ratings at issuance, CRSP for stock return data, benchmark treasury yields, corporate's S&P ratings and historical CUSIPS information, CRSP/Compustat quarterly database for firms' quarterly accounting data, Trades Reporting and Compliance Engine (TRACE) for secondary bond market intraday transactions, and the new WRDS Bond Returns dataset for bond yields and bid-ask spreads.

I restrict the sample to 1988-2016 period. My sample starts in 1988 because I require uniformly-defined quarterly cash flow information used to construct my main measure of accounting conservatism. I exclude bond issues that are not offered by U.S. domiciled firms (Yankee), and those which are not denominated in U.S. dollars. I also exclude private placements, 144a, convertible, exchangeable, and puttable issues as they are hybrid issues which share properties with other classes of securities (Edward, Harris, and Piwowar 2007, Kerr and Ozel 2015, and Bessembinder, Kahle, Maxwell, and Xu 2008). Furthermore, I require bonds to have data on offering yield, amount, offering date, maturity, seniority, covenants, and security level available on FISD. My final sample is the intersection of this sample with other required data and contains 8,017 observations of new bond issues.

To construct the firm-quarter bond return volatility measure, I use intra-day corporate bonds transaction data on the Trade Reporting and Compliance Engine (TRACE) dataset provided by the Financial Industry Regulatory Authority (FINRA). After the National Association of Securities Dealers (NASD) completed phase 3 of the TRACE project, TRACE covers 99% of all OTC transactions and 95% of all secondary transactions of U.S. corporate bonds (Edwards, Harris, and Piwowar 2007). Moreover, after 2005, FINRA requires all OTC trades to be reported within 15 minutes. The only transactions which are not reported in TRACE are those taking place on exchanges such as the NYSE. To obtain bond daily prices, I follow the procedure described in

Bessembinder et al. (2009) and Dick-Nielson et al. (2012) and eliminate all cancellations, corrections, reversals, commission and special trades, single trades larger than offering size, and truncated top and bottom 1% of the remaining clean prices to minimize the effect of erroneous observations. Then, I define bond daily prices as the trade weighted average of all daily transactions. To construct quarterly return volatility, I impose further liquidity and duration requirements on quarterly bond transactions to ensure return volatility captures the underlying corporate information. I require bonds to be traded at least 45 times per quarter and first and last trades of each quarter to be at least 41 trading days apart, so they occur in the first and last months of corresponding fiscal quarters respectively (Lin et al. 2011 and Bao et al. 2011). The intersection of this sample with other required data yields 24,041 firm-level and 83,482 bond-level observations.

I also extract the secondary bond market's bid-ask information from the new WRDS Bond Returns dataset. This dataset contains firm-level quarterly bond transaction data such as quarterly yields, returns, and average bid-ask spreads. Merging this dataset with other required variables results in 120,612 firm-quarter observations. All variables are truncated at the top and bottom 1% of observations to reduce the effect of outliers.

4.2 Conservatism measure

My primary measure of firm-quarter conservatism is defined as the difference between the skewness of cash flows and the skewness of earnings following Givoly and Hayn (2000) and Beatty et al. (2008). For each firm-quarter, I measure conservatism as the difference between the skewness of operating cash flows (deflated by assets) and earnings before extraordinary items (deflated by assets) using a maximum of 20 and a minimum of 5 prior quarters. Thus, higher values of this measure reflect higher conservatism.

I use this measure as my primary conservatism measure for several reasons; first, it captures the characterization of conservatism in Gigler et al. (2009) as a stochastic shift in accounting reports which I employ to develop my analytical predictions. Second, as discussed earlier, in their joint conceptual framework, FASB and IASB state that their main concern about conservative (and prudent) reporting is the introduction of bias into reports. From a statistical standpoint, bias in a random variable can be expressed as the third moment of its distribution. Thus, I use a relative skewness-based measure of conservatism to directly capture potential reporting biases. Third, prior literature has shown that this measure captures the effect of both conditional and unconditional conservatism on accounting reports (Givoly and Hyan 2000, Zhang 2008, Gigler et al. 2009). While the skewness measure is appealing in the context of this paper, in robustness tests, I also use negative non-operating accruals (Givoly and Hayn 2000, Ahmed and Duellman 2007, and Beatty et al. 2008), the un-amortized portion of R&D expenses (Penman and Zhang 2002), and the firm-specific asymmetric timeliness measure of conservatism (Basu 1997) due to its popularity in the accounting literature.

4.3 Covenants

Since my primary conservatism measure, is the skewness of earnings relative to that of cash flows, I limit attention to earnings-based covenants to capture the reinforcing effect of covenants in the presence of conservatism. I define the intensity of earnings covenants (*NEarn_Cov*) as the total number of covenants explicitly related to earnings as reported on the FISD dataset (i.e., fixed_charge_coverage_is, fixed_charge_coverage_sub, net_earnings_test_issuance). Thus, this variable can take a value between 0 and 3. I also include the total number of bond covenants ($NCov$) as a control variable in all empirical specifications. This variable is defined as the sum of dividend, investment, financing, accounting and other covenants as classified in Nikolaev (2010) and can vary between 0 and 22.

4.4 Empirical specifications

4.4.1 Conservatism and uncertainty in the bond market

To test my first hypothesis that conservatism increases uncertainty among bond investors especially when reports reflect low performance, I regress firms' quarterly bond return volatility, as a proxy for bond investors' uncertainty, on the lagged measure of conservatism as well as its interaction with an indicator variable that takes a value of one for accounting loss-quarters. I control for several firm-level variables that could affect the volatility of bond returns as well as quarter and firm fixed effects. To test H1a, I use the following specification and expect β_1 to be significantly positive:

$$RetVol_{ijt} = \beta_0 + \beta_1\, Conserv_{jt-1} + \beta_2 ROA_{jt-1} + \beta_3 Lev_{jt-1} + \beta_4 Size_{jt-1} + \beta_5 BM_{jt-1} + \beta_6 CFOVol_{jt-1} + \beta_7 StockRet_{jt} + \beta_8 Rating_{jt} + u_i + v_t + \varepsilon_{ijt} \quad (1)$$

where i, j, and t are bond, firm, and quarter indices, respectively. To test H1b, I augment equation (1) with its interaction with a loss variable (as defined below) and expect β_2 to be significantly positive:

$$RetVol_{ijt} = \beta_0 + \beta_1 Conserv_{jt-1} + \beta_2 Conserv_{jt-1} * Loss_{jt-1} + \beta_3 Loss_{jt-1} + Controls + u_i + v_t + \varepsilon_{ijt} \quad (2)$$

where $Controls$ is the same set of control variables included in equation (1). $RetVol$ equals the quarterly measure of bond return volatility defined as the standard deviation of daily bond returns during a quarter. I define $Loss$ as the fraction of the past 20 quarters with negative earnings before extraordinary items.

I control for several known determinants of return volatility following Bao and Pan (2013) and Rajgopal and Venkatachalam (2011). Vuolteenaho (2002) has shown that returns can be decomposed into news about expected return and expected cash flows. Therefore, I control for the volatility of firms' prior cash flows ($VCFO$) because variation in cash flows is likely to be mirrored in variation in returns. I also, control for leverage (Lev) and bond ratings ($Rating$) because both capture firms' financial distress risk which can affect the volatility of bond returns. I expect firms' volatility to increase with leverage and decrease with ratings. I also expect returns of smaller firms to be more sensitive to corporate news as they have less ability to absorb negative corporate shocks and fewer assets to compensate lenders during the bankruptcy process. I predict the volatility of bond returns to be negatively associated with firm size ($Size$). I control for firms' growth opportunities by including the book-to-market ratio (BM) because growth firms are more likely to have volatile performance and returns. Since bondholders have fixed claims against borrowers' value, they are likely to be more sensitive to corporate news when borrowers are less profitable. Thus, I expect, firms' profitability (ROA) to reduce the volatility of bond returns. Additionally, I control for corporate news that is known to the stock market which could have an impact on the bond market by including the compounded stock returns of the given quarter ($StockRet$).

4.4.2 Informational cost of conservatism

My second hypothesis (H2) predicts that the uncertainty induced by accounting conservatism increases bond yield spreads. I test this prediction using the following empirical specification:

$$Spread_{ijt} = \beta_0 + \beta_1 InfoCost_{jt-1} + \beta_2 ROA_{jt-1} + \beta_3 Lev_{jt-1} + \beta_4 Size_{jt-1} + \beta_5 BM_{jt-1} + \beta_6 OfferAmt_{ijt} + \beta_7 Rating_{ijt} + \beta_8 Maturity_{ijt} + \beta_9 Seniority_{ijt} + \beta_{10} NCov_{ijt} + \beta_{11} Asset\_Backed_{ijt} + \beta_{12} Redeemable_{ijt} + Offer\_Mnth_{ij} + Industry_i + \varepsilon_{ijt} \quad (3)$$

where *i* and *t* represent bonds and offering periods, respectively. The dependent variable, *Spread*, is the yield spread of new bonds defined as the offering yield minus the yield of treasury securities issued during the same month with the closest maturity date to that of the corresponding bond.

$InfoCost$ equals the volatility of bond returns induced by conservatism and the interaction of conservatism ($Conserv$) and $Loss$ variables from the firm-specific regression (2). The parameters of equation (1) are estimated separately for each new bond issuance over the same 5 to

20 prior quarters that are used to calculate the conservatism measure. Then, *InfoCost* is defined as the predicted volatility of returns explained by the most recent values of $Conserv$ and its interaction with $Loss$, i.e., $InfoCost_{jt} = \hat{\alpha}_{j1}\, Conserv_{jt} + \hat{\alpha}_{j2} Conserv_{jt} * Loss_{jt} + \hat{\alpha}_{j3} Loss_{jt}$. I predict the coefficient on $InfoCost$ (β_1) to be significantly positive, confirming that uncertainty induced by conservatism increases the yield spread of new bonds.

In equation (3), I also include several firm and bond specific control variables that are expected to impact bond interest rates. I expect larger and more profitable firms to issue bonds at lower interest rates as the extent of bondholder-shareholder conflict is potentially less severe. Similarly, higher leverage is associated with higher expected default and bankruptcy risk which should increase bond interest rates. I include *ROA*, *Lev*, *BM*, and *Size* as defined in the previous section to control for firm-level determinants of the cost of borrowing (Fama and French 1993, Gebhardt et al. 2005, Zhang 2008, Ahmed et al. 2002). Another subtle reason for including firm profitability (*ROA*) is to control for the mechanical association between earnings skewness and the mean earnings. As earnings become more negatively skewed, its mean also shifts to the left which could cause an increase in bond spreads. However, my main conjecture is that conservatism increases yield spreads by increasing uncertainty rather than by simply lowering operating performance measures. Controlling for earnings profitability ensures that any association between conservatism and yields is not due to a decline in operating performance. I also control for other terms of bond contracts as they are simultaneously determined with interest rates. I expect higher bond ratings ($Rating$), higher bond seniority ($Seniority$), and asset-backed bonds ($Asset\_Backed$) to have lower interest rates as they reflect lower risk of default and lower agency conflict between borrowers and lenders (Blume et al. 1991, Gebhardt et al. 2005, Bessembinder et al. 2008, Zhang 2008, Ahmed et al. 2002). I also, include bond issue size ($Offer\_Amt$), time to maturity ($Maturity$), and total number of included covenants ($NCov$), and an indicator for redeemable ($Redeemable$) bonds (Blume et al. 1991, Gebhardt et al. 2005, Zhang 2008). I do not have any prior expectations about their effect on interest rates, because prior literature finds that, beyond contractual values, these bond agreement terms could indicate other offsetting factors. For instance, while intensity of covenants could reduce the flexibility of borrowers to expropriate wealth from lenders (Beatty et al. 2002), it could also signal the severity of agency conflict between the two parties (Li et al. 2016). Similarly, while longer duration and larger size of bonds could increase lender exposure to borrowers' risk, it could signal the credibility of the borrower as well.

4.4.3 Contractual benefits of conservatism

My third set of hypotheses predicts that earnings covenants reduce bond yield spreads and that this effect gets reinforced with level of accounting conservatism. To test H3a and H3b, I use the following two empirical specifications:

$$Spread_{ijt} = \beta_0 + \beta_1 NEarn\_Cov_{ijt} + Controls + Offer\_Mnth_{ij} + Industry_i + \varepsilon_{ijt} \quad (4)$$

and,

$$Spread_{ijt} = \beta_0 + \beta_1 NEarn\_Cov_{ijt} + \beta_2\ Conserv_{jt-1} + \ \beta_3 Conserv_{jt-1} * NEarn\_Cov_{ijt} + Controls + Offer\_Mnth_{ij} + Industry_i + \varepsilon_{ijt} \quad (5)$$

where $Controls$ are same control variables used in equation (3). $NEarn\_Cov$ equals the intensity of operating performance covenants defined as the number of earnings-based covenants included in new bond contracts. H3a predicts that the coefficient on $NEarn\_Cov$, β_1, in equation (4) is significantly negative.

To capture the reinforcing effect of accounting conservatism and intensity of earnings covenants, I interact $Conserv$ and $NEarn\_Cov$ in equation (5). A significantly negative coefficient on the interaction term, β_3, will confirm the prediction in H3b. Thus, I refer to the combined effect of conservatism and earnings covenants ($Conserv * NEarn\_Cov$) as the "contractual benefit" of conservatism.

4.4.4 Overall effect of conservatism on bond yield spreads

Lastly, I test the overall effect of conservatism on bond yield spreads (H4) by regressing yield spreads ($Spread$) on conservatism ($Conserv$) and other control variables, where indices and control variables are identical to those in equation (3).

$$Spread_{ijt} = \beta_0 + \beta_1 Conserv_{jt-1} + Controls + Offer\_Mnth_{ij} + Industry_i + \varepsilon_{ijt} \quad (6)$$

and,

$$Spread_{ijt} = \beta_0 + \beta_1 Conserv_{jt-1} + \beta_2 Conserv_{jt-1} * Loss_{jt-1} + \beta_3 Loss_{jt-1} + Controls + Offer\_Mnth_{ij} + Industry_i + \varepsilon_{ijt} \quad (7)$$

H4a predicts that the coefficient on $Conserv$, β_1, in equation (6) is significantly positive. To test H4b that the effect of conservatism on bond yield spreads is stronger when accounting reports convey bad news, I interact $Conserv$ and $loss$ in equation (7). A significantly positive coefficient on the interaction term, β_2, will confirm the prediction in H4b.

5. Empirical Results

5.1 Univariate results

Table 1 provides descriptive statistics for the sample of new bond issues. The average new bond offering size is \$472.4 million. The average (median) duration of bonds is 11.3 (9.9) years. The average (median) number of covenants included in bonds is 6.7 (6.0), and the average (median) number of earnings covenants is 0.38 (0.0). The mean and median bond credit ratings at issuance are BBB and BBB+, respectively. The yield spreads on new bonds are on average 1.88% with a median of 1.43%. The reported income before extraordinary items of issuing firms on average exhibits more negative skewness than operating cash flows (positive difference of 0.67) indicating that on average issuing firms report income more conservatively. Moreover, firms that issue bonds appear to report income more conservatively compared to the Compustat population for which the positive difference in skewness is 0.616 (untabulated). Lastly, issuing firms on average are larger and more profitable, and have higher leverage ratios compared to the population of issuing and non-issuing public firms. The average quarterly ROA, market capitalization, and leverage are 0.958%, $26.4 billion, and 0.287 for issuing firms compared to -0.021%, $1.82 billion, and 0.186, respectively, for Compustat firms.

5.2 Multivariate results

5.2.1 Conservatism and uncertainty in the bond market

Columns 1 and 2 of Table 2 present results of estimating equations (1) and (2) to test H1a and H1b at the bond-quarter level. I include quarter and issue fixed effects to control for aggregate trends and time invariant characteristics of bond issues. Standard errors are clustered at the issue level and are robust with respect to serial correlation and cross-sectional heteroscedasticity of error terms. Consistent with H1a, lagged accounting conservatism is significantly positively associated with quarterly bond return volatility (coefficient=0.011, p-value <0.001). Moreover, as can be seen in the second column, the coefficient of the interaction term of conservatism and percentage of prior loss periods is significantly positive. This result confirms H1b that the effect of conservatism on bond investors' uncertainty significantly increases with reported losses. The coefficient estimates on control variables are all as expected. The coefficient estimates on *ROA*, stock return, and *Rating* are significantly negative and the coefficient on *Leverage* is significantly positive indicating that firms with lower agency conflict and probability of financial distress exhibit lower variation in bond returns.

To alleviate concerns about the influence of firms with multiple outstanding bonds, I also report the effect of conservatism on bond return volatility at the firm level by replacing the individual bond return volatility with the (equally-weighted) average return volatility of all bonds of the firm (Bessembinder et al. 2008). I include quarter and firm fixed effects to control for aggregate trends and time invariant characteristics of issuers. Standard errors are clustered at the issuer level and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Columns 3 and 4 of Table 2 present the firm-level results. Despite the decline in sample size to 24,608 observations, the results in columns 3 and 4 remain significant, confirming the bond level results. The coefficient estimate on lagged conservatism is 0.01 and highly significant. Moreover, as predicted by H1b, the effect of conservatism on bond investors' uncertainty is exacerbated as borrowers report more losses in preceding periods.

Overall, the bond-level and firm-level results in Table 2 confirm my first set of hypotheses that conservatism increases uncertainty among bond investors especially when financial reports convey bad news. As explained in the previous section, I refer to the increased uncertainty due the combined effect of conservatism and losses as the "informational cost" of conservative reporting in the bond market.

5.2.2 Contractual benefit and informational cost of conservatism

In this section, I examine the impact of costs and benefits of conservatism on yield spreads of new bond issues. Table 3 presents the empirical results of H2 and H3. The dependent variable in all columns is yield spreads of new bonds. I include offering month and industry fixed effects to control for time trends and period- and industry-specific determinants of bond yields. Standard errors are clustered at the industry level and are robust with respect to serial correlation and cross-sectional heteroscedasticity of error terms.

Column 1 of Table 3 provides results of tests of H2 using equation (3). As described in the previous section, $Infocost$ is the predicted value of bond return volatility based on the combined effect of conservatism and conservatism interacted with negative earnings. Column 1 shows that the estimated coefficient on this variable is positive and significant (0.475, p-value<0.001). In terms of economic significance, a one standard deviation increase in information cost of conservatism leads to 0.494% increase in bond yield spread in the following quarter. This result confirms my prediction that conservative reporting imposes informational costs on bond investors who ex-ante price protect themselves by increasing interest rates.

The estimated coefficients on control variables are also consistent with prior expectation. More profitable and larger firms issue bonds at lower interest rates whereas firms with more debt issue bonds at higher rates. As for other characteristics of bond issues, investors demand lower interest rates if the bond has more favorable rating, has higher seniority or is asset-backed as these provisions reduce the agency risk faced by bond investors.[28] On the other hand, larger offering size and longer maturity increases investors' exposure to borrower risk and are therefore unfavorably priced via demanded yields. Similarly, redeemable bonds provide an option to the issuer and is priced in interest rates accordingly. Of special interest is the significantly positive association of the total number of included covenants and the yield spread suggesting that more covenants lead to higher bond yields. In untabulated results, I replace the overall number of included covenants with its components as categorized in Nikolaev (2010). The results show that the intensity of accounting-based covenants and those restricting investments are significantly negatively associated with yield spreads as expected and the intensity of covenants that restrict financing activities is negatively but insignificantly associated with spreads. This finding is consistent with Reisel (2014) who finds that restrictions on investment activities and issuing activities reduce the cost of debt. On the other hand, the intensity of covenants that restrict dividend payments is positively and significantly related to spreads, highlighting the signaling value of dividend covenants (Callen et al. 2015). Moreover, I find that the coefficient on the three-way interaction of conservatism, intensity of dividend covenants, and the borrowers' dividend payout level is significant and negative, consistent with predictions in Callen et al. (2015).

[28] Ahmed et al. (2002) document that accounting conservatism improves the credit ratings of firms, where conservatism is measured by the bias component of market-to-book ratio (Beaver and Ryan 200) and negative accruals (Givoly and Hayn 2000). By including bond ratings as a control variable, my analysis shows that the effect of conservatism on bond yields is incremental to that of bond ratings.

Columns 2 and 3 of Table 3 report results of testing H3a and H3b. As can be seen in column 2, the coefficient on the intensity of earnings covenants is significantly negative. In terms of economic significance, one additional earnings covenant in a bond agreement reduces yield spread by 0.356%. This indicates that requiring a minimum level of operating profitability will reduce the lenders' exposure to borrowers' risk of financial distress hence reducing demanded bond spreads. Column 3 confirms the prediction that accounting conservatism reinforces the protective value of covenants resulting in timelier intervention of lenders when borrowers approach default. The coefficient estimate on the interaction of conservatism and the intensity of earnings covenants is -0.025 (significant at the 3% level) indicating that more earnings covenants coupled with conservative reporting benefits lenders and results in lower bond interest rates. Thus, I refer to the combined effect of conservatism and the intensity of earnings covenants as the "contractual benefit" of conservatism.

Column 4 juxtaposes the two effects of conservatism in one regression. As can be seen both informational and contractual effects remain significant in the presence of the other, which further highlights the importance of both channels through which conservatism can affect bond yields. Overall, the results presented in Table 3 confirm my second and third hypotheses.

5.2.3 Overall effect of conservatism on bond spreads

In the previous section, I documented the benefit as well as the cost of accounting conservatism for bond investors. Next, I investigate the overall effect of conservatism on bond spreads. Table 4 reports the results of testing H4a and H4b in which I directly regress bond yield spreads on the conservatism measure. As can be seen, the association between lagged conservatism and bond spreads is significantly positive (coefficient=0.031, p-value=0.006), indicating that the cost of reporting conservatively dominates its potential benefits for bond investors. In terms of economic significance, a one standard deviation increase in the level of conservatism results in

0.05% net increase in yield spreads in the subsequent quarter. Moreover, as column 2 shows, it appears that this cost is purely due to reporting lower values of earnings with an increase of 0.166% in yield spreads for firms with more loss quarters. While the coefficient estimate on the interaction term between conservatism and loss periods is significantly positive, the coefficient estimate on conservatism, which captures the effect of conservative reporting when reports reflect profits, is negative but insignificant. These results support my prediction that the overall adverse effect of conservatism on bond yield spreads results especially when reports reflect losses. This finding suggests that conservatism imposes net costs in the bond market due to the increase in uncertainty generated by the lower information content of bad news (Gigler et al. 2009).

5.3 Cross-sectional tests

To further confirm my findings that conservatism-induced uncertainty increases bond yields, I conduct a series of cross-sectional tests. First, I expect that bond investors of firms with better information environment will have more access to other sources of information and place less reliance on public accounting reports. Consequently, the negative impact of uncertainty due to conservatism should be attenuated leading to a lower demand for high interest rates. Conversely, when information environment of a firm is poor, the increased reliance of bond investors on public reports should lead to a higher demand for price protection against uncertainty. I test this conjecture, by sorting firms into terciles based on analyst following, analysts' forecast dispersion, and firm size. I expect a lower association between bond yield spreads and conservatism-induced uncertainty for firms in the highest tercile of analyst following and firm size and the lowest tercile of analysts' forecast dispersion. Panel A of Table 5 reports the results for these tests. As can be seen the effect of conservatism-induced uncertainty on bond yield spreads is significantly lower for firms with better information environment consistent with their lower sensitivity to the uncertainty induced by conservative public reports.

Second, due to their asymmetric payoff functions, I expect bondholders to be less concerned about the uncertainty induced by conservatism when their exposure to borrowers' default risk is low. To test this prediction, I interact conservatism-induced uncertainty (*InfoCost*) with *Ratings*, and indicators for investment grade (*InvGrade*) and asset-backed (*Asset_Backed*) bonds. From Panel B of Table 5, the informational cost of conservatism has a significantly lower effect on bond interest rates for investment grade, higher rated, and asset-backed bonds.

Overall, the cross-sectional results provide reassurance in relation to my main results by demonstrating that the effect of conservatism-induced uncertainty on bond yield spreads is lower in circumstances in which we expect bond investors to place less reliance on public disclosures.

5.4 Secondary bond market tests

To further analyze the informational impact of accounting conservatism on bond investors, I examine the secondary bond market. Focusing on the secondary market has the advantage that bond agreement terms such as covenants or stated yields are no longer any parties' choice variables and the market sets bond yields-to-maturity entirely based on available information about bond issuers. Moreover, unlike for initial bond issuances, underwriters with access to private information do not play a role in the secondary market.

Wittenberg-Moerman (2008) finds that, in the secondary (private) loan market, accounting conservatism reduces information asymmetry among investors as measured by bid-ask spreads. As discussed earlier, in contrast with private lenders, I hypothesize that accounting conservatism increases uncertainty among bond investors due to their lack of access to private information and other institutional differences. In the secondary market, I test this hypothesis by regressing bid-ask spreads on accounting conservatism and other controls using the empirical specification below:

$$Bid\_Ask_{ijt} = \beta_0 + \beta_1 Conserv_{jt-1} + \beta_2 Conserv_{jt-1} * Loss_{jt-1} + \beta_3 Loss_{jt-1} + \beta_3 ROA_{jt-1} + \beta_4 Lev_{jt-1} + \beta_5 Size_{jt-1} + \beta_6\, Rating\_Trd_{it} + \beta_7 Tmt_{it} + u_i + v_t + \varepsilon_{ijt} \quad (8)$$

where i, j, and t are issue, firm, and time indices, respectively. $Rating\_Trd$ is the bond credit rating for the trading quarter, Tmt is time-to-maturity, u_i is the issue fixed effect, and the remaining variables are as defined earlier.

Table 6, Panel A, reports the descriptive statistics for traded bonds in the secondary bond market and their respective issuing firms. The average quarterly volume of trades is $125.63 million with the average bid-ask spread of 0.682 as a percentage of ask prices. Traded bonds have average (median) rating of BBB (BBB) with the remaining duration of 8.8 (6.1) years. Moreover, the average yield (to maturity) spread of traded bonds is 2.29% which is slightly more (less) than the yield spread of new bonds. Similar to firms that issue new bonds, firms with traded bonds on average report income conservatively and are large and profitable.

Table 6, Panel B, reports the results of the association between lagged conservatism and bid-ask spreads at both the bond issue level (columns 1 and 2) and the firm level (columns 3 and 4). Consistent with my results for new bond issuances, I find that accounting conservatism is significantly positively associated with bid-ask spreads. Moreover, columns 2 and 4 show that this effect is exacerbated when borrowers report more losses in preceding periods.

In Table 6, Panel C, I examine the impact of conservatism on bond yield spreads in the secondary market at both the issue level (columns 1 and 2) and the firm level (columns 3 and 4) using the following regression.

$$Spread_{ijt} = \beta_0 + \beta_1\ Conserv_{jt-1} + \beta_2 Conserv_{jt-1} * Loss_{jt-1} + \beta_3 Loss_{jt-1} + \beta_3 ROA_{jt-1} + \beta_4 Lev_{jt-1} + \beta_5 Size_{jt-1} + \beta_6\ Rating\_Trd_{it} + \beta_7 Tmt_{it} + u_i + v_t + \varepsilon_{ijt} \qquad (9)$$

where all control variables are similar to those in equation (8). Consistent with my results for new bond issuances, I find a positive and significant association between accounting conservatism and traded bond yields (coefficient estimate 0.043, p-value<0.001). Economically, a one standard deviation increase in the level of conservatism results in 0.07% increase in bond yield spreads in the subsequent quarter. Moreover, as column 2 suggests this cost is mainly attributable to reporting low values of earnings with an increase of 0.293% in yield spreads for firms with more loss quarters. Columns 3 and 4 report qualitatively similar results at the firm level.

I also conduct a changes analysis of bid-ask spreads and yield spreads in the secondary market. I replace all levels variables in equations (8) and (9) with one year changes. I report the results in Panel D of Table 6. Column 1 shows that the association between change in conservatism and change in bid-ask spreads is positive and significant. Moreover, as can be seen in column 2, conservatism significantly increases the bid-ask spread in the secondary market for firms with more accounting loss periods. Columns 3 and 4 report the effect of changes in conservatism on the yield spreads changes. I find that the change in conservatism has a significant positive association with changes in bond yields in the secondary market. Overall, the secondary bond market results mirror my prior findings in the new bonds sample and also help to alleviate endogeneity concerns inherent in tests of simultaneously determined variables.

5.5 Robustness test: Alternative measures of conservatism

In all previous tests, I use the skewness-based measure of conservatism following Givoly and Hayn (2000) and Beatty et al. (2008). I use this measure because it directly measures the reporting bias that IASB and FASB believe conservatism might induce and because it is consistent with the characterization of conservatism in Gigler et al. (2009). I further confirm my findings by using several alternative measures of conservatism. I use Basu's (1997) asymmetric timeliness measure and negative non-operating accruals (Givoly and Hayn 2000, Ahmed and Duellman 2007, Beatty et al. 2008). To focus on the effect of conservative reporting of R&D expenditures, I also use the un-amortized portion of R&D expenses (Penman and Zhang 2002) as the third alternative measure of conservatism.

I estimate the firm-level quarterly Basu measure of conservatism over a maximum of 20 and minimum of 10 prior quarters using the Basu regression, $E_t/P_{t-1} = \beta_0 + \beta_1 D_t + \beta_2 R_t + \beta_3 R_t * D_t + \varepsilon_t$, where E_t/P_{t-1} is earnings per share scaled by closing price of prior quarter, R_t is quarterly cumulative return, and D_t is the negative return indicator. I use the estimated β_3 from this firm-specific regression as the asymmetric timeliness measure. Negative non-operating accruals is estimated following Givoly and Hayn (2000) and Beatty et al. (2008) as -1 × (Net Income + Depreciation Expense - Cash Flows from Operation - (ΔAccounts Receivable + ΔInventories + ΔPrepaid Expenses – ΔAccounts Payable - ΔTaxes Payable)) scaled by total assets and averaged over the past 20 quarters using a minimum of 5 past quarters when developing the average. The amount of R&D reserve is estimated as the unamortized portion of R&D assets generated by current and past R&D expenditures that would have been capitalized had accounting standards permitted their capitalization. I amortize this expenditure using the sum-of-the-quarters' digits method over 20 quarters scaled by Net Operating Assets defined as (Total Assets + Long-Term Debt + Debt in Current Liabilities - Total Liabilities – Investments and Advances - Cash and Short-Term Investments) following Richardson, Sloan, Soliman, and Tuna (2006).

Table 7 presents the results of testing the effect of informational cost and contractual benefits of conservatism as well as the overall effect of conservatism on new bond yield spreads using these alternative measures. *Conserv* is the Basu's Asymmetric timeliness measure in columns (1) and (2), non-operating accruals in columns (3) and (4), and unamortized R&D reserves in columns (5) and (6). As can be seen by the results presented in columns (1), (3), and (5), the informational cost of conservatism is significantly positive using alternative measures of conservatism, consistent with my previous finding in Table 3. However, the contractual benefit of conservatism, as captured by the coefficient on *Conserv * NEarn_Cov*, is insignificant, suggesting that the informational costs overshadow the contractual benefits of reporting conservatively for bond investors. Consistently, in columns (2), (4), and (6), I find that overall, reporting conservatively significantly increases the yield spreads of new bonds. In untabulated results, I also find that the overall negative effect of conservatism for bond investors is significantly higher when borrowers report more periods of accounting losses confirming my previous findings.

In another set of untabulated results, I also find that accounting conservatism, using alternative proxies, increases the uncertainty among bond investors. Moreover, this increase is mostly attributable to periods of losses, consistent with the results in Table 2. Lastly, I test the effect of conservatism on bond yield spreads in the secondary bond market using these alternative measure of conservatism. Untabulated results confirm my previous findings reported in Table 6 that conservatism increases yield spreads of bonds in the secondary market. Overall, the tenor of my results remains unchanged when alternative measures of conservatism are used, suggesting that the findings based on my primary measure of conservatism are not simply due to the choice of the proxy for accounting conservatism.

6. Additional tests and Sensitivity Analysis

6.1 Alternative measure of informational cost of conservatism

Given the results in Table 2 that conservative reporting during loss periods increases uncertainty among bond investors, in Table 3, I defined the increased uncertainty due to the combined effect of conservatism and losses as the "informational cost" of conservative reporting in the bond market. As an alternative proxy for the informational cost of conservatism, in this subsection, I directly use the interaction between conservatism and loss periods to test H2 and H3. Specifically, I replace *InfoCost* in (3) with *Conserv * Loss* in the following regression model where all other variables and controls are as defined before:

$$Spread_{ijt} = \beta_0 + \beta_1 Conserv_{jt-1} + \beta_2 NEarn\_Cov_{ijt} + \beta_3 Loss_{jt-1} + \beta_4 Conserv_{jt-1} * Loss_{jt-1}$$
$$+\beta_5 Conserv_{jt-1} * NEarn\_Cov_{ijt} + \beta_6 Conserv_{jt-1} * Loss_{jt-1} * NEarn\_Cov_{ijt}$$
$$+Controls + Offer\_Mnth_{ij} + Industry_i + \varepsilon_{ijt} \quad (10)$$

H2 predicts that the coefficient on *Conserv * Loss* (β_4) is significantly positive, and as before a negative coefficient on *Conserv * NEarn_Cov* (β_5) would confirm H3b. I include offering month and industry fixed effects to control for time trends and period- and industry-specific determinants of bond yields. Standard errors are clustered at the industry level and are robust with respect to serial correlation and cross-sectional heteroscedasticity of error terms.

Results of testing equation (10) are presented in Table 8. Column 1 provides results of tests of H2 using the alternative proxy for informational cost of conservatism. The estimated coefficient on *Conserv* * *Loss* (β_4) is positive (0.174) and significant at the one percent level, confirming H2 that conservative reporting imposes informational costs on bond investors who ex-ante price protect themselves by increasing interest rates. Column 2 reports results of testing H3b. As can be seen, the coefficient estimate on the interaction of conservatism and the intensity of earnings covenants (the contractual benefit proxy) is -0.025 (significant at 4% level) confirming that more intensity of earnings covenants coupled with conservative reporting benefits lenders by reducing bond interest rates. Finally, column 3 confirms that the contractual and the informational effects each remains significant in the presence of the other, similar to the finding in Table 3. Overall, the results in Table 9 reassure that the findings in Table 3 are not sensitive to the choice of proxy measure used for the informational cost of conservatism.

6.2 Simultaneous effect of conservatism on bond yield and earnings covenant

One key finding in Gigler et al. (2009) is that the optimal level of debt covenants is endogenously determined and varies with the degree of conservatism in accounting reports. They show that as the degree of accounting conservatism (both conditional and unconditional) increases, the optimal covenant threshold will move downward suggesting a substitution role of accounting conservatism with respect to debt covenants. To take into account the simultaneous determination of bond covenants intensity and yield spread with respect to the degree of conservatism, I simultaneously estimate the following system of equations which specifies bond yield spreads and the intensity of earnings covenants as a function of each other and the degree of reporting conservatism. I include quarter and industry fixed effects to control for time and industry specific invariant characteristics:

$$NEarn\_Cov_{ijt} = \beta_0 + \alpha_1 Spread_{ijt} + \alpha_2\, Conserv_{jt-1} + Controls + Offer\_qtr_{ij} + Industry_i + \varepsilon_{ijt} \quad (11)$$

$$Spread_{ijt} = \beta_0 + \beta_1 NEarn\_Cov_{ijt} + \beta_2\, Conserv_{jt-1} + Controls + Offer\_qtr_{ij} + Industry_i + \varepsilon_{ijt} \quad (12)$$

The results are presented in the first two columns of Table 9. The correlation between the residuals of equations (11) and (12) is 0.077 and the Chi-Squared from the test of independence of these residuals is 47.942 which rejects the null hypothesis that this correlation is zero. As can be seen in the first column, the coefficient on yield spread is significantly negative. A one basis point increase in bond yield spread is associated with 0.059 reduction in the number of earnings-based bond covenants. Moreover, the coefficient on conservatism is negative, consistent with the prediction in Gigler et al. (2009) that conservatism and covenants are substitutes. However, this coefficient is statistically insignificant. Consistent with the results of testing H4a presented in Table 4, in column (2), I find accounting conservatism significantly increases yield spread on new bonds after taking into account the simultaneous determination of covenants and yield spreads. In columns (3) and (4) of Table 9, I present the result of testing the system of equations in (11) and (12) augmented with the *Loss* and *Conserv* * *Loss* variables. Once again the independence of the seemingly unrelated equations in (11) is rejected (chi-squared=30.169). As one can see in column (4), accounting conservatism increases yield spreads significantly more when accounting reports convey bad news, reconfirming H4b and the results in Table 4. Overall, Table 9, reassures that findings in prior sections will remain unchanged after controlling for the joint endogenous determination of yield spreads and earnings covenants.

6.3 Indirect measure of cost of public borrowing

Using firm S&P long-term credit ratings as an indirect measure of cost of borrowing, Ahmed et al. (2002) document that accounting conservatism improves credit ratings and thus reduces the cost of public borrowing. However, since the primary objective of these authors is to study the effect of conservative accounting in mitigating bondholder-shareholder conflicts over dividend policy, their sample consists of mostly dividend paying firms which are generally more profitable than an average firm. As reported in their paper, the sample mean ROA is 0.039 which is about four times more profitable than an average Compustat firm. As I illustrate later, this could potentially explain the difference in results between this paper and Ahmed et al. (2002).

Moreover, prior literature highlights the circumstances in which credit agencies fail to incorporate all relevant information into their ratings (e.g., Grier and Katz 1976, Hettenhouse and Sartoris 1976, Pinches and Singleton 1978). For instance, credit ratings have been criticized for merely reflecting the probability of default without incorporating information about the extent of losses and recovery rates following defaults. Similarly, while a large proportion of firms' bond spreads are explained by liquidity risk which is incremental to operating and leverage risks (e.g., Chen, Lesmond, and Wei 2007, Bao et al. 2011), existing literature and anecdotal evidence suggest that rating agencies may not adequately account for liquidity risk in their ratings (e.g., Schultz 2001, Gopalan, Song, Yerramilli 2014, Bao et al. 2011, Morris and Shin 2009). Moreover, because credit rating agencies favor the long-term measurement of creditworthiness (e.g., "through-the-cycle" rather than "point-in-time" approach), short-term fluctuations in the default risk such as business cycles may not trigger rating changes (Amato and Furfine 2004). Additionally, rating agencies and their published ratings are subject to other inefficiencies and frictions highlighted in prior literature such as ratings shopping (Skreta and Veldkamp 2009, Benmelech and Dlugosz 2009b, Cornaggia and Cornaggia 2013), catering and conflict of interest (e.g., Kisgen and Strahan 2010, Bolton, Freixas, and Shapiro 2012, Griffin, Nickerson, and Tang 2013), regulatory changes (Jorion, Liu, and Shi 2005, Cheng and Neamtiu 2009, Alp 2013, Dimitrov, Palia, and Tang 2015), inflation and deflation (Blume et al. 1998), Strobl and xia 2012, Alp 2013, Baghai, Servaes, and Tamayo 2014) and stickiness and lack of timeliness (Altman and Rijken 2004, Fons et al. 2002, and Ellis 1998, Bonsall, Koharki, and Neamtiu 2015). Lastly, while S&P long-term ratings do not take into account the provisions of a particular debt issue, interest rates incorporate all relevant information with regard to a specific issue as well as issuers in regards to meeting their obligations. For these reasons, I followed Zhang (2008) and used interest spreads as the direct measure of cost of borrowing instead of credit ratings in my main tests. Nonetheless, as a robustness check, I repeat the test of my main Hypotheses in H4 using the S&P long-term credit rating as the dependent variable. I use ordered-probit regression for these tests similar to Ahmed et al. (2002). Standard errors are clustered at firm level and are robust with respect to serial correlation and cross-sectional heteroscedasticity.

The results are presented in Table 10. In Column (1), the coefficient on *Conserv* is significantly negative at the 2% level, suggesting that higher levels of conservatism are associated with deteriorated credit rating in the subsequent quarter. This result is consistent with my prior results presented in Table 4 that overall conservatism increases cost of bond borrowing. Moreover, as can be seen in column (2), the coefficient on the *Conserv * Loss* is positive and significant (p-value < 0.00). This result confirms my previous findings in Table 4 and is consistent with H4b. Interestingly, the coefficient on *Conserv* in Column (2) is positive and significant which suggests that conservatism during profit periods improves firms' credit ratings. This finding together with the highly profitable sample of firms used in Ahmed et al. (2002) might explain their finding that conservative accounting reduces cost of public borrowing.

7. **Conclusion**

In their joint conceptual framework, the IASB and the FASB appear to downplay the benefits of conservatism as suggested by their statement that "*The boards…no longer recognize accounting conservatism as a desirable quality of accounting*" (FASB 2010 and IASB 2010). Yet, the majority of research studies document the benefits of conservatism (Ball and Shivakumar 2006, Ahmed et al. 2002, Zhang 2008, Callen et al. 2015 LaFond and Watts 2008, Lara et al. 2011, Donovan et al. 2015 among others) and very few focus on the potential downside of reporting conservatively (e.g., Gigler et al. 2009, Guay and Verrecchia 2006, Dyreng et al. 2017). Following Lambert's (2010) suggestion that future research should investigate the underlying cost as well as benefit of accounting conservatism to pinpoint the optimal level of conservatism, I examine both the benefit and the potential cost of conservatism for bond market investors.

My analysis is based on the premise that the relative costs and benefits of conservatism can vary among different stakeholders due to structural differences in their payoffs, information access, monitoring abilities, and renegotiation costs (Bharath et al. 2008, Li 2013, Armstrong et al. 2010, Nikolaev 2010). While prior studies have documented benefits of conservatism in private lending, I find conservatism to impose net costs in the bond market due to the increase in uncertainty generated by the lower information content of bad news (Gigler et al. 2009). While private lenders have greater access to managerial private information they rely less on public information and thus bear lower informational costs of conservatism. On the other hand, because private lenders rely more on covenants for monitoring borrowers, the benefits of conservatism are greater through the acceleration of covenant violations. In line with this reasoning, prior studies document the net benefit of conservatism for private lenders. In contrast, I show that costs outweigh the benefit of conservatism for bond investors, consistent with the contractual and informational environments bond investors face. My paper highlights that prior findings of the effect of conservative accounting need not generalize to all debtholders. Overall, my results together with prior findings underscore the incongruent demands for different accounting attributes by different financial statements users, leading regulators to make trade-off decisions that could affect different stakeholders differently.

Table 1
Descriptive Statistics (*New Bond Issuances*)

	Mean	Median	Min	Max	Sd
Yield Spread (%)	1.881	1.432	-2.553	7.854	1.566
Offer_Amt (millions)	472.437	300	12.264	2500	445.65
NEarn_Cov	0.386	0	0	2	0.786
Ncov	6.763	6	0	22	3.821
Maturity(Yrs)	11.35	9.942	1.932	40.636	8.716
Rating	BBB	BBB+	D	AAA	-
Size (billions)	26.379	6.586	0.082	250.278	49.594
ROA (%)	0.958	0.936	-8.567	6.260	1.902
Leverage	0.287	0.262	0.000	0.886	0.184
BM	0.516	0.456	-0.407	1.871	0.367
Conserv (Skewness)	0.670	0.504	-4.105	5.042	1.780
Conserv (Basu Measure)	0.023	0.004	-0.722	0.953	0.217
Conserv (Non op Accruals)	0.004	0.003	-0.017	0.040	0.008
Conserv (Unamortized R&D)	0.007	0.000	0.000	0.136	0.020

Table 2
The Effect of Conservatism and Low earnings on Bond Investors' Uncertainty

	Bond-level		Firm-Level	
	Dependent Variable: Volatility of Bond Returns			
VARIABLES	(1)	(2)	(3)	(4)
Conserv	**0.011**	0.005	**0.010**	-0.000
	(0.000)	(0.145)	**(0.022)**	(0.936)
Loss		-0.156		-0.104
		(0.009)		(0.206)
*Conserv * Loss*		**0.050**		**0.067**
		(0.001)		**(0.026)**
ROA	-0.021	-0.021	-0.018	-0.018
	(0.000)	(0.000)	(0.000)	(0.000)
Lev	0.186	0.184	0.366	0.355
	(0.013)	(0.016)	(0.002)	(0.003)
Size	0.000	0.000	-0.002	-0.002
	(0.180)	(0.178)	(0.315)	(0.301)
BM	0.212	0.215	0.272	0.275
	(0.000)	(0.000)	(0.000)	(0.000)
StockRet	0.000	0.000	0.002	0.002
	(0.628)	(0.707)	(0.000)	(0.000)
CFOVol	1.030	0.988	0.673	0.713
	(0.101)	(0.118)	(0.540)	(0.521)
Rating	-0.052	-0.057	-0.052	-0.053
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	83,482	83,482	24,608	24,608
R-squared	0.272	0.273	0.314	0.314
Quarter FE	Yes	Yes	Yes	Yes
Issue FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes

Table 2 presents the estimates from the following regression:

$$\text{RetVol}_{ijt} = \beta_0 + \beta_1\ \text{Conserv}_{jt-1} + \beta_2\ \text{Loss}_{jt-1} + \ \beta_3\ \text{Conserv}_{jt-1} * \text{Loss}_{jt-1} + \text{Controls} + u_{i/j} + v_t + \varepsilon_{ijt}.$$

In columns (1) and (2), the dependent variable is the quarterly volatility of bond returns. In columns (3) and (4), the dependent variable is the (equally weighted) average volatility of returns over all traded bonds of the firm in a quarter. All other variables are as defined in Appendix II. Standard errors are clustered by issue in columns (1) and (2), and by issuer in columns (3) and (4) and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 3
Informational Cost and Contractual Benefit of Conservatism

	Dependent Variable: Bond Yield Spread			
	Informational Cost	Contractual Benefit		Cost & Benefit
VARIABLES	(1)	(2)	(3)	(4)
InfoCost	**0.475**			**0.464**
	(0.000)			**(0.000)**
NEarn_Cov		**-0.356**	-0.340	-0.322
		(0.000)	(0.000)	(0.000)
Conserv			0.042	0.034
			(0.001)	(0.014)
*Conserv * NEarn_Cov*			**-0.025**	**-0.025**
			(0.037)	**(0.044)**
ROA	-0.095	-0.126	-0.122	-0.091
	(0.000)	(0.000)	(0.000)	(0.000)
Lev	1.720	1.685	1.683	1.669
	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.005	-0.006	-0.006	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)
BM	0.725	0.835	0.821	0.696
	(0.000)	(0.000)	(0.000)	(0.000)
Offer_Amt	0.000	0.000	0.000	0.000
	(0.295)	(0.261)	(0.261)	(0.326)
Rating	-0.063	-0.068	-0.068	-0.061
	(0.000)	(0.000)	(0.000)	(0.000)
Maturity	0.011	0.009	0.009	0.011
	(0.000)	(0.000)	(0.000)	(0.000)
Seniority	-0.108	-0.062	-0.059	-0.102
	(0.001)	(0.086)	(0.098)	(0.001)
Ncov	0.064	0.124	0.125	0.096
	(0.000)	(0.000)	(0.000)	(0.000)
Asset_Backed	-1.184	-0.595	-0.600	-1.133
	(0.000)	(0.020)	(0.017)	(0.000)
Redeemable	0.237	0.342	0.337	0.219
	(0.004)	(0.000)	(0.000)	(0.005)
Observations	7,050	8,017	8,017	7,050
R-squared	0.680	0.639	0.640	0.686
Offering Month & Industry FE	Yes	Yes	Yes	Yes

Table 3 presents the estimates from the following regression:

$$\text{Spread}_{\text{ijt}} = \beta_0 + \beta_1 \text{InfoCost}_{\text{jt}-1} + \beta_2 \text{NEarn\_Cov}_{ijt} + \beta_3\ \text{Conserv}_{\text{jt}-1} + \ \beta_4 \text{Conserv}_{\text{jt}-1} * \text{NEarn\_Cov}_{ijt} + \text{Controls} + \text{Offer\_Mnth}_{\text{i}} + \text{Industry}_{\text{j}} + \varepsilon_{\text{ijt}}.$$

The dependent variable is Bond Yield Spreads in all columns. All variables are as defined in Appendix II. Standard errors are clustered by industry and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 4
The Overall Effect of Conservatism on Bond Yield Spreads

	Dependent Variable	
	Bond Yield Spread	
VARIABLES	(1)	(2)
Conserv	**0.031**	-0.003
	(0.006)	(0.800)
Loss		2.194
		(0.000)
*Conserv * Loss*		**0.166**
		(0.007)
ROA	-0.123	-0.075
	(0.000)	(0.000)
Lev	1.750	1.140
	(0.000)	(0.000)
Rating	-0.071	-0.059
	(0.000)	(0.000)
Size	-0.006	-0.005
	(0.000)	(0.000)
Offer_Amt	0.000	0.000
	(0.235)	(0.388)
BM	0.854	0.788
	(0.000)	(0.000)
Maturity	0.009	0.011
	(0.000)	(0.000)
Seniority	-0.064	-0.097
	(0.088)	(0.009)
Ncov	0.093	0.082
	(0.000)	(0.000)
Asset_Backed	-0.632	-0.476
	(0.016)	(0.071)
Redeemable	0.349	0.289
	(0.000)	(0.000)
Observations	8,017	8,017
R-squared	0.634	0.667
Offering Month & Industry FE	Yes	Yes

Table 4 presents the estimates from the following regression:

$$\text{Spread}_{ijt} = \beta_0 + \beta_1 \text{Conserv}_{jt-1} + \beta_2 \text{Loss}_{jt-1} + \beta_3 \text{Conserv}_{jt-1} * \text{Loss}_{jt-1} + \text{Controls} + \text{Offer\_Mnth}_i + \text{Industry}_j + \varepsilon_{ijt}.$$

The dependent variable is Bond Yield Spreads in all columns. All variables are as defined in Appendix II. Standard errors are clustered by industry and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 5
Cross-Sectional Tests of the Effect of Conservatism-Induced Uncertainty on Yield Spreads

Panel A: Borrowers' Information Environment

	Dependent Variable: Bond Yield Spread		
	Information Environment Proxy:		
	Analysts Following	Analyst Forecast Dispersion	Size
VARIABLES	(1)	(2)	(3)
InfoCost	0.502	0.459	0.550
	(0.000)	(0.000)	(0.000)
InfoEnvrn_High	0.064	0.360	0.195
	(0.666)	(0.008)	(0.064)
*InfoCost * InfoEnvrn_High*	**-0.218**	**-0.288**	**-0.447**
	(0.001)	**(0.000)**	**(0.000)**
Conserv	0.038	0.036	0.031
	(0.007)	(0.026)	(0.014)
NEarn_Cov	-0.293	-0.304	-0.298
	(0.000)	(0.000)	(0.000)
*Conserv * NEarn_Cov*	-0.022	-0.025	-0.018
	(0.062)	(0.049)	(0.074)
ROA	-0.063	-0.059	-0.058
	(0.000)	(0.002)	(0.001)
Lev	1.865	1.977	1.681
	(0.000)	(0.000)	(0.000)
Size	-0.005	-0.005	-0.004
	(0.000)	(0.001)	(0.000)
Offer_Amt	0.712	0.669	0.597
	(0.000)	(0.000)	(0.000)
Rating	0.000	0.000	0.000
	(0.203)	(0.342)	(0.074)
Seniority	-0.056	-0.060	-0.052
	(0.000)	(0.000)	(0.000)
BM	0.012	0.012	0.013
	(0.000)	(0.000)	(0.000)
Maturity	-0.103	-0.108	-0.114
	(0.003)	(0.001)	(0.000)
Ncov	0.087	0.088	0.080
	(0.000)	(0.000)	(0.000)
Asset_Backed	-1.102	-1.027	-1.206
	(0.000)	(0.000)	(0.000)
Redeemable	0.211	0.218	0.247
	(0.024)	(0.018)	(0.002)
Observations	7,017	7,017	7,017
R-squared	0.665	0.662	0.685
Offering Month & Industry FE	Yes	Yes	Yes

Table 5 Panel A presents the estimates from the following regression:

$$\text{Spread}_{ijt} = \beta_0 + \beta_1 \text{InfoCost}_{jt-1} + \beta_2 \text{InfoEnvrn\_High}_{jt-1} + \beta_3 \text{InfoCost}_{jt-1} * \text{InfoEnvrn\_High}_{jt-1} + \text{Controls} + \text{Offer\_Mnth}_i + \text{Industry}_j + \varepsilon_{ijt}.$$

InfoEnvrn_High is an indicator variable that equals one if analyst following belongs to highest tercile in column (1), analyst forecast dispersion belongs to lowest tercile in column (2), and firm size belongs to highest tercile in column (3). The dependent variable is Bond Yield Spreads in all columns. All other variables are as defined in Appendix II. Standard errors are clustered by industry and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 5 *(continued)*

Cross-Sectional Tests of the Effect of Conservatism-Induced Uncertainty on Yield Spreads

Panel B: Lenders' Exposure to Default Risk

	Dependent Variable: Bond Yield Spread		
	Default Risk Proxy:		
	Rating	*Investment Grade*	*Asset Backed*
VARIABLES	(1)	(2)	(3)
InfoCost	1.009	0.807	0.571
	(0.000)	(0.000)	(0.000)
Default_Risk_Low	0.016	0.080	-0.649
	(0.112)	(0.625)	(0.070)
*InfoCost * Default_Risk_Low*	**-0.035**	**-0.375**	**-0.246**
	(0.000)	**(0.000)**	**(0.017)**
Conserv	0.024	0.024	0.024
	(0.031)	(0.046)	(0.032)
NEarn_Cov	-0.295	-0.338	-0.416
	(0.000)	(0.000)	(0.000)
*Conserv * NEarn_Cov*	-0.023	-0.023	-0.017
	(0.052)	(0.066)	(0.210)
ROA	-0.066	-0.070	-0.084
	(0.000)	(0.000)	(0.000)
Lev	1.946	2.269	2.307
	(0.000)	(0.000)	(0.000)
Size	-0.005	-0.006	-0.005
	(0.000)	(0.000)	(0.000)
BM	0.632	0.703	0.674
	(0.000)	(0.000)	(0.000)
Offer_Amt	0.000	0.000	-0.000
	(0.212)	(0.795)	(0.557)
Maturity	0.012	0.010	0.006
	(0.000)	(0.000)	(0.003)
Seniority	-0.068	-0.095	-0.148
	(0.073)	(0.033)	(0.001)
Ncov	0.097	0.116	0.113
	(0.000)	(0.000)	(0.000)
Redeemable	0.108	0.131	0.270
	(0.037)	(0.028)	(0.000)
Observations	6,978	6,981	6,981
R-squared	0.725	0.702	0.615
Offering Month & Industry FE	Yes	Yes	Yes

Table 5 Panel B presents the estimates from the following regression:

$$\text{Spread}_{ijt} = \beta_0 + \beta_1 \text{InfoCost}_{jt-1} + \beta_2 \text{Default\_Risk\_Low}_{jt-1} + \beta_3 \text{InfoCost}_{jt-1} * \text{Default\_Risk\_Low}_{it-1} + \text{Controls} + \text{Offer\_Mnth}_i + \text{Industry}_j + \varepsilon_{ijt}.$$

In column (1), *Default_Risk_Low* equals bond ratings as defined in Appendix II. In column (2), *Default_Risk_Low* is an indicator variable that equals one if the bond is rated BBB- or better. In column (3), *Default_Risk_Low* is an indicator variable that equals one if the bond is asset-backed. The dependent variable is Bond Yield Spreads in all columns. All other variables are as defined in Appendix II. Standard errors are clustered by industry and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 6
Secondary Bond Market

Panel A: Descriptive Statistics

	Mean	Median	Min	Max	Sd
Quarterly Trade Volume (millions)	125.639	60.518	0.508	1143.296	187.039
Bid-Ask Spread (%)	0.682	0.504	0.026	3.347	0.601
Yield Spread (%)	2.289	-0.127	1.527	14.698	2.412
Time-to-Maturity (Yrs)	8.805	6.131	0.128	29.889	8.245
Rating (at Trade Quarters)	BBB	BBB	D	AAA	-
Size (billions)	35.410	14.357	0.218	250.318	52.825
ROA (%)	1.032	1.030	-8.382	5.768	1.807
Leverage	0.283	0.260	0.022	0.794	0.160
BM	0.548	0.454	-0.364	2.464	0.439
Conserv (Skewness Measure)	0.689	0.573	-4.289	4.851	1.762
Conserv (Basu Measure)	0.037	0.008	-0.560	0.830	0.197
Conserv (Non op Accruals)	0.005	0.003	-0.017	0.039	0.008
Conserv (Unamortized R&D)	0.005	0	0	0.103	0.015

Table 6 *(continued)*
Secondary Bond Market

Panel B: The Effect of Conservatism on Bid-Ask Spreads (levels)				
	Bond-level		Firm-Level	
	Dependent Variable: Bid-Ask Spread			
VARIABLES	(1)	(2)	(3)	(4)
Conserv	**0.007**	0.000	**0.009**	0.004
	(0.001)	(0.835)	**(0.006)**	(0.180)
Loss		0.108		0.041
		(0.011)		(0.002)
*Conserv * Loss*		**0.033**		**0.025**
		(0.001)		**(0.000)**
ROA	-0.010	-0.009	-0.014	-0.006
	(0.000)	(0.000)	(0.000)	(0.014)
Lev	0.526	0.502	0.513	0.506
	(0.000)	(0.000)	(0.000)	(0.000)
Size	-0.001	-0.001	-0.002	-0.002
	(0.000)	(0.000)	(0.000)	(0.000)
BM	0.135	0.137	0.186	0.180
	(0.000)	(0.000)	(0.000)	(0.000)
StockRet	0.001	0.001	0.001	0.001
	(0.000)	(0.000)	(0.000)	(0.000)
CFOVol	1.463	1.261	1.199	1.167
	(0.020)	(0.046)	(0.127)	(0.139)
Rating	-0.023	-0.018	-0.024	-0.023
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	106,098	106,098	29,407	29,407
R-squared	0.265	0.266	0.270	0.273
Quarter FE	Yes	Yes	Yes	Yes
Issue FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes

Table 6 Panel B presents the estimates from the following regression:
$\text{Bid\_Ask}_{ijt} = \beta_0 + \beta_1 \text{ Conserv}_{jt-1} + \beta_2\text{Conserv}_{jt-1} * \text{Loss}_{jt-1} + \beta_3\text{Loss}_{jt-1} + \text{Controls} + u_{i/j} + v_t + \varepsilon_{ijt}$.
In columns (1) and (2), the dependent variable is the quarterly bond bid-ask spread. In columns (3) and (4), the dependent variable is the (equally weighted) average bid-ask spread over all traded bonds of the firm in a quarter. All other variables are as defined in Appendix II. Standard errors are clustered by issue in Columns (1) and (2), and by issuer in columns (3) and (4) and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 6 *(continued)*
Secondary Bond Market

Panel C: The Effect of Conservatism on Yield Spreads (levels)				
	Bond-level		Firm-Level	
	Dependent Variable: *Bond Yield Spread*			
VARIABLES	(1)	(2)	(3)	(4)
Conserv	**0.043**	-0.008	**0.065**	0.043
	(0.000)	(0.307)	**(0.000)**	(0.000)
Loss		0.901		0.208
		(0.000)		(0.001)
*Conserv * Loss*		**0.293**		**0.125**
		(0.000)		**(0.000)**
ROA	-0.109	-0.102	-0.138	-0.099
	(0.000)	(0.000)	(0.000)	(0.000)
Lev	2.982	2.795	3.838	3.801
	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.010	0.010	0.010	0.010
	(0.000)	(0.000)	(0.000)	(0.000)
BM	1.481	1.492	1.590	1.558
	(0.000)	(0.000)	(0.000)	(0.000)
Rating	-0.446	-0.398	-0.449	-0.443
	(0.000)	(0.000)	(0.000)	(0.000)
Tmt	-0.044	-0.042	-	-
	(0.300)	(0.280)		
Observations	111,242	111,242	31,508	31,508
R-squared	0.587	0.590	0.598	0.600
Quarter FE	Yes	Yes	29,407	Yes
Issue FE	Yes	Yes	0.270	No
Firm FE	No	No	Yes	Yes

Table 6 Panel C presents the estimates from the following regression:
$\text{Spread}_{ijt} = \beta_0 + \beta_1 \text{ Conserv}_{jt-1} + \beta_2 \text{Conserv}_{jt-1} * \text{Loss}_{jt-1} + \beta_3 \text{Loss}_{jt-1} + \text{Controls} + u_{i/j} + v_t + \varepsilon_{ijt}$.
In columns (1) and (2), the dependent variable is the quarterly bond yield spreads. In columns (3) and (4), the dependent variable is the (equally weighted) average yield spreads over all traded bonds of the firm in a quarter. All other variables are as defined in Appendix II. Standard errors are clustered by issue in columns (1) and (2), and by issuer in columns (3) and (4) and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 6 *(continued)*
Secondary Bond Market

Panel D: The Effect of Conservatism on Bid-Ask and Yield Spreads (Change Specification)

	Dependent Variable			
	ΔBid-Ask Spread		*ΔYield Spread*	
VARIABLES	(1)	(2)	(3)	(4)
ΔConserv	**0.008**	0.001	**0.040**	-0.010
	(0.016)	(0.883)	**(0.019)**	(0.326)
Loss		0.101		0.745
		(0.000)		(0.000)
*ΔConserv * Loss*		**0.023**		**0.135**
		(0.043)		**(0.061)**
ΔROA	-0.021	-0.018	-0.163	-0.142
	(0.000)	(0.000)	(0.000)	(0.000)
ΔLev	0.594	0.522	4.589	4.065
	(0.000)	(0.000)	(0.000)	(0.000)
ΔSize	-0.005	-0.005	0.004	0.004
	(0.000)	(0.000)	(0.164)	(0.088)
ΔBM	0.279	0.283	2.657	2.689
	(0.000)	(0.000)	(0.000)	(0.000)
ΔRating	-0.018	-0.012	-0.390	-0.342
	(0.010)	(0.108)	(0.000)	(0.000)
ΔTmt	-0.046	-0.060	18.14	18.10
	(0.924)	(0.901)	(0.000)	(0.000)
Observations	91,417	91,417	89,679	89,679
R-squared	0.076	0.076	0.220	0.225
Year & Issue FE	Yes	Yes	Yes	Yes

Table 6 Panel D presents the estimates from the following regression:
$\text{Dep\_Var}_{ijt} = \beta_0 + \beta_1 \Delta\text{Conserv}_{jt-1} + \beta_2 \text{Loss}_{jt-1} + \beta_3 \Delta\text{Conserv}_{jt-1} * \text{Loss}_{jt-1} + \text{Controls} + u_i + v_t + \varepsilon_{ijt}$.
The dependent variable is one year change in bid-ask spreads (ΔBid_Ask) in columns (1) and (2) and change in bond yield spreads (ΔSpread) in columns (3) and (4). Loss is an indicator which equals 1 if earnings before extraordinary items are negative during the 4 quarters. All other variables are as defined in Appendix II. Standard errors are clustered by issue and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 7
Sensitivity Analysis: Alternative Conservatism Measures

	Dependent Variable: Bond Yield Spread					
	Conservatism Measure:					
	Basu's Asym. Timeliness		*Non-Operating Accruals*		*Unamortized R&D*	
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
InfoCost	**0.406**		**0.415**		**0.466**	
	(0.000)		**(0.000)**		**(0.000)**	
NEarn_Cov	-0.378		-0.304		-0.330	
	(0.000)		(0.000)		(0.000)	
*Conserv * NEarn_Cov*	0.143		1.602		0.683	
	(0.428)		(0.606)		(0.462)	
Conserv	0.099	**0.292**	4.993	**9.735**	1.561	**3.907**
	(0.391)	**(0.002)**	(0.143)	**(0.013)**	(0.401)	**(0.076)**
ROA	-0.079	-0.104	-0.071	-0.099	-0.087	-0.101
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Lev	2.084	2.502	2.061	2.232	1.988	2.273
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Rating	-0.003	-0.004	-0.060	-0.073	-0.003	-0.073
	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.645	0.799	-0.005	-0.004	-0.003	-0.005
	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)
Offer_Amt	-0.000	0.000	-0.000	-0.000	0.000	0.000
	(0.778)	(0.889)	(0.378)	(0.955)	(0.928)	(0.594)
BM	-0.068	-0.079	0.714	0.791	0.635	0.838
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maturity	0.009	0.007	0.012	0.008	0.011	0.009
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Seniority	-0.080	-0.070	-0.109	-0.090	-0.086	-0.093
	(0.048)	(0.122)	(0.000)	(0.060)	(0.029)	(0.061)
Ncov	0.071	0.079	0.090	0.094	0.104	0.098
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Asset_Backed	-0.965	-0.913	-0.993	-0.599	-0.880	-0.577
	(0.000)	(0.003)	(0.000)	(0.010)	(0.000)	(0.010)
Redeemable	0.189	0.347	0.224	0.366	0.184	0.328
	(0.001)	(0.000)	(0.004)	(0.000)	(0.002)	(0.000)
Observations	6,389	6,825	7,011	7,939	6,896	7,863
R-squared	0.681	0.626	0.694	0.615	0.651	0.595
Offering Month & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 7 presents the estimates from the following regressions in columns (1) and (2) respectively:

$$\text{Spread}_{ijt} = \beta_0 + \beta_1 \text{InfoCost}_{jt-1} + \beta_2 \text{NEarn\_Cov}_{ijt} + \beta_3 \text{ Conserv}_{jt-1} + \beta_4 \text{Conserv}_{jt-1} * \text{NEarn\_Cov}_{ijt} + \text{Controls} + \text{Offer\_Mnth}_i + \text{Industry}_j + \varepsilon_{ijt},$$

$$\text{Spread}_{ijt} = \beta_0 + \beta_1 \text{Conserv}_{jt-1} + \text{Controls} + \text{Offer\_Mnth}_i + \text{Industry}_j + \varepsilon_{ijt}.$$

The dependent variable is Bond Yield Spreads in all columns. *Conserv* is Basu's asymmetric timeliness measure in columns (1) and (2), non-operating accruals in columns (3) and (4), and the unamortized R&D expenditures in columns (5) and (6). All other variables are as defined in Appendix II. Standard errors are clustered by industry and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 8
Sensitivity Analysis: Alternative Measure of Informational Cost of Conservatism

	Dependent Variable: Bond Yield Spread		
	Informational Cost	Contractual Benefit	Cost & Benefit
VARIABLES	(1)	(2)	(3)
Conserv	-0.003	0.041	0.009
	(0.817)	(0.002)	(0.453)
Loss	2.055		2.066
	(0.000)		(0.000)
*Conserv * Loss*	**0.174**		**0.142**
	(0.014)		**(0.034)**
NEarn_Cov		-0.313	-0.235
		(0.000)	(0.000)
*Conserv * NEarn_Cov*		**-0.025**	**-0.023**
		(0.041)	**(0.087)**
*Loss * NEarn_Cov*			-0.181
			(0.281)
*Conserv * Loss * NEarn_Cov*			0.050
			(0.374)
ROA	-0.047	-0.090	-0.047
	(0.008)	(0.000)	(0.006)
Lev	1.569	2.106	1.514
	(0.000)	(0.000)	(0.000)
Size	-0.005	-0.006	-0.005
	(0.000)	(0.000)	(0.000)
BM	0.819	0.858	0.803
	(0.000)	(0.000)	(0.000)
Offer_Amt	0.000	0.000	0.000
	(0.414)	(0.322)	(0.418)
Rating	-0.057	-0.066	-0.056
	(0.000)	(0.000)	(0.000)
Maturity	0.012	0.010	0.012
	(0.000)	(0.000)	(0.000)
Seniority	-0.104	-0.069	-0.099
	(0.008)	(0.073)	(0.011)
Ncov	0.079	0.118	0.103
	(0.000)	(0.000)	(0.000)
Asset_Backed	-0.493	-0.610	-0.470
	(0.078)	(0.021)	(0.086)
Redeemable	0.275	0.318	0.265
	(0.000)	(0.000)	(0.000)
Observations	7,981	7,981	7,981
R-squared	0.64	0.62	0.65
Offering Month & Industry FE	Yes	Yes	Yes

Table 8 presents the estimates from the following regression:

$$\text{Spread}_{\text{ijt}} = \beta_0 + \beta_1\text{Conserv}_{\text{jt}-1} + \beta_2\text{NEarn\_Cov}_{ijt} + \beta_3\text{Loss}_{\text{jt}-1} + \beta_4\text{Conserv}_{\text{jt}-1} * \text{Loss}_{\text{jt}-1} + \beta_5\text{Conserv}_{\text{jt}-1} * \text{NEarn\_Cov}_{ijt} + \beta_6\text{Conserv}_{\text{jt}-1} * \text{Loss}_{\text{jt}-1} * \text{NEarn\_Cov}_{ijt} + \text{Controls} + \text{Offer\_Mnth}_{ij} + \text{Industry}_{\text{i}} + \varepsilon_{\text{ijt}}$$

The dependent variable is Bond Yield Spreads in all columns. All variables are as defined in Appendix II. Standard errors are clustered by industry and are robust with respect with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 9
Conservatism and Simultaneous determination of Bond Yield and Earnings Covenants

	Dependent Variable:			
	NEarn_Cov	Yield Spread	NEarn_Cov	Yield Spread
VARIABLES	(1)		(2)	
Yield Spread	-0.059		-0.049	
	(0.000)		(0.000)	
NEarn_Cov		-0.401		-0.303
		(0.000)		(0.000)
Conserv	-0.000	**0.027**	0.002	-0.0101
	(0.958)	**(0.000)**	(0.432)	(0.147)
Loss			-0.044	2.076
			(0.193)	(0.000)
*Conserv * Loss*			-0.019	**0.208**
			(0.181)	**(0.000)**
ROA	-0.006	-0.098	-0.007	-0.048
	(0.020)	(0.000)	(0.015)	(0.000)
Lev	0.091	2.308	0.083	1.712
	(0.015)	(0.000)	(0.026)	(0.000)
Size	-0.001	-0.004	-0.001	-0.004
	(0.000)	(0.000)	(0.000)	(0.000)
BM	-0.015	0.755	-0.021	0.694
	(0.367)	(0.000)	(0.207)	(0.000)
Offer_Amt	0.000	0.000	0.000	0.000
	(0.691)	(0.124)	(0.665)	(0.477)
Rating	0.002	-0.072	0.002	-0.060
	(0.043)	(0.000)	(0.016)	(0.000)
Maturity	-0.001	0.007	-0.001	0.008
	(0.360)	(0.000)	(0.268)	(0.000)
Seniority	0.001	-0.090	-0.002	-0.111
	(0.940)	(0.002)	(0.845)	(0.000)
Asset_Backed	-0.081	-0.753	-0.076	-0.672
	(0.278)	(0.000)	(0.311)	(0.000)
Redeemable	0.065	0.418	0.063	0.345
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	7,942	7,942	7,942	7,942
R-squared	0.76	0.56	0.76	0.60
Offering Quarter & Industry FE	Yes	Yes	Yes	Yes
Breusch-Pegan Chi-Squared	47.942		30.169	

Table 9 presents the estimates from the following seemingly unrelated regressions (SUR) model:

$$\text{NEarn\_Cov}_{ijt} = \alpha_0 + \alpha_1 \text{Spread}_{ijt} + \alpha_2\ \text{Conserv}_{jt-1} + \text{Controls} + \text{Offer\_qtr}_{ij} + \text{Industry}_i + \varepsilon_{ijt}$$

$$\text{Spread}_{ijt} = \beta_0 + \beta_1 \text{NEarn\_Cov}_{ijt} + \beta_2\ \text{Conserv}_{jt-1} + \text{Controls} + \text{Offer\_qtr}_{ij} + \text{Industry}_i + \varepsilon_{ijt}.$$

The dependent variable is Bond Yield Spreads in all columns. *Conserv* is the skewness measure of conservatism as defined earlier. All variables are as defined in Appendix II. Standard errors are clustered by industry and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses.

Table 10
The Effect of Conservatism on Firm Credit Ratings

	Dependent Variable: Firm Credit Rating	
VARIABLES	(1)	(2)
Conserv	**-0.014**	**0.035**
	(0.029)	**(0.000)**
Loss		-2.572
		(0.000)
*Conserv * Loss*		**-0.136**
		(0.000)
ROA	0.058	0.016
	(0.000)	(0.000)
Lev	-2.826	-2.207
	(0.000)	(0.000)
Size	0.044	0.0433
	(0.000)	(0.000)
BM	-0.321	-0.318
	(0.000)	(0.000)
StockRet	-0.001	-0.001
	(0.000)	(0.000)
CFOVol	-7.182	-5.585
	(0.000)	(0.000)
Observations	104,526	104,526
Pseudo R-squared	0.117	0.162

Table 10 presents the estimates from the following ordered-probit regressions:
$\text{Rating}_{ijt} = \beta_0 + \beta_1\text{Conserv}_{jt-1} + \beta_2\text{Loss}_{jt-1} + \beta_3\text{Conserv}_{jt-1} * \text{Loss}_{jt-1} + \text{Controls} + \varepsilon_{ijt}$.
The dependent variable is S&P long-term credit rating in all columns. *Conserv* is the skewness measure of conservatism as defined earlier. All variables are as defined in Appendix II. Standard errors are clustered by firm and are robust with respect to serial correlation and cross-sectional heteroscedasticity. Clustered robust P-values are reported in parentheses

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Appendix I: Analytical Model

Following Gigler and Hemmer (2001) and Gigler et al. (2009), consider a binary setting in which a firm's future cash flows could be either low (X_L) with probability p or high (X_H) with probability $(1-p)$ where p is the exogenous prior and a common knowledge. At an interim date, a conservative accounting system generates a report that could be either high or low (Y_H, Y_L) based on news about future cash flows and the degree of accounting conservatism. The conservative accounting system reports bad news immediately with probability one, but requires a higher verifiability threshold to disclose good news. For simplicity, assume that low values of cash flows are always reported as low (with probability one) but high values of cash flows are reported as high only with probability $(1-\lambda)$ which captures the notion of higher verifiability requirement for good news.[31] As such a high cash flow (X_H) can be reported as a low signal (Y_L) with probability ($\lambda > 0$). This accounting system is represented in Figure (1).

A1.1 Bond

Now consider a representative firm which raises one unit of currency by issuing a bond that pays $R > 1$ if the firm generates high cash flow (X_H) at maturity. However, if X_L is realized, firm's resources are not enough to repay either the promised interest or the principal of the bond, i.e., $X_L < 1 < R \leq X_H$. Additionally, the bond contains a covenant which transfers control rights to investors based on the realization of the interim signal that the accounting system generates which will be described below.

A1.2 Interim Signal

The accounting system which is characterized above generates an interim signal after the bond is issued and before the bond maturity. This signal is informative about the future cash flows

[31] In the continuous setting in Gigler et al. (2009), higher verifiability requirement for good news results in stochastic downward shift in earnings reports.

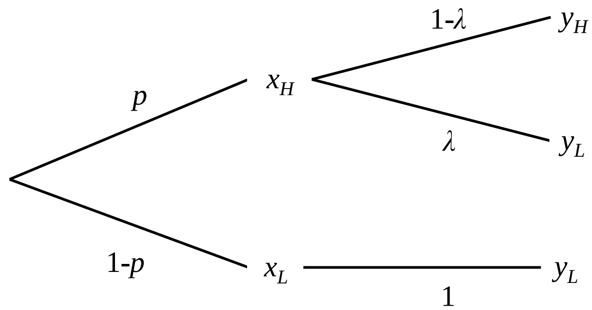

Figure (1): The structure of accounting system

of the firm. A bond covenant is written on this interim signal which transfers control rights to the bondholder in the case that the interim signal reflects firm's weak performance (i.e. Y_L). When Y_L is realized, the bondholder decide whether to continue the firm until the terminal date and receive either $X_L$or X_H or to liquidate the firm at an interim date for a liquidation value of M. Further, assume that the liquidation is efficient if the true cash flow is X_L but is inefficient if the true level of cash flow is X_H; i.e. assume $X_L < M < R \leq X_H$. The bondholder's decision tree and contingent payoffs are presented in Figure (2). Given the information structure of this model the following posterior probabilities could be derived:

$$p\ \ Y_L\ \ = p +\ \ 1 - p\ \ \lambda,$$

$$p\ \ Y_H\ \ = (1-\lambda)\ \ 1 - p\ \ ,$$

$$p\ \ X_H|Y_H\ \ = 1,\ \ p\ \ X_L|Y_H\ \ = 0,$$

$$p\ \ X_L|Y_L\ \ = \frac{p}{p+\ \ 1-p\ \ \lambda} \equiv \pi,$$

$$p\ \ X_H|Y_L\ \ = \frac{1-p\ \ \lambda}{p+\ \ 1-p\ \ \lambda} = 1 - \pi.$$

Using these probabilities, the payoffs to bondholder's decision after observing the interim signal can be obtained. When the interim signal is Y_L, the bondholder will choose to continue the firm only if the expected payoff from the continuation exceeds the immediate liquidation value M:

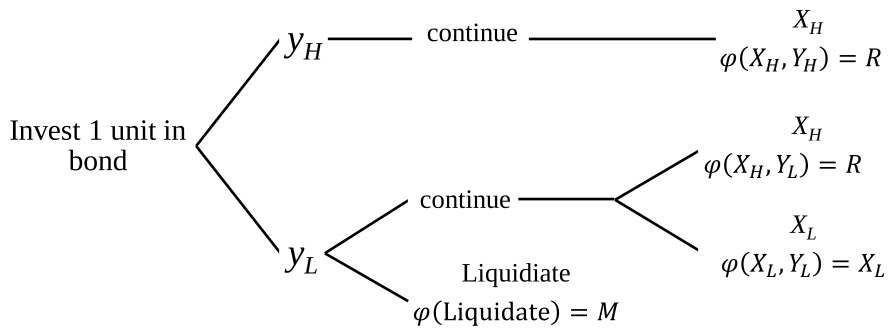

Figure (2): The Bondholder's payoff structure

$$p\ X_H|Y_L\ R+\ p\ X_L|Y_L\ X_L > M \Leftrightarrow\ 1-\pi\ R+\pi X_L > M \Leftrightarrow \pi < \frac{R-M}{R-X_L}.$$

By Substituting π and rearranging the above condition, one can obtains that if $\lambda > \left(\frac{p}{1-p}\right)\frac{M-X_L}{R-M} \equiv \lambda_0$, the bondholder will prefer to let the borrower continue when a low interim signal is realized. The intuition is that, for a high degree of conservatism (λ), the low interim signal Y_L has a high chance of being drawn from a high cash flow value because $p\ X_H|Y_L$ is increasing in λ. Therefore, the expected payoff from continuation exceeds the liquidation value even though the interim signal shows weak performance.

The expected payoff in this case will be equal to $P\ X_H|Y_L\ R + P\ X_L|Y_L\ X_L$. This expression shows that if the level of conservatism is too high, the uncertainty about the true state of cash flow when Y_L is reported increases to the extent that the investor will ignore the interim signal and will not base her interim decision on the accounting signal, hence, she will always continue the project.

On the other hand, when $\lambda < \left(\frac{p}{1-p}\right)\frac{M-X_L}{R-M}$ the bondholder will prefer to exercise her contractual rights and liquidate the firm when Y_L is reported. In this case, her payoff given $Y_L$is observed is simply M. Consequently, investors expected payoff at time 0, will be different under two conservatism regimes; If

$\lambda > \left(\frac{p}{1-p}\right)\frac{M-X_L}{R-M} \Rightarrow E_0[Payoff|\lambda > \lambda_0] = P\ Y_H\ R + P\ Y_L\ [P\ X_H|Y_L\ R + P\ X_L|Y_L\ X_L]$

and if

$\lambda \leq \left(\frac{p}{1-p}\right)\frac{M-X_L}{R-M} \quad \Rightarrow \quad E_0[Payoff|\lambda \leq \lambda_0] = P\ Y_H\ R + P(Y_L)M.$

Replacing $P\ Y_H$, $P(Y_L)$, $P\ X_H|Y_L$, and $P\ X_L|Y_L$ in the above equations results in the following proposition:

Proposition 1 *When* $\lambda > \left(\frac{p}{1-p}\right)\frac{M-X_L}{R-M}$*, the bondholder will always continue the project and her expected payoff at t=0 is* $E_0[Payoff|\lambda > \lambda_0] = \ 1-p\ R + PX_L$*. When* $\lambda \leq \left(\frac{p}{1-p}\right)\frac{M-X_L}{R-M}$*, the bondholder will liquidate the firm when* Y_L *is observed and continue the project when* Y_H *is observed. Her expected payoff at t=0 will be* $E_0[Payoff|\lambda \leq \lambda_0] = R - [P +\ 1-P\ \lambda](R - M)$.

As one can readily see, the expected payoff to the bond is strictly increasing in λ when $\lambda \leq \lambda_0$ and insensitive to changes in λ when $\lambda > \lambda_0$ which leads to the following corollary:

Corollary 1 *The Expected payoff to a bond is weakly decreasing in the degree of conservatism (*λ*). Specifically:*

$\frac{\partial}{\partial\lambda}E_0[Payoff|\lambda \leq \lambda_0] = -\ 1-P\ \ R-M\ < 0$ *and* $\frac{\partial}{\partial\lambda}E_0[Payoff|\lambda > \lambda_0] = 0.$

The result in proposition 1 and corollary 1 should not be surprising. Rewriting bondholder's expected payoff when $\lambda \leq \lambda_0$, one can obtain:

$E_0[Payoff|\lambda \leq \lambda_0] = [\ 1-p\ R + PM] + [\ 1-P\ \lambda\ M-R\ ].$

The term in the first bracket on the right hand side of the above equation is simply the expected payoff had the interim signal been fully informative; that is, when $\lambda = 0$, X_H is reported as Y_H and X_L is reported as Y_L with probability one. So, there will be no ambiguity about the level of

(A): The Bond expected payoff (B): Bond Interest rate

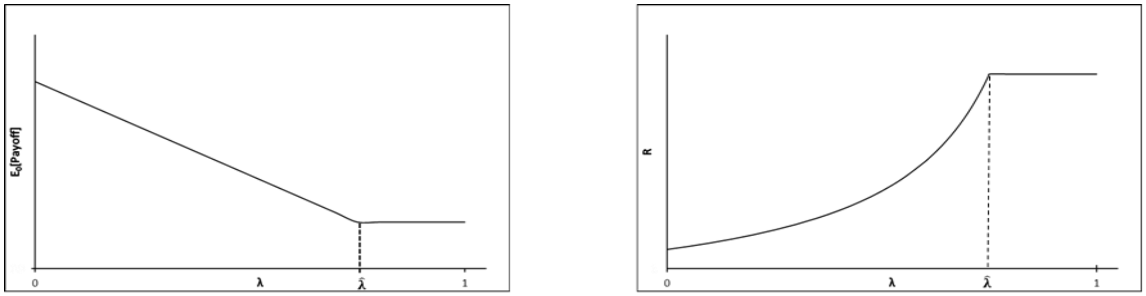

Figure (3): The Bond expected payoff (A) and Interest rate (B) as a function of conservatism Level

cash flows specifically when the low signal (Y_L) is observed. However, when $\lambda > 0$, uncertainty about the cash flow from which Y_L is drawn arises. In this case, with probability $P\ Y_L\ P\ X_H|Y_L\ =\ 1-p\ \lambda$ the low signal is drawn from X_H state, yet the firm will be inefficiently liquidated. Therefore, the bondholder receives $M(< R)$ at the interim date instead of a potential R at the maturity. The second bracket on the left hand side of the above expression, represents this inefficiency.

It should be obvious that any decrease in the expected payoff of a bond will result in a higher interest rate. The simplest way to illustrate this point, is to assume that there exists a risk free asset in the market which will pay R_f at the terminal date for every dollar invested at time 0. In expectation, the payoff of all assets in the economy must be equal to the risk free rate at time 0, i.e., $E_0[Payoff] = R_f$. Conditioning this relationship on different values of λ, I can write:

If $\lambda \leq \lambda_0$: $E_0[Payoff|\lambda \leq \lambda_0] = [\ 1-p\ R + PM] + [\ 1-P\ \lambda\ M-R\ ]\ = R_f$, and if

$\lambda > \lambda_0$: $E_0[Payoff|\lambda > \lambda_0] =\ 1-p\ R + PX_L = R_f$.

Rearranging the above expressions will lead to the following proposition:

Proposition 2 *The relationship between bond interest rates and conservatism will be a piecewise function described below:*

If $\lambda < \left(\frac{p}{1-p}\right)\frac{M-X_L}{R-M}, R = M + \frac{R_f-M}{(1-P)(1-\lambda)}$.

If $\lambda > \left(\frac{p}{1-p}\right)\frac{M-X_L}{R-M},\ R = \frac{R_f-PX_L}{1-P}$.

Once again, the following corollary is readily obtained.

Corollary 2 *The bond interest rate is weakly increasing in the degree of conservatism (λ). Specifically:*

$$If \quad \lambda \leq \left(\frac{p}{1-p}\right)\frac{M-X_L}{R-M},\ \frac{\partial R}{\partial \lambda} = \frac{(R_f-M)}{1-P \quad 1-\lambda} > 0,\ and\, If \quad \lambda > \left(\frac{p}{1-p}\right)\frac{M-X_L}{R-M},\ \frac{\partial R}{\partial \lambda} = 0.$$

Figure 3 summarizes the results obtained in corollary 2.

Appendix II: Variables Definitions

Variable		Definition
Anlst_Disp	=	Indicator variable that equals 1 if the average analyst dispersion during the past 5 to 20 quarters used in measuring conservatism belongs to the lowest tercile.
Anlst_No	=	Indicator variable that equals 1 if the average number of analysts during the past 5 to 20 quarters used in measuring conservatism belongs to the highest tercile.
Asset_Backed	=	Indicator variable that equals 1 if the issue is asset backed.
BM	=	Total common equity divided by market value of equity.
Bid-Ask	=	Quarterly bid-ask spread of traded bonds.
CFO	=	Operating cash flows.
Conserv (Skewness)	=	Difference between the skewness of operating cash flows (deflated by total assets) and earnings before extraordinary items (deflated by total assets) using a maximum of 20 and a minimum of 5 prior quarters.
Conserv (Basu)		Basu measure of asymmetric timeliness estimated from a time-series regression of the Basu model using a minimum of 10 and maximum of 20 quarters data.
Conserv (Non Op Accruals)	=	Negative non-Operating accruals measure of conservatism defined as-1 × (Net Income + Depreciation Expense - Cash Flows from Operations - (ΔAccounts Receivable + ΔInventories + ΔPrepaid Expenses – ΔAccounts Payable - ΔTaxes Payable))/Total Assets averaged over the past 20 quarters using minimum of 5 quarters.
Conserv (Unamortized R&D)	=	Unamortized portion of R&D assets generated by current and past R&D expenditures, using the sum-of-the-quarters' digits method over 20 quarters, scaled by Net Operating Assets defined as (Total Assets + Long-Term Debt + Debt in Current Liabilities - Total Liabilities – Investments and Advances - Cash and Short-Term Investments).
NEarn_Cov	=	Earnings covenant intensity defined as the sum of fixed_charge_coverage_is, fixed_charge_coverage_sub, net_earnings_test_issuance covenants on FISD file.
InvGrade	=	Indicator variable that equals 1 if the bond issue is rated BBB- or better.
Lev	=	Total long-term liabilities deflated by total assets.
Loss	=	The proportion of periods with negative reported income before extraordinary items over the same quarters that is used to measure conservatism.
Maturity	=	Initial duration of bonds (*years*).
Ncov	=	Total number of covenants included in a bond contract.
Offer_Amt	=	Bond offering size (*millions USD*).
Rating	=	(=Rating_Issue) S&P bond rating at issuance coded from 1 to 22 where highest numbers represent better ratings. If S&P rating is not available, I use Moody's or Fitch ratings.
Rating_Trd	=	In bond-level regressions, I use S&P issue-specific bond ratings at the transaction quarter, which is replaced with Moody's or Fitch ratings if S&P ratings are unavailable. In firm-level regressions, I use S&P firms' long-term debt credit ratings in the transaction quarter. If missing, it is replaced with the imputed rating from the regression of $Rating = \hat{\beta}_0 + \hat{\beta}_1 ROA + \hat{\beta}_2 Lev + \hat{\beta}_3 B2M + \hat{\beta}_4 Size + \hat{\beta}_5 Loss + \hat{\beta}_6 Div$ where coefficients are estimated for available data and used to predict missing ratings. *Loss* is the negative earnings indicator for the quarter and *Div* is an indicator for quarters with dividend payments. Other variables are as defined in this table. The variable is coded similar to Rating.

Appendix II: Variables Definitions *(Continued)*

Redeemable	=	Indicator variable that equals 1 if the issue is redeemable.
ROA	=	Net income as a percentage of total assets.
Seniority	=	Seniority level of issued bond coded from 1 (junior subordinate) to 7 (secured senior).
Size	=	Market value of equity (*billions USD*)
Spread	=	Bond yield spreads defined as the offering yield (or yield to maturity in secondary market tests) subtracted by the yield of treasury security offered during the same month with closest maturity date to that of the bond.
StockRet	=	Raw cumulative quarterly stock returns.
Tmt	=	Remaining life of a bond (*years*).
CFOVol	=	Standard deviation of operating cash flows deflated by total assets calculated over the same prior 5 to 20 quarters over which Conservatism is measured.
RetVol	=	Quarterly standard deviation of bond returns calculated form daily bond returns. In firm-level regressions, this variable represents equally weighted average of the standard deviation of all bonds of the firm.
InfoCost	=	The volatility of returns explained by *Conserv* interacted with *Loss* i.e., $InfoCost_t = \hat{\alpha}_{j1}\ Conserv_{jt} + \ \hat{\alpha}_{j2} Conserv_{jt} * Loss_{jt} + \hat{\alpha}_{j3} Loss_{jt}$ where parameters are estimated from $InfoCost_t = \alpha_0 + \alpha_1\ Conserv_{t-1} + \alpha_2 Conserv_{t-1} * Loss_{t-1} + \alpha_3 Loss_{t-1} + \alpha_4 ROA_{t-1} + \alpha_5 Lev_{t-1} + \alpha_6 Size_{t-1} + \alpha_7 B2M_{t-1} + \alpha_8 CFO_{t-1} + \alpha_9 VCFO_{t-1} + \alpha_{10} StockRet_t + \alpha_{11} Rating_t + \varepsilon_t$.