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The effect of timely loss recognition and accrual quality on corporate bond spread: the influence of legal and financial institutions

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Title: The effect of timely loss recognition and accrual quality on corporate bond spread: the influence of legal and financial institutions.

Abstract: We use a unique dataset of 11,497 corporate bonds issued by firms operating in 56 countries. The objective of the paper is to study the effect of timely loss recognition and accrual discretion on the design of public debt contracts in international bond markets, especially that previous research had more focus on bank loans rather than bonds. The paper provides an alternative explanation to prior literature for the relevance of timely loss recognition to the bond market, and clarifies more the role of accrual quality in debt contracting. We utilize our international sample to capture variations in the main analysis with respect to the legal enforcement in which the issuer firm operates, or the financial development of the market of issue. We find evidence that timely loss recognition is counterproductive with bond issuances, whereas accrual quality has a strong favorable impact on bond spread. The relevance of accounting choices to bond markets changes with the level of a country's law enforcement and a market's financial development. The paper encourages researchers to come up with different explanations for the influence of accounting choice on different types of debt contracts. It also highlights the role played by institutions to mitigate the effects.

Key words: Timely loss recognition - Timely loss recognition – Accrual Quality – Earnings management – Abnormal Accruals - Debt contracts – Spread – Maturity – Cost of Debt – Bonds – Accounting Quality.

1. Introduction

The corporate debt raised through capital international markets in the first quarter of 2018, amounted to 770.7 billion US dollars, 482.6 billion Euros, 56.3 billion British pounds, and 29.4 billion Australian dollars; among other issuances with other currencies and less amount[1]. Though equity and debt are important sources of finance, equity markets have had the lion's share in research; and debt markets remain to a large extent a black box. The fundamentals and stock market information of public corporations cannot get any easier to access. However, debt contract information has very specific databases that are costly. The paper takes a positive accounting theory approach, in which the core of the paper is how accounting choice affects

[1] The statistics is retrieved from statistca.com.

contracting parties, and how managers use their discretion within the accepted set (the accounting standards) to reach a desired end state (see; Watts and Zimmerman, 1986); this type of research is very important because it tests the implications of accounting choice on debt contracting parties.

The development of the positive accounting theory has directed accounting research to accounting choices. The implications of the theory have been the corner stone for research in both accrual quality and timely loss recognition; bearing in mind that both constructs have management discretion embedded in them. Nevertheless, the literature for debt contracting is limited and generalizations are drawn from few empirical papers. In the few coming paragraphs, we illustrate more on both timely loss recognition and accrual quality; and their relationship with debt contracting.

Timely loss recognition is interpreted as how quickly bad news is incorporated into earnings, as opposed to good news. The asymmetric importance of bad news to debt holders, relative to good news, has motivated the debt contracting explanation of conditional conservatism (Watts, 2003). In other words, managers choose to report bad news quickly to allow for prompt covenant violations and lower agency costs. This is the official story for debt contracting explanation of conservatism, one that is backed by limited research. The research in this field focuses on private debt that has low negotiation costs and many restrictive covenants. Only 4 research papers at the debt level back the contracting explanation of conservatism, in which the 4 papers are conducted on US private debt (see; Zhang, 2008; Wittenberg-Moerman, 2008; Beatty et al., 2008; Sunder et al., 2018). However, if a debt contract is already concluded and there is low probability of negotiating its terms, will debt holders in this case seek timely loss recognition?! This paper provides evidence that seeks to revise the debt contracting explanation of conservatism; especially for bond contracts. The paper provides an alternative explanation for how timely loss recognition affects public debt contracts.

Accrual discretion is used by managers to influence earnings upwards or downwards to achieve a certain contractual outcome (Dechow & Skinner, 2000). Some scholars focus on how management uses discretion to influence the credit rating of the firm favorably (for example; Jung, Soderstrom, & Yang , 2012; Alissa, Bonsall , Koharki, & Penn., 2013; Iatridis, 2018). Other research finds that firms with better accrual quality have lower average cost of debt

(Francis et al. 2005; Bharath et al. 2008). The question here is how management choice of accruals influences bondholders. Upward accrual discretion can influence the profitability of the firm positively; however, it cannot influence the cash flow from operations. A large discrepancy between earnings and cash flow from operations signals a problem with accruals; and is associated with higher firm risk.

The paper suggests that accrual quality is of greater relevance to bondholders compared to timely loss recognition; as the quality of earnings reflects the cash flows of the firm. Whereas, timely loss recognition incorporates bad news that is already known to the market and, thus, its inclusion in the income statement of the firm is irrelevant. Bondholders react to bad news through selling or keeping the bond. Unlike private debt holders, bondholders' actions are not tied to accounting covenants. The bond price adjustments to bad news alter the effective interest rate to investors willing to buy the bond in the secondary market.

The objective of the paper is to examine how accounting choices, as represented by timely loss recognition (quick recognition of adverse news relative to good news in company income) and accrual discretion (management choice of accruals), affect bond spread. The paper contributes to the literature in many ways; the paper provides an interesting explanation for how timely loss recognition might be of less relevance to bondholders compared to private debt holders. To enhance the robustness of results, we use 3 measures of timely loss recognition to back our explanation. Moreover, our results show that accrual quality has strong favorable impact on bond spread, suggesting that it can be used to predict firm's future bond spread. We extend the contribution of previous research by testing the main hypotheses in different legal frameworks and financial markets. The results offer insights of how a country's legal system and a market's financial development influence the relevance of accounting information to debt contracting.

The sample consists of 11,497 bonds issued by firms in 56 countries; from year 2006 till April 2017; the corporate bonds are retrieved from the Government and Corporate Bonds Database provided by Thomson Reuters Eikon®. First, we measure the effect of both timely loss recognition and accrual quality on bond spread using country and year fixed effects regression model. Second, we divide the main sample according to law enforcement and re-run the tests for the subsamples. Third, we run cross-sectional regressions on individual bond markets.

Furthermore, the bond markets are clustered based on the level of financial development and the tests are re-run.

The findings suggest that timely loss recognition seems to add debt contracting disadvantages, as higher levels of timely loss recognition is associated with higher bond spreads. The paper advances knowledge by new evidence about how timely loss recognition influences bond issues. The results imply that timely loss recognition may be of more relevance to private debt (bank loan) rather than bonds. On the other hand, there is strong evidence that accrual quality has favorable impact on bond spread. The results are more pronounced in strong enforcement countries and in markets with high financial development.

2. Prior research and hypotheses

2.1. Timely loss recognition and debt contract efficiency

Theoretical explanations for conditional conservatism have been popular since the introduction of the positive accounting theory. Watts & Zimmerman (1986) define conservatism as the accountant tendency to select the lowest value for assets as opposed to choose the highest value for liabilities. Expenses should be recognized sooner than later while the opposite is true for revenues. Watts (1993) provides 2 main explanations for conservatism which are debt contracting and regulation. Later, Basu (1997) interprets conservatism as the accountants need for higher degree of verification for the recognition of good news versus bad news. This result in what Basu calls asymmetry of timely loss recognition in which bad news is recognized more quickly than good news; positive stock returns proxy for good news; while negative stock returns proxy for bad news. Later on, Watts (2003) develops the conservatism theory, in which conservatism has four main explanations; debt contracting, regulation, shareholder litigation, and taxation. Though Watts (2003) suggests that the four explanations play a role, previous research points out that debt contracting and shareholder litigation are the most important factors in explaining variation in conservatism. Watts (2003) theorizes that debt holders are more concerned about bad news rather than good news; as, at the time of concluding the contract, debt holders agree on certain contractual payments, no matter how much the net assets are maximized, debt holders will only receive their contractual payments. On the other hand, in case the company defaults and liquidation of assets takes place, debt holders face a risk of lower payment than contractually agreed; especially that shareholders are protected by limited liability.

Therefore, debt holders demand conservative accounting to protect their rights and reduce the probability of moral hazard.

Though theoretical foundations are well established for the topic at hand, the empirical assertions for the theory is grounded on limited empirical work; which, on its turn, mainly focuses on private debt. Consequently, this causes the literature to be incomplete. Few studies examine the association between timely loss recognition and debt terms at the contract level, especially public debt contracts. Zhang (2008); Wittenberg-Moerman (2008); Beatty et al. (2008); Nikolaev (2010); Liu and Magan (2016); & Sunder et al. (2018); represent, to the best of my knowledge, the total publications that relate timely loss recognition with debt terms in a study at the debt contract level; all the identified papers use private debt contracts (loans) and only include US debt, with exception to Nikolaev (2010), and Liu and Magan (2016). Nikolaev uses US bonds, nevertheless, our study is substantially different; as he studies the association between timely loss recognition and covenant use. However, this paper aims at exploring the impact of timely loss recognition on cost of debt. Liu and Magan (2016) find that conditional conservatism has a positive effect on US corporate bond spread, a result that though different from previous research, has not drawn scholars' attention.

Private debt contracts usually contain debt covenants, and are negotiated many times in the life of the loan (Roberts, 2015; Godlewski, 2015a). On the other hand, bonds depend less on covenants, and are rarely negotiated (Rajan & Winton 1995; Gilson & Warner 1998; Dichev & Skinner 2002, Bharath et al. 2008). Li (2013) suggests that in case renegotiation costs are high and renegotiation is not possible, accounting conservatism might not be favorable to the lender; especially when the contract is already signed, and consequently accounting information will be irrelevant. Liu and Magan (2016) back the renegotiation hypothesis suggested by Li; their findings suggest that timely loss recognition is positively related to US corporate bond spreads; as bonds have higher negotiation costs than private loans.

Therefore, the conclusions drawn on conservative accounting and debt contracting are more theoretically driven, and generalizations are drawn from research that mainly focuses on US private debt.

2.1.1. Hypothesis development: Timely loss recognition effect on bond spread

The paper provides an alternative explanation of how timely loss recognition affects bond spread. The bond market reacts asymmetrically to bad news relative to good news. Defond and Zhang (2014) find that firm's bad news is related to a drop in bond prices, suggesting that firm specific information causes bond price reactions. Consistent with this finding, Fang and Hung (2014) find that bonds same as equity have price reductions based on firm unsystematic risk or adverse news specific to the firm. Therefore, we believe a rational investor, holding a mix of bonds and stocks, aims at maximizing his/her asset value. Given that he/she has low influence over the firm issuing the bond, and cannot negotiate terms or demand control rights, therefore the bondholder reaction to bad news would be either to keep or to sell the bond.

Figure 1, illustrates the mechanism in which bad news affects both private and public debt holders. Private debt holders use covenants that are based on accounting numbers or ratios, so when bad news (which is already known to the market) is not incorporated into financial statements, this would not allow quick covenant violations and project liquidation. Consequently, less conservative accounting would restrict the actions that can be taken by lenders to protect their rights; and in this case they would demand conservative accounting. However, the mechanism is different for bonds, because bonds already depend less on covenants and are often traded, so whenever there is bad news that is known to the market, it will be irrelevant whether this news is incorporated into the financial statements. The bondholder reaction to bad news could be by selling the security if the bad news is to affect the future cash flows, or to keep it if it would not. The price reaction to bad news adjusts the bond effective spread to the future bondholder who is willing to take a higher risk and a higher rate. So the mechanism suggested by Watts (2003) in which timely loss recognition reduces debt spread is irrelevant to the contracts that use less covenants. While some bonds, of course, use covenant restrictions, previous research suggests that the importance of covenants is less pronounced for bond contracts (see for example; Bharath et al. 2008; Ball, et al. 2015)[2]. For that we hypothesize that timely loss recognition may magnify the effects of bad news and will be irrelevant to the bondholder. Figure 1, illustrates the mechanisms in which bad news affects both private and public debt holders.

H1: Firm timely loss recognition is significantly associated with higher bond spread.

[2] Both Bharath et al. 2008 and Ball et al. 2015 use a sample of private and public debt. They assert that public debt has generally less dependence on covenants.

[Insert Figure 1 about here]

2.2. Accrual quality and debt contracting

Accrual discretion represents the management choice of accruals. Managers may choose to report aggressive accruals, to influence the earnings either upward or downward. However, if managers choose to limit discretionary accruals, then, a firm is said to have good accrual quality. Our objective is to examine how managers use discretionary accruals to influence bond terms, prior to the conclusion of the contract. Dechow & Skinner (2000) define accrual discretion as the management choice of accruals within the boundaries of accounting standards, in order to increase or decrease earnings, to reach a desired contractual outcome.

Sengupta (1998) and Bharath et al. (2008) investigate reasons why managers may increase the transparency of their accounting information. Sengupta (1998) documents that good accounting quality is used by underwriters and credit rating agencies as a determinant for the bond issues' rating and credit risk. She added that firms that produce information rich disclosures in a timely manner, are perceived to be less engaging in moral hazard, and therefore are rewarded with lower interest charges; and are perceived to have lower default risk. Bharath et al. (2008) extend her work, by documenting that accrual quality does not only induce favorable debt terms due to a reduction in the default risk, but also it has an incremental change on debt terms, due to a reduction in the information risk.

Prior research documents that management uses upward accrual discretion to influence credit rating favorably, as deterioration in credit rating has a negative effect on a firm's access to finance, especially if the expected credit rating is below the current credit rating (Jung, Soderstrom, & Yang , 2012; Alissa, Bonsall , Koharki, & Penn., 2013; Iatridis, 2018). Ahmed et al. (2002) use a firm's credit rating as a proxy for cost of debt, as credit rating is highly correlated with lower interest rates and lower probability of default. For this reason, if discretionary accruals affect credit rating favorably, then it may lead to lower cost of debt.

On the other hand, Francis et al. (2005); Bharath et al. (2008) show that accrual quality is related to lower interest costs. The literature relating accrual quality with debt terms finds contradicting evidence with those studying the effect of accrual discretion on credit ratings. While Francis et al. (2005); Bharath et al. (2008); find evidence that accrual quality is related to lower cost of debt, on the ground that accrual quality reduces the information risk to creditors, other research

suggests that accrual discretion may be used by management to improve credit ratings (Jung et al., 2012; Alissa et al., 2013; and Iatridis, 2018). Therefore, the effect of accrual discretion on bond terms is an empirical question. The studies relating accrual quality with debt terms were conducted on US debt and therefore, there is a concern about their generalizability at an international level. Also, the literature is underdeveloped with respect to the number of studies that relate accrual quality and debt terms.

2.2.1. Hypothesis development: accrual quality and bond spread.

The positive accounting theory hypothesizes that managers use their discretion to influence contractual outcomes (Watts & Zimmerman, 1986). Accrual quality reduces the information risk for creditors, and has a greater relevance to the bond market (Bharath et al. 2008). Moreover, it strengthens the creditors' ability to forecast future cash flows due to enhanced earnings quality. Therefore, we hypothesize that managers are expected to limit their discretionary accruals to gain favorable bond spread.

H2: Firm accrual quality is significantly associated with lower bond spread.

3. Accounting choices and bond spread: the influence of legal and financial institutions

The paper intends to study the relevance of accounting choices to bond spread with respect to different institutional settings. Hope (2004) studies the variation of accrual quality with respect to country's institutional factors. Bushman and Piotroski (2006) study how the choice of conservative accounting is influenced by the legal and political institutions of a country. Ball et al. (2008) show that countries, with greater financial development, devote more resources to institutional and operational factors; increasing the effectiveness of the financial system.

Though institutional settings have an important role in influencing the relevance of accounting information to debt contracting, previous research mainly focused on US debt. To build on this limitation, the paper utilizes different strategies to capture the effects of legal and financial institutions on the main tests. First, a country's law enforcement is believed to mitigate the effects of accounting choices. Our sample has 56 countries with varying law scores[3]. The 56 countries are segregated according to the level of law enforcement and the main relationships are

[3] Law score is based on the law score developed by Kaufman et al., for details for the computation and methodology used see Kaufmann et al. (2010). Data for the law score is available from 1996 to date in the World Bank governance indicator website. Law score "reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence".

re-tested. Second, though there are 56 countries in the main sample, it is found that most of the sample is issued in 25 bond markets. Only markets with more than 38 issuances are kept. We hypothesize that individual markets of issue will mitigate the effects of accounting choices on bond cost of debt. Moreover, we hypothesize that the level of financial development of the market of issue will influence how accounting choices affect the bond cost of debt. For example, if a firm headquartered in Thailand wishes to issue bonds in the United States, it will probably have variations in the effects of accounting choices on debt contracting, relative to local issuances. Therefore, the bond contracts are clustered according to the financial development index[4] of the market of issue rather than the nationality of the issuer firm.

H3: The effect of accounting choice on bond spread varies according to country's level of law enforcement.

H4: The effect of accounting choice on bond spread varies with respect to the market of issuance.

H5: The effect of accounting choice on bond spread varies according to market's level of financial development.

4. Methodology

4.1. Variable measurements

4.1.1. C-score

Khan and Watts (2009) develop a firm-year measure of timely loss recognition; C-score. C-score is computed based on cross-sectional regression of the Basu model along with firm specific variables. Khan and Watts (2009) extend the basic Basu model in equation (a) as shown in equation (b) and run cross-section piecewise regression by year, to get the empirical estimators λ_1,λ_2, λ_3, and λ_4, in order to compute C-score as in (d). C-score represents how promptly bad news, relative to good news, is incorporated into net income; represented by *Earnings*. Negative stock returns are used as a proxy for bad news, while positive stock returns reflect good news. G-

[4] Financial development index is a comprehensive index developed by the International Monetary fund (IMF). The index includes Access, Depth, and Efficiency of Financial Institutions and Financial Markets. Financial Institutions include Banks, Insurance Companies, Mutual Funds, whereas Financial Markets include stock and bond markets (Sahay et al.2015).

score represents how quickly good news is incorporated into net income. All non-ratio variables are converted to US dollars using end of fiscal year currency rate. C-score is a firm-year measure that incorporates firm specific factors, unlike the measures utilized in Sunder et al. (2018) (in which they treat timely loss recognition as an industry-year score) or in Li (2015) (where timely loss recognition is treated as a country-year score).

Basu (1997) piecewise linear regression: $Earnings = \beta_0 + \beta_1 D + \beta_2 R + \beta_3 DR + \varepsilon$ (a)

Extended regression equation for the Basu model, developed by Khan and Watts (2009):

$Earnings = \beta_0 + \beta_1 D + R(\mu_1 + \mu_2 size + \mu_3 MTB + \mu_4 Lev) + DR(\lambda_1 + \lambda_2 size + \lambda_3 MTB + \lambda_4 Lev) + (\delta_1 Size * D + \delta_2 MTB * D + \delta_3 LEV * D + \delta_4 Size + \delta_5 MTB + \delta_6 Lev) + \varepsilon$ (b)

$G - score = \mu_1 + \mu_2 size + \mu_3 MTB + \mu_4 Lev$ (c)

$C - score = \lambda_1 + \lambda_2 size + \lambda_3 MTB + \lambda_4 Lev$ (d)

Variable Definitions	
Earnings	Net income before extraordinary items scaled by lagged market value.
R	Annual stock return computed by monthly return.
D	Dummy variable taking value of 1 if R is negative, 0 otherwise.
DR	Negative annual stock return
β_3	Measures the sensitivity of bad news to earnings as opposed to good news (timely loss recognition).
MTB	Market value of equity divided by book value of equity.
Size	Log market value of equity.
Lev	Leverage calculated as total liabilities scaled by market value of equity.

4.1.2. Modified C-score

Li (2015) uses Basu piecewise linear regression model mentioned in the last section under equation (a) to run the regression by country- year, to get a country-year measure of timely loss recognition. Li explains that country-year measures are better in expecting timely loss recognition as a firm in a specific country faces the same law, regulation and reporting norms, in this measure all firms in a country will have the same score. To extend his work and build on this limitation, we run equation (d) in Khan and Watts model by country-year, instead of year. Same as C-score, we substitute λ_1,λ_2,λ_3,and λ_4 generated from equation (b) into equation (d) to compute Modified C-score. This gives a timely loss recognition measure that varies across firms and countries.

4.1.3. Negative skewness of earnings

The negative skewness of earnings measure is developed by Givoly and Hayn (2002), in which timely loss recognition is computed through measuring the time series skewness of earnings deflated by the skewness of cash flow from operations. Skewness of earnings is measured by skewness of Net Income Before Extraordinary Items (EBXI) scaled by total assets for the past 6 years before the observation year. Skewness of cash flow from operations is measured by skewness of cash flow from operations (CFO) deflated by total assets for 6 years before the observation year. The negative skewness of earnings measure is multiplied by -1 to get a measure increasing with timely loss recognition. Givloy and Hayn (2002) explain that if timely loss recognition leads to prompt recognition of bad news, it is expected that earnings would reflect the bad news before cash flows does, therefore the negative skewness of earnings relative to cash flows reflects the level of timely loss recognition. The negative skewness of earnings measure is used in Beatty et al. (2008) and Zhang (2008).

$$Consv\_skew = -\left(skew\frac{EBXI}{Total\ Assets} \Big/ skew\frac{CFO}{Total\ Assets} \right)$$

4.1.4. Accrual Quality measure

The paper uses modified jones model developed by Dechow, Sloan & Sweeney (1995) to measure the level of abnormal accruals. The model divides total accruals into discretionary and non-discretionary accruals. The amount of deviation of Cash Flow from Operations (CFO) from earnings, shows the extent of discretionary (abnormal) accruals, and signals the possibility of earnings management (Bharath et al, 2008). The paper calculates total accruals as the difference between (EBXI) and CFO, because in the absence of accruals, EBXI should equal CFO, and therefore the difference between both figures represents total accruals (the total effect of expenses and revenues that are not paid in cash). Cross-sectional regressions are run for equation (f) by industry-year based on Thomson Reuters Eikon® industry classification. Similar to Dechow et al., (1995) and Kothari, Leone & Wasley, (2005), only observations that lie in industries with at least 10 unique firm-year observations are kept. Moreover, when estimating the measure, any repeated firm in a single year is eliminated to reduce bias. We use k1, k2, and k3 generated from equation (f) to calculate normal accruals as in equation (g). The abnormal accruals are calculated as the absolute value of the difference between Total Accruals and

Normal Accruals as in equation (h). Then, the value of abnormal accruals is multiplied by -1 to obtain a value increasing with accrual quality. All variables are defined below.

Total Accruals = TA = EBXI - CFO (e)

$$\frac{TA_t}{Assets_{t-1}} = k_t\frac{1}{Assets_{t-1}} + k_2\frac{\Delta Rev_t}{Assets_{t-1}} + k_3\frac{PPE_t}{Assets_{t-1}} + \varepsilon_t \quad \text{(f)}$$

$$NA_t = \widehat{K}_t\frac{1}{Assets_{t-1}} + \widehat{K}_2\frac{(\Delta Rev_t - \Delta AR_t)}{Assets_{t-1}} + \widehat{K}_3\frac{PPE_t}{Assets_{t-1}} + \varepsilon_t \quad \text{(g)}$$

$$Abnormal\ accruals = -|(TA_{it})/(Assets_{t-1}) - NA_{it}| \quad (h)$$

CFO	Cash flow from operations.
EBXI	Net income before extraordinary items and discontinued operations.
Assets	Assets lagged one year before the firm-year observation.
ΔRev	Difference between Revenue in year t and year t-1; $\mathrm{Rev_t} - \mathrm{Rev_{t-1}}$.
PPE	Gross value for Property, Plant, and Equipment.
ΔA/R	Difference between Account receivable in year t and year t-1; $\mathrm{A/R_t} - \mathrm{A/R_{t-1}}$.
NA	Normal accruals represent the non-discretionary part of accruals based on the modified jones model; derived from the difference between changes in Revenues and changes in Accounts Receivables.
TA	Total accruals calculated as EBXI less than cash flow from operations

4.2. Sample

The sample consists of 11,497 bonds issued in 56 countries; from year 2006 till April 2017; the public debt contracts are retrieved from the Government and Corporate Bonds Database provided by Thomson Reuters Eikon©. The bond sample is based on corporate bonds, and bonds issued by firms in the financial sector are excluded. The initial sample is 43,168 bonds, out of the 43,168 bonds only 22,536 were issued by public companies. Since Basu regression model requires annual stock return, only contracts issued by public companies are kept. Bonds with missing information were omitted from the sample. Table 1 shows details for sample construction. To compute an unbiased estimate for C-score, Modified C-score, and Accrual Quality, only one unique firm observation per year is allowed to enter the computation, as some firms have more than 1 bond contract issued in a single year. Then, the C-score is matched to the final sample; this keeps 7,984 unique firm-year observations. To compute the Accrual Quality measure, an industry should have at least 10 unique firm observations in a year. To compute Modified C-score, a country must have at least 10 unique firm-year observations. After computation of C-score, Modified C-score and Accrual Quality, we match the scores to the initial bond sample of 17,606 bonds, to get the final sample. It is important to clarify that in the final sample a firm may have several issuances in a year. Table 1 shows the details for sample

construction. Table 2 shows the details for sample composition in terms of industry, country and level of law enforcement.

[Insert Table 1 about here]

[Insert Table 2 about here]

4.3. Research design

First, the paper tests the relationships between timely loss recognition and cost of debt (H1); and accrual quality and cost of debt (H2) through equations (1) & (2) respectively. Second, we segregate the main sample according to the median law score of issuer firm country and re-run the equations to test (H3). Third, to extend the contribution of the paper, we group bonds according to the market of issue which could be different from the nationality of the issuer firm. We exclude from this analysis any bond market that has less than 38 issuances. We run cross-sectional tests for individual markets to test (H4); and then group markets according to the level of financial development to test (H5). The paper controls for bond specific variables which are maturity, amount, investment grade, exchange listed, frequency, and secured. The firm specific variables are: size, cash flow from operations scaled by average assets, sales growth, tangibility, ROA, and issuer rating. The bond macro-economic variables are: corporate bond default spreads, TED spread, and the CBOE Volatility Index (VIX) on the bond issue date. The paper also controls for industry, country and year fixed effects. Firm specific variables are lagged one year before the year of debt issuance. All non-ratio variables are converted to U.S dollars using end of fiscal year currency rate.

Equation (1):

$$Spread_t = \beta_0 + \boldsymbol{\beta_1 Consv_{t-1}} + \beta_2 Rating_{t-1} + \beta_3 CFO_{t-1} + \beta_4 Sales\_Growth_{t-1} + \beta_5 Size_{t-1} + \beta_6 Tangibility_{t-1} + \beta_7 ROA_{t-1} + \beta_8 Secured_t + \beta_9 Investment\_Grade_t + + \beta_{10} Frequency + \beta_{11} Exchange\_Listed_t + \beta_{12} Log\_Amount_t + \beta_{13} Log\_Maturity_t + \beta_{14} CorporateBondDefaultSpread + \beta_{15} TED + \beta_{16} VIX + IndustryDummies + Country\ F.E + Year\ F.E + \varepsilon$$

Equation (2):

$$Spread_t = \beta_0 + \boldsymbol{\beta_1 AccrualQuality_{t-1}} + \beta_2 Rating_{t-1} + \beta_3 CFO_{t-1} + \beta_4 Sales\_Growth_{t-1} + \beta_5 Size_{t-1} + \beta_6 Tangibility_{t-1} + \beta_7 ROA_{t-1} + \beta_8 Secured_t + \beta_9 Investment\_Grade_t + + \beta_{10} Frequency + \beta_{11} Exchange\_Listed_t + \beta_{12} Log\_Amount_t + \beta_{13} Log\_Maturity_t + \beta_{14} CorporateBondDefaultSpread + \beta_{15} TED + \beta_{16} VIX + IndustryDummies + Country\ F.E + Year\ F.E + \varepsilon$$

Variable definitions

Spread[5]	The difference between the yield to maturity at issuance date less the relevant government bond yield with the same remaining maturity in basis points.
Consv	Any of the three measures of timely loss recognition.
Accrual Quality	Modified jones abnormal accruals multiplied by -1
Rating	Issuer credit rating provided by Thomson Reuters Eikon; for details see Appendix A.
CFO	Cash flow from operations scaled by average total assets.
Sales_Growth	$(\text{Rev}_t - \text{Rev}_{t-1})/\text{Rev}_{t-1}$.
Size (control)[6]	Log average assets in US dollars.
Tangibility	Net Property, Plant, and Equipment divided by Total Assets.
ROA	Net income before extraordinary items divided by average assets.
Secured	Dummy variable indicating if the bond is secured.
Investment_Grd	Dummy variable indicating if the bond is investment grade.
Frequency	Number of coupon payments in a year.
Exchange_Listed	Dummy variable indicating if the bond is exchange listed.
Log_Amount	Natural logarithm of amount of bond in US dollars.
Log_Maturity	Natural logarithm of Maturity in months.
Corporate Bond Default Spread	The differences in yields between AAA and BBB rated corporate bonds on the bond issue date.
TED	Difference between the three-month Treasury bill and the three-month LIBOR on the bond issue date.
VIX	The CBOE Volatility Index (VIX) on the bond issue date.

5. Results

5.1. Results of Univariate analysis

The objective of this section is to provide some evidence about the sample at hand. Table 3 provides the mean, standard deviation, and the distribution of the data for key variables. Furthermore, Table 3 provides the mean values of key variables with respect to legal enforcement. We find that strong enforcement countries have significantly higher means for accrual quality, debt amount, debt maturity, rating, cash flows scaled by average assets, and size. Moreover, strong enforcement countries have significantly lower means for spread, and tangibility. C-score has a comparable mean for both subsamples. We group the sample according to the top and bottom 50th percentile for timely loss recognition using the three measures utilized in the main tests. We find that firms scoring highest on the 3 measures of timely loss recognition

[5] The sample has issuances in 41 currencies. To get a reliable estimate for the benchmark rate, we retrieve the historical government bond yields that match the currency of the bond contract in the sample. We match the government yields to our sample using the issue date and maturity. We use investing.com to retrieve historical bond yields. We also use the European Central Bank rates for issuances in Euro.

[6] Since size enters into the computation of C-score and Modified C-score, hence we use a different measure for size as a control variable in the main equations, in the computation of C-score, size is computed as the log of market value of assets, whereas as a control variable in the main equations it is the log of average assets, to overrule the possibility that our conclusions are biased due to collinearity. The untabulated results of the variance covariance matrix suggest that size does not have a collinearity problem with C-score or Modified C-score.

have higher bond spread, lower debt amount, shorter maturity, and lower credit rating. However, these mean differences have larger significance for C-score and Modified C-score.

5.2. Results of Equation (1): timely loss recognition and bond spread

H1 hypothesizes that higher levels of timely loss recognition is significantly associated with higher bond spread. We interpret the coefficient on each measure of timely loss recognition separately, but coefficients on firm specific and bond specific variables are interpreted with respect to results of equation (1) using *C-score* as a timely loss recognition measure. As shown in Table 4; the results of firm specific and bond specific controls are substantially the same for the three regressions.

The R-sq is 52.50%, indicating that the model has a good fit and explains a significant portion in the variation of cost of debt. *Modified C-score, C-score,* and *Consv_skew* show a positive association with cost of debt, but only *C-score, Consv_skew* have a significant positive association at the 1% and 10% level of significance respectively; such evidence signifies that contrary to private loans, public loans do not require high level of timely loss recognition. Therefore, H1 cannot be rejected; timely loss recognition does not lower the cost of debt for public debt issues.

The direction of the relationship suggests that timely loss recognition might magnify the effects of an adverse message about the company; especially that public debt contracts seldom use covenants, and are usually exchanged in organized markets were bad news affect the price of security in the secondary market. That is why; the importance of timely loss recognition is associated in prior research with the use of debt covenants and bank loans. Hence, timely loss recognition may only be relevant when coupled by covenant use, as it speeds up covenant violations and protect debt holders. Nikolaev (2010) & Ismail (2014) argue that the dependence on accounting based debt covenants makes creditors demand more conservative accounting.

Moving on to firm specific controls; *CFO* shows a significant negative relationship with cost of debt at the 1% level of significance, suggesting that the liquidity of a business, reduces lenders demands for higher debt costs; this result is consistent with Chen et al. (2015), who finds that current ratio is negatively related to interest rate. *Rating* and *Investment_Grd* have a negative significant relationship with bond spread at the 1% level of significance, which is consistent with

the findings of Zhang (2008); and Florou and Kosi (2015). The result indicates that higher issuer credit rating is associated with lower cost of debt. *ROA* has a positive yet insignificant coefficient. Hence, the evidence suggests that public debt holders prefer liquidity over profitability. The result is consistent with the results of Chen et al. (2015). *Tangibility* has a significant positive association with cost of debt at the 1% level of significance. Assets tangibility importance may have deteriorated, as a result of using fair value approaches to account for Net Property, Plant, and Equipment and good will valuation either in US GAAP or IFRS, but further research should be carried out to confirm this hypothesis.

Moving on to bond specific controls, *Exchange_listed* has a negative insignificant relationship with spread; this result shows that exchange listed public debt has lower costs of debt. Both *Log_amount* and *Log_maturity* have a negative association with spread; the result is consistent with the results of Chen et al. (2015) and Zhang (2008). Rodriguez, (1988) explains that yield spread and maturity does not always exhibit monatomic relations, bonds spreads may increase or decrease in bonds with certain maturities.

[Insert Table 4 about here]

5.3. Results of Equation (2): accrual quality and bond spread

Table 4 illustrates the results of Equation (2). This section discusses the results of the effect of accrual quality on bond spread. Only the main variables are interpreted; the control variables have similar results to previous tests done with timely loss recognition.

Accrual quality has a negative significant coefficient with bond spread at the 1% level of significance; the results are consistent with Bharath et al. (2008); and Francis et al. (2005). Bond spread shows a stronger association with accrual quality than with timely loss recognition. The negative relationship between bond spread and accrual quality indicates that firms with higher accrual quality, are granted lower costs of debt. The result asserts the notion that good accrual quality decreases the information risk and helps in forecasting more accurate future cash flows; which, in turn, conveys the ability of the firm to meet future obligation.

5.4. Results of weak and strong enforcement countries

The sample is divided into strong and weak enforcement countries based on the law score provided by the World Bank governance indicators developed by Kaufmann et al. (2011); and

equation (1) and (2) are re-run for the subsamples. The cutoff point is at 1.33; the median law score for all 56 countries in the analysis. Table 7 illustrates the results of the main analysis in strong and weak enforcement countries. The results match the results for the main regression analysis. Accrual quality has a negative relationship with bond spread for both weak and strong enforcement countries; however, only strong enforcement countries have a significant relationship at the 1% level of significance. Timely loss recognition has a positive relationship with bond spread in both weak and strong enforcement countries; however, only weak enforcement countries show a significant relationship at the 1% level of significance.

[Insert Table 5 about here]

5.5. Results of market level regressions

We run cross-sectional regressions by market to examine how market differences affect the relationship of conditional conservatism and spread. Though the main sample is in 56 countries, yet most of the contracts are issued in 25 markets. All markets with observations below 38 are omitted from the cross-sectional analysis. Table 5 illustrates the market distribution of the sample; it also clarifies both the country of origin of the bond issuer and the market of issue. We run equation (1) and (2) using cross-sectional regression and control for the industry and year fixed effects. Table 6 illustrates the results of the main coefficients across markets, along with the adjusted R-square and the number of observations. The results of the cross-sectional tests give support to the original hypotheses of the paper. Timely loss recognition shows a positive relationship with spread in 14 markets that comprise 67% of the observations. The rest of the 11 markets have small sample sizes that might not be the true representation for the bond market. European Markets including France, Norway, Poland, and the Eurobond markets show a negative relationship between timely loss recognition and spread, whereas Germany, Sweden, and Switzerland show a positive relationship. Moving on to accrual quality, the results show negative association with spread in 15 out of the 25 markets; that represent 85.6% of the total observations in the sample, giving support to the main hypotheses developed in the paper.

[Insert Table 6 and 7 about here]

5.6. Results based on the financial development index

We cluster the sample into financially developed and less financially developed markets based on the median of the financial development index for the sample countries in year 2010; and run

equation (1) and (2) on the divided sample. Table 8 illustrates the results of the regressions. Financially developed markets include Australia, Canada, Eurobond Markets, France, Germany, Japan, Malaysia, Norway, Singapore, South Korea, Sweden, Switzerland, Taiwan, and the United States. Although, there is no score for the financial development of the Eurobond markets, we cluster it with the financially developed markets, given its size and importance. The developing financial markets include Argentina, Brazil, China, India, Indonesia, Israel, Mexico, Poland, Russia, South Africa, and Thailand. The results indicate that accrual quality has a significant negative relationship with spread in developed markets at the 1% level of significance, whereas accrual quality shows a positive coefficient with spread in developing financial markets at the 10% level of significance. Timely loss recognition is positive and significant in both financially developed markets and less financially developed markets at the 5% and 1% respectively.

[Insert Table 8 about here]

6. Robustness Checks

6.1. Repeating main equations with unique firm observations

To ensure the validity of results, the 2 main regression equations are repeated with unique firm year observations. We keep only 1 debt contract issuance for each firm in a single year, so that all firms have equal weight in the analysis. Table 9 summarizes the results at the firm level. The results are substantially the same as the results for the total sample. *C-score* shows positive significant coefficient at the 5% level of significance with debt cost. *Modified C-score* and *Consv_skew* both have positive coefficients very close in value to previous results but they are insignificant. Accrual quality has similar results to the results of the main tests. All other variables have substantially the same results.

[Insert Table 9 about here]

6.2. Removing financial crisis years from the analysis

To increase the robustness of the results, we remove years 2008 and 2009 from the main regression tests; as the results may be influenced by the 2008 financial crisis. Table 10 illustrates the results of the fixed effects regression model excluding years 2008 and 2009. The results show that 2 of the measures used for timely loss recognition; C-score, and Negative Skewness of Earnings have positive relationships with spread; which is consistent with the main results.

However, only C-score has a significant relationship at the 10% level of significance. The results relating accrual quality with bond spreads are robust and consistent with the main results. Accrual quality shows a negative effect on bond spread at the 1% level of significance.

[Insert Table 10 about here]

6.3. Robustness of the Regression model

To measure the sensitivity of the results to other standard error measurements, we run the main regressions with bootstrapped S.E and robust S.E. Peterson (2009) documents that clusters with observations less than 40 can cause small sample bias in the estimates, therefore; we exclude any country with less than 40 observations. This yields 11,228 observations in 33 countries. Then, we repeat the tests on the new sample at the country, industry, and year level. We remove industry dummies and run the analysis only at the country and year level. We use the new sample of 11,228 and run the regression once with bootstrapped S.E and once with robust S.E. We find that our conclusions are robust with respect to different variations in the regression model. In Table 11, the sensitivity analysis is summarized and key coefficients are presented.

[Insert Table 11 about here]

7. Conclusion

The paper elaborates on how accounting choices of managers affect debt terms, and highlights the possible interaction of financial and legal institutions in influencing the main hypotheses of the study. First, the paper tests the effects of timely loss recognition and accrual quality on bond cost of debt. Second, the main sample is grouped with respect to the level of legal enforcement, in order to test variations in the main effects. Third, we believe that the market, where a firm issues a bond, influences its accounting choices. For example, an issuer firm that is domiciled in Thailand, but wishes to issue bonds in the US market is assumed to react differently than if the bond is to be issued locally. For this reason, we run cross-sectional tests by individual markets of issue. Moreover, we cluster markets according to the degree of financial development, and re-run the tests. We find that timely loss recognition has a positive effect on bond cost of debt. The results are more pronounced in weak law enforcement countries, yet it seems that the effect is equally pronounced in both financially developed and less developed markets. The results, as

expected, provide evidence that the relationship between timely loss recognition and bond spread defies the common believed theory of conservatism, in which timely recognition of losses, enhances debt efficiency and reduces cost of debt. The results deviate from the theory for the following reasons; most of the previous empirical evidence uses private debt samples (bank loans), and focuses on the debt covenants aspect of debt contracting. Bonds generally rely less on covenants. For this reason, we suggest an alternative explanation for how bondholders react to bad news, unlike loans; the incorporation of bad news into firm's earnings is of less relevance to the bond market as it has an alternative mechanism for reacting to bad news; i.e.; through affecting the bond price and the bond yield directly in the market rather than through covenant violations and project liquidation. Furthermore, our results suggest that accrual quality has a negative effect on bond cost of debt. The results are more pronounced in strong law enforcement countries, and in markets with higher levels of financial development. Therefore, we conclude that good accrual quality, enhances the reliability of earnings in expecting future cash flows, and is rewarded with lower costs of debt.

While debt contracting is one of the main explanations for the existence of conservatism as in Watts (2003), we find that timely loss recognition increases bond cost of debt. Unconditional conservatism can immunize the system against conditional conservatism (timely loss recognition) (see; Basu 2005), by routinely writing down assets and creating provisions to account for losses before they occur. For example, a large provision for doubtful accounts tends to immunize the system against the default of any of the firm's major customers. Also, a large estimate for warranty expense can be used to protect the firm when actual expenses occur. The paper opens the door for future research to seek alternative explanations, than what was already set as a standard in the literature; the type of debt and institutional settings affect the relevance of accounting choices to cost of debt. The paper is the first attempt to point out the role of legal and financial institutions in mitigating the effects of accounting choices on bond cost of debt. Firms intending to issue bonds, in financially developed markets or in countries with high law enforcement, need to limit their discretionary accruals, to gain favorable debt terms, whereas this is not necessarily true in weak enforcement countries or in developing financial markets. Moreover, the strong association between accrual quality and bond spread makes it an excellent predictor for bond cost of debt. For this reason, credit rating agencies can use this association to predict the credit soundness of a firm.

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Tables and Figures

Figure 1: Conceptual Framework

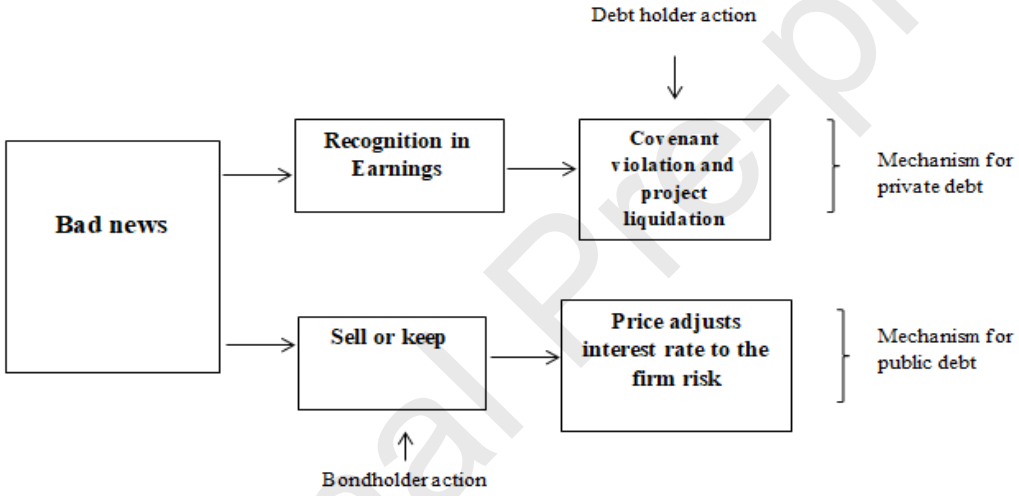

Table 1: Sample Construction

Panel A: Sample Construction	
Initial Sample of corporate bonds	43,168
Less: bonds issued by private companies	(20,632)
Bonds issued by public companies	22,536
Companies with missing data	(4,930)
Bonds with sufficient information to compute C-score	**17,606**
Outliers for 1% up and bottom for R, Earnings, MTB, Leverage and size to compute C-score	(621)
Less observations with missing necessary variables	(3,728)
Less observations that fall in industries with insufficient number of observations	(1,760)
Final Bond Sample for C-score and accrual quality	11,497
Less observations that fall in countries with insufficient number to compute Modified C-score	(1,408)
Final Bond sample for Modified C-score	10,089
Less observations with missing variables to compute Consv_skew	(468)
Final Bond sample for Consv_skew	9,621
Panel B: Details for computation of C-score and Modified C-score	
Initial Sample for C-score computation (bond sample)	**17,606**
Keeping only 1 bond issue for each unique firm per year. (firm year observations)	7,984
Outliers for 1% up and bottom for R, Earnings, MTB, Leverage and size to compute C-score	(456)
Sample to compute C-score	7,528
Less observations that lie in countries with less than 10 observations per year	(1,135)
Sample to compute Modified C-score	**6,393**
Panel C: Sample details for computation of abnormal accruals	
Unique observations with sufficient data to compute accrual quality (firm year observations)	7,482
Less observations that lie in industries with less than 10 observations.	(858)
Sample to compute abnormal Accruals	**6,624**

Note: Panel A illustrates the sample construction for the main sample utilized in the analysis. Panel B shows the computation of C-score and Modified C-score; only 1 observation is kept for a firm in a year so that all firms have equal weight in influencing the timely loss recognition measure. The scores are then matched to the initial sample of bonds. Panel C shows the computation of the accrual quality measure; only 1 observation is left for a firm in a year so that all firms have equal weight in influencing the Accrual Quality. The scores are then matched to the initial sample of bonds to reach the final sample of 11,497. For the main sample we keep only observations that have both C-score and Accrual quality measurement, so that the results are comparable.

Table 2: Sample - Details for sample composition by country and industry

Part 1 : Number of Observations by Country and Rule of law					
Country	Law	N	Country	Law	N
1. Argentina	-0.59	58	29. Luxembourg	1.85	40
2. Australia	1.76	110	30. Malaysia	0.48	128
3. Austria	1.8	32	31. Marshall Islands	-0.26	2
4. Belgium	1.39	50	32. Mauritius	0.86	1
5. Bermuda	1.12	19	33. Mexico	-0.55	116
6. Brazil	0.04	139	34. Monaco	0.89	7
7. Canada	1.81	435	35. Netherlands	1.82	93
8. Cayman Islands	0.9	2	36. New Zealand	1.87	27
9. Chile	1.34	31	37. Norway	1.9	112
10. China	-0.41	704	38. Pakistan	-0.74	1
11. Colombia	-0.31	15	39. Peru	-0.56	11
12. Croatia	0.2	2	40. Philippines	-0.55	26
13. Cyprus	1.22	5	41. Poland	0.68	59
14. Czech Republic	0.95	1	42. Portugal	1.06	17
15. Denmark	1.9	32	43. Russia	-0.76	115
16. Finland	1.97	51	44. Singapore	1.63	103
17. France	1.52	459	45. Slovenia	1.01	2
18. Germany	1.63	189	46. South Africa	0.14	43
19. Greece	0.63	6	47. Spain	1.19	57
20. Hong Kong	1.54	48	48. Sweden	1.96	229
21. India	-0.04	483	49. Switzerland	1.76	132
22. Indonesia	-0.64	96	50. Taiwan	1.01	239
23. Ireland	1.77	67	51. Thailand	-0.2	402
24. Israel	0.92	116	52. Turkey	0.11	17
25. Italy	0.43	127	53. United Arab Emirates	-0.81	8
26. Japan	1.33	1,645	54. United Kingdom	1.76	179
27. Kenya	-0.94	1	55. United States of America	1.64	3,135
28. South Korea	1.00	1,269	56. Virgin Islands	0.85	4
Total					**11,497**
Part 2: Number of observations by Industry					
Industry		N	Industry		N
1. Aerospace		61	19. Industrials - Other		340
2. Airline		164	20. Information/Data Technology		242
3. Automotive Manufacturer		219	21. Leisure		106
4. Beverage/Bottling		254	22. Lodging		61
5. Building Products		370	23. Machinery		179
6. Cable/Media		133	24. Metals/Mining		620
7. Chemicals		740	25. Oil and Gas		1,095
8. Conglomerate/Diversified Manufacturing		498	26. Pharmaceuticals		374
9. Consumer Products		130	27. Publishing		10
10. Electric Utility High Quality		43	28. Railroads		445
11. Electric Utility Mid Quality		30	29. Retail Stores - Food/Drug		34
12. Electronics		702	30. Retail Stores - Other		419
13. Food Processors		413	31. Service - Other		1,118
14. Gas Utility - Local Distribution		104	32. Telecommunications		640
15. Gas Utility – Pipelines		103	33. Textiles/Apparel/Shoes		96
16. Health Care Facilities		79	34. Transportation - Other		342
17. Health Care Supply		186	35. Utility - Other		649
18. Home Builders		381	36. Vehicle Parts		117

Note: Part 1 provides details for the country composition of the sample and the law score of each country in 2010. Law score is based on the law score developed by Kaufman et al., for details for the computation and methodology used see Kaufmann et al. (2010). Data for the law score is available from 1996 to date in the World Bank governance indicator website. Law score "reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence". Part 2 provides details for the number of observations grouped according to industry. The industry classification is based on the sector provided for the issuer firm by the Government and Corporate bonds database; in Thomson Reuters Eikon®.

Table 3: Descriptive statistics and univariate analysis

A- Descriptive statistics					
Variable	Mean	STD	25th	Median	75th
Spread in basis pts.	158.627	222.988	44.500	116.633	225.163
Accrual quality	-0.054	0.057	-0.069	-0.040	-0.019
C-score	0.538	6.326	-0.247	0.156	0.374
Tangibility	0.347	0.248	0.131	0.296	0.537
ROA	0.109	0.073	0.065	0.101	0.146
Sales Growth	0.195	3.251	-0.016	0.048	0.139
CFO	0.082	0.076	0.045	0.079	0.118
Debt amount in millions	364	470	75	179	500
Rating	10.843	8.217	0.000	14.000	18.000
Maturity in years	9.158	7.749	5.000	7.010	10.010
Size in millions	34,300	169,000	2,870	10,900	34,800
Frequency[7]	2.173	1.264	2	2	2
Exchange_Listed	0.769[8]	-	1	1	1
Secured	0.091[9]	-	0	0	0
Investment_Grd	0.362[10]	-	0	0	1

B- Univariate Analysis based on rule of law score			
Variables	**Mean for strong enforcement**	**Mean for weak enforcement**	**Diff**
C-score	0.536	0.541	-0.005
Accrual Quality	-0.051	-0.057	0.006***
Spread	157.948	159.743	-1.795***
Debt amount in millions	463	201	262 ***
Maturity in years	10.646	6.713	3.933***
Rating	12.098	8.782	3.316***
Size in millions	13,213	4,764	8449***
Tangibility	0.332	0.372	-0.040***
CFO	0.091	0.067	0.024***

C- Univariate analysis for bond terms and issuer credit rating			
Variables	**Top 50th percentile for C-score**	**Bottom 50th percentile for C-score**	**Diff**
Spread	182.628	134.622	48.005***
Debt amount in millions	311	417	-106 ***
Maturity in years	8.409	9.906	-1.497***
Rating	9.892	11.795	-1.903***
Variables	**Top 50th percentile for Modified C-score**	**Bottom 50th percentile for Modified C-score**	**Diff**
Spread	159.280	134.333	24.947***
Amount in millions	351	391	-40***
Maturity in years	8.878	9.388	-0.510***
Rating	11.199	11.332	-0.133
Variables	**Top 50th percentile for Consv_skew**	**Bottom 50th percentile for Consv_skew**	**Diff**
Spread	159.621	147.138	12.483***
Debt amount in millions	344	341	3
Maturity in years	9.237	9.291	0.054
Rating	10.678	10.651	0.027

Note: Part A of the table provides descriptive statistics for key variables. Part B and C provide t-tests for the means of key variables based on a) the level of law enforcement b) median score of timely loss recognition. ***, **, and * represent 1%, 5%, and 10% level of significance respectively. All non-ratio variables such as Size and Debt amount are in US dollars.

[7] The 10th percentile for Frequency variable is 1 and the 90th percentile is 4.
[8] The mean of dummy variables represent the portion of the sample that scored 1. 76.9% of the sample is exchange listed.
[9] 9.1% of the sample is secured bonds.
[10] 36.22% of bond contracts are investment grade.

Table 4: Results of the main regression analysis

Dependent Variable: Spread								
Independent variables	**Main variable: C-score**		**Main Variable: Modified C-score**		**Main Variable: Consv_Skew**		**Main Variable: Accrual Quality**	
Intercept	337.244	(47.049)***	368.290	(48.516)***	337.289	(47.033)***	329.912	(47.093)***
Main Variable*	0.881	(0.283)***	0.001	(0.085)	0.401	(0.238)*	-114.495	(26.787)***
Log_Maturity	-45.701	(6.418)***	-42.101	(5.944)***	-53.042	(6.452)***	-45.162	(6.417)***
Log_Amount	-0.075	(3.210)	4.427	(3.000)	4.088	(3.919)	-0.456	(3.210)
Secured	59.692	(6.176)***	49.517	(5.767)***	61.185	(5.915)***	59.669	(6.172)***
Investment_Grd	-81.728	(4.474)***	-82.268	(4.163)***	-77.996	(4.315)***	-81.043	(4.476)***
Exchange_listed	-3.952	(5.998)	-16.328	(5.668)***	3.949	(5.822)	-3.585	(5.996)
Frequency	9.636	(1.460)***	10.549	(1.379)***	8.649	(1.424)***	9.549	(1.460)***
Tangibility	35.737	(7.893)***	34.598	(7.352)***	40.023	(7.722)***	36.240	(7.892)***
ROA	4.268	32.163	45.267	(30.232)	20.209	(32.364)	0.101	(32.177)
Sales_Growth	0.583	(0.446)	0.343	(0.481)	1.431	(0.575)**	0.583	(0.446)
CFO	-213.460	(30.570)***	-239.946	(28.879)***	-294.928	(30.693)***	-208.760	(30.576)***
Rating	-1.881	(0.250)***	-2.205	(0.236)***	-1.713	(0.247)***	-1.845	(0.250)***
Size	-22.202	(2.752)***	-27.081	(2.598)***	-25.674	(3.122)***	-21.102	(2.767)***
VIX	1.251	(0.436)***	0.620	(0.429)	1.305	(0.446)***	1.296	(0.435)***
TED	-33.489	(12.477)***	-42.921	(12.504)***	-29.827	(12.322)**	-32.840	(12.474)***
Corporate bond default spread	26.930	(7.111)***	32.963	(6.887)***	21.245	(7.068)***	25.478	(7.109)***
N	11,497		10,089		9,621		11,497	
Prob > F	0.000***		0.000***		0.000***		0.000***	
Adj R-squared	52.50%		44.99%		42.73%		52.54%	
Period From 2006-April 2017 Industry dummies Country and Year Fixed Effects								

Note: The table illustrates the results of the main regressions; in which spread is the dependent variable. The regression is run 4 times, the first 3 columns represent the results of the regression with the 3 measures of timely loss recognition to test hypothesis 1. The last column represents the results using accrual quality as the main variable to test hypothesis 2. Standard errors are represented in parenthesis. ***, **, and * represent 1%, 5%, and 10% level of significance respectively.

Table 5: Results of weak and strong enforcement countries

Dependent Variable: Spread								
	Main Variable: C-score				Main Variable: Accrual Quality			
	Weak enforcement		Strong enforcement		Weak enforcement		Strong enforcement	
Intercept	217.126	(88.439)**	510.409	(53.969)***	219.988	(88.643)**	491.668	(53.841)***
Main Variable*	2.488	(0.866)***	0.119	(0.265)	-38.355	(46.808)	-120.899	(30.294)***
Log_Maturity	-112.844	(13.117)***	-15.816	(6.673)**	-111.084	(13.121)***	-15.488	(6.664)**
Log_Amount	-31.857	(6.137)***	6.782	(3.700)*	-32.012	(6.142)***	6.360	(3.696)*
Frequency	11.811	(1.926)***	4.884	(2.830)*	11.734	(1.928)***	4.882	(2.827)*
Secured	33.766	(9.350)***	140.973	(9.118)***	33.541	(9.359)***	139.974	(9.096)***
Investment_Grd	24.306	(10.862)**	-91.310	(4.690)***	23.785	(10.870)**	-90.215	(4.692)***
Exchange_Listed	100.321	(19.495)***	-3.428	(5.570)	97.579	(19.521)***	-2.720	(5.566)
Tangibility	1.008	(13.747)	53.652	(9.799)***	2.942	(13.844)	52.925	(9.788)***
ROA	108.284	(53.051)**	-39.116	(40.625)	98.497	(53.238)*	-37.409	(40.544)
Sales_Growth	0.619	(0.868)***	0.216	(0.467)	0.687	(0.869)	0.233	(0.466)
CFO	-175.543	(46.377)***	-245.892	(40.462)***	-172.215	(46.637)***	-250.997	(40.433)***
Size	13.639	(4.932)***	-44.419	(3.293)***	13.861	(4.948)***	-42.722	(3.316)***
Rating	-1.552	(0.440)***	-1.526	(0.290)***	-1.578	(0.441)***	-1.523	(0.290)***
VIX	1.197	(0.808)	1.315	(0.472)***	1.115	(0.808)	1.336	(0.470)***
TED	37.452	(27.459)	-73.950	(12.574)***	39.495	(27.502)	-72.366	(12.542)***
Corporate bond default spread	31.162	(12.604)***	17.586	(7.993)**	32.900	(12.600)***	16.825	(7.973)**
N	4,729		6,768		4,729		6,768	
Prob > F	0.000***		0.000***		0.000***		0.000***	
Adj R-squared	61.15%		44.48%		61.09%		44.62%	
Period From 2006-April 2017 Industry dummies Country and Year Fixed Effects								

Notes: The sample is segregated according to the median law score of the issuer home country and the main equation is re-run to test the variation of the main estimates with respect to the level of law enforcement. Standard errors are represented in parenthesis. ***, **, and * represent 1%, 5%, and 10% level of significance respectively.

Table 6: Markets of issue

Bond Market	Issuer firm's Country of Head Quarters	N
Argentina	Argentina (42)	42
Australia	Australia (36) New Zealand (2)	38
Brazil	Brazil (118)	118
Canada	Canada (169), USA (3)	172
China	China (625), Hong Kong (12)	637
Eurobond Markets	Argentina (6), Australia (57),Austria (11) Belgium (18), Brazil (16) , Bermuda (5), Canada (59), Chile (8), China (53), Czech Republic (1), Denmark (22) Finland (22), France (165), Germany (154), Hong Kong (27), India (26), Indonesia (1), Ireland (3), Israel (1), Italy (101), Japan (77),S. Korea (103), Luxembourg (22), Marshal Islands (2), Mexico (31), Netherlands (75), Norway(17), Peru (8), Philippines (6), Portugal (4),Singapore (21), Slovenia (1), South Africa (3), Spain (32),Sweden(158), Switzerland (25), Thailand (5), Turkey (7), UAE (6), United Kingdom (127), United States of America (296)	1,782
France	France (267)	267
Germany	Austria (5), Germany (33) Luxembourg (1)	39
India	India (445)	445
Indonesia	Indonesia (93)	93
Israel	Israel (111)	111
Japan	France (2), Japan (1,567) Thailand(3)	1,572
Malaysia	Hong Kong (1), Malaysia (128)	129
Mexico	Mexico (55)	55
Norway	Belgium (1), Bermuda (10), China(1), Cyprus (5), Denmark (1)Norway (60), Sweden (2), United Kingdom (4)	84
Poland	Netherlands (11), Poland (59)	70
Russia	Canada (3), Luxembourg (3), Russia (115)	121
Singapore	Australia (1), Hong Kong (3), Singapore (73)	77
South Africa	South Africa (40)	40
South Korea	Canada (1), France (1), S. Korea (1154), USA (2)	1,158
Sweden	Finland (1), Luxembourg (1), Sweden (68)	70
Switzerland	Australia (2), France (2), Germany (2), India (1), Switzerland (84), USA (4), Virgin islands (4)	99
Taiwan	China (1), Taiwan (238)	239
Thailand	Thailand (392)	392
United States	Argentina (10), Australia (14), Bermuda (4),Brazil (5), Canada (207), Cayman islands (2),Chile (10), China (25), Colombia (2), Denmark (9),France (22), Greece (4), Hong Kong (3), India (11), Indonesia (2), Ireland (64), Israel (4), Italy (4), Japan (1), S. Korea (12), Luxembourg (13), Mexico (31), Monaco (7), Netherlands (12), Norway (35), Peru (2), Singapore (9), Spain (7), Sweden (1), Switzerland (23), Thailand (2), Turkey (10), UAE (2), United Kingdom(48), USA (2,915)	3,532
Total		11,382

Notes: The table provides details for the 25 markets found to have more than 38 observations, and it illustrates the nationalities of the firms that issued bonds in any specific market. The table shows that the US market has the greatest international bonds followed by the Eurobond markets. The numbers shown in parenthesis in the second column indicates the number of bonds issued by firms headquartered in a certain country in a specific market.

Table 7: Results of cross-sectional regression by Market

Market	C-score		Adj. R sq	Accrual Quality		Adj. R sq	N
Argentina*	15.369	(92.984)	68.87%	6697.396	(2254.238)***	75.75%	42
Australia*	25.209	(10.511)**	74.89%	-611.707	(240.114)**	73.63%	38
Brazil	-0.185	(4.066)	65.37%	315.032	(293.487)	65.86%	118
Canada	-0.414	(3.657)	58.84%	-315.517	(277.600)	59.24%	172
China	0.624	(1.691)	48.01%	-73.235	(78.589)	48.07%	637
Eurobond Markets	-0.141	(0.794)	43.43%	-653.204	(81.300)***	45.48%	1782
France	-1.298	(3.888)	66.48%	-333.826	(197.349)*	58.28%	267
Germany*	194.955	(178.038)	84.58%	-3108.933	(1334.181)*	90.84%	39
India	-0.693	(2.512)	43.10%	77.981	(179.911)	43.11%	445
Indonesia	45.494	(40.730)	71.12%	-163.284	(126.683)	71.29%	93
Israel	25.310	(22.110)	52.11%	227.555	(442.819)	51.43%	111
Japan	2.374	(0.486)***	50.38%	-62.526	(27.582)**	49.77%	1572
Malaysia	41.010	(15.526)***	87.35%	361.749	(115.138)***	87.69%	129
Mexico	34.754	(61.927)	93.14%	873.651	(196.104)***	96.34%	55
Norway	-50.246	(31.004)	48.25%	-806.693	(575.431)	47.63%	84
Poland	-325.570	(132.975)**	91.25%	72.955	(197.759)	89.79%	70
Russia	-6.088	(2.694)**	76.47%	-525.185	(495.960)	75.45%	121
Singapore	-48.913	(39.049)	78.84%	-267.791	(333.107)	78.40%	77
South Africa*	1,122.532	(598.730)*	56.04%	25.052	(26.432)	52.19%	40
South Korea	1.680	(0.955)*	46.97%	-2.216	(56.519)	46.83%	1158
Sweden	40.301	(95.303)	85.19%	-1106.59	(616.911)*	86.43%	70
Switzerland	16.180	(19.934)	87.58%	-692.160	(113.418)***	92.07%	99
Taiwan	-1.054	(1.751)	78.49%	52.000	(55.838)	78.54%	239
Thailand	-4.287	(4.069)	69.53%	97.764	(58.067)*	69.67%	392
United States	0.278	(0.325)	38.41%	-28.321	(38.157)	38.40%	3532
Period From 2006-April 2017 Industry and Year fixed effects							

Notes: We run cross-sectional regressions by market for Equation (1) and (2). We run 25 regressions for the 25 markets included in the sample; in which we run Equation (1) with C-score as the independent variable and spread as the dependent variable, and we run Equation (2) with accrual quality as the dependent variable. All 25 regressions are run with industry and year fixed effects except countries with "*" are run with simple OLS regressions due to limitation related to their number of observations. All control variables are used in the regression analysis same as the main equations, however, only the main estimates, the R-squared, and the number of observation are provided in the table. Standard errors are represented in parenthesis. ***, **, and * represent 1%, 5%, and 10% level of significance respectively.

Table 8: Results according to the financial development of the market of issue

Dependent Variable: Spread								
	Main Variable: C-score				Main Variable: Accrual quality			
	developing financial markets		Developed financial markets		Developing financial markets		Developed financial markets	
Intercept	786.854	(116.793)***	354.200	(43.938)***	760.107	(116.835)***	333.940	(44.052)***
Main Variable*	3.150	(1.264)**	0.669	(0.248)***	130.388	(70.603)*	-145.277	(25.762)***
Log_Maturity	-45.542	(20.523)**	-37.148	(5.884)***	-41.110	(20.445)**	-36.351	(5.879)***
Log_Amount	-33.730	(9.851)***	2.521	(3.095)	-33.080	(9.872)***	2.205	(3.091)
Frequency	13.866	(2.455)***	7.426	(2.062)***	13.659	(2.458)***	7.267	(2.059)***
Secured	30.479	(12.121)***	92.104	(7.401)***	32.859	(12.144)***	91.471	(7.392)***
Investment_Grd	134.545	(41.778)***	-103.922	(3.990)***	134.997	(41.806)***	-102.932	(3.989)***
Exchange_Listed	32.864	(30.988)	-7.048	(5.350)	32.750	(31.083)	-6.650	(5.343)
Tangibility	-9.764	(21.141)	41.372	(8.133)***	-15.585	(21.415)	41.100	(8.121)***
ROA	31.434	(91.018)	43.286	(31.207)	48.350	(92.254)	45.911	(31.157)
Sales_Growth	21.465	(7.845)***	0.477	(0.376)	22.153	(7.862)***	0.480	(0.376)
CFO	-209.100	(65.694)***	-261.560	(31.332)***	-239.342	(67.359)***	-266.160	(31.304)***
Size	-47.819	(8.465)***	-22.572	(2.599)***	-47.372	(8.471)***	-20.514	(2.626)***
Rating	-1.089	(0.639)*	-1.228	(0.246)***	-1.280	(0.645)**	-1.221	(0.245)***
VIX	1.231	(1.194)	1.068	(0.408)**	1.114	(1.193)	1.150	(0.407)***
TED	33.090	(40.582)	-61.877	(11.394)***	21.517	(40.507)	-60.292	(11.381)***
Corporate bond default spread	42.752	(19.085)**	12.387	(6.733)*	46.999	(18.964)**	9.709	(6.726)
N	2,138		9,258		2,138		9,258	
Prob>F	0.000***		0.000***		0.000***		0.000***	
Adj R-squared	77.08%		45.7%		77.05%		46.49%	
Period From 2006-April 2017 Industry dummies Country and Year Fixed Effects								

Notes: The 25 markets included in the sample is segregated according to the median value of the financial development index and equation 1 and 2 are re-run to test the variation in the main estimates in financially developed and less financially developed markets. Though Eurobond markets do not have a score for the financial development index, we group it with financially developed markets. The main independent variable is C-score in the first 2 columns, while it is accrual quality in the last 2 columns. The dependent variable is bond spread. Standard error is represented in parenthesis. ***, **, and * represent 1%, 5%, and 10% level of significance respectively.

Table 9: Results of the main regressions with unique firm year observations

Dependent Variable: Spread								
	Main independent Variables							
	C-score		Modified C-score		Consv_skew		Accrual Quality	
Intercept	414.508	(67.375)***	417.537	(68.734)***	395.631	(67.140)***	406.088	(67.633)***
Main variable*	0.894	(0.343)***	0.045	(0.100)	0.150	(0.352)	-93.247	(37.478)***
Log_Maturity	-53.223	(10.988)***	-49.862	(10.542)***	-54.526	(10.849)***	-52.403	(10.995)***
Log_Amount	-4.760	(6.192)	-7.739	(6.154)	-4.490	(6.350)	-5.061	(6.194)
Frequency	14.988	(2.304)***	17.209	(2.314)***	12.124	(2.293)***	14.945	(2.304)***
Secured	67.730	(9.837)***	69.221	(9.594)***	77.770	(9.660)***	68.749	(9.828)***
Investment_Grd	-83.826	(6.865)***	-90.759	(6.597)***	-85.246	(6.662)***	-83.200	(6.871)***
Exchange_listed	4.489	(8.550)	-7.275	(8.337)	8.503	(8.356)	5.126	(8.553)
Tangibility	41.059	(11.779)***	40.699	(11.371)***	46.595	(11.625)***	41.329	(11.783)***
ROA	-68.688	(48.079)	-26.714	(46.693)	-44.971	(49.429)	-76.930	(48.238)
Sales_Growth	1.112	(0.858)	0.837	(0.932)	2.112	(1.063)**	1.125	(0.858)
CFO	-199.293	(44.809)***	-194.190	(43.493)***	-249.223	(45.637)***	-188.690	(44.951)***
Size	-23.953	(4.530)***	-20.635	(4.500)***	-22.108	(4.854)***	-23.147	(4.554)***
Rating	-1.891	(0.387)***	-2.248	(0.376)***	-1.737	(0.382)***	-1.873	(0.387)***
VIX	1.107	(0.688)	0.501	(0.688)	0.925	(0.695)	1.186	(0.688)*
TED	-33.837	(17.588)**	-51.726	(17.758)***	-37.751	(17.264)**	-34.621	(17.577)**
Corporate bond default spread	29.954	(10.813)***	38.498	(10.695)***	26.900	(10.820)**	28.977	(10.815)***
Number	5,390		4,704		4,682		5,390	
Prob > F	0.000***		0.000***		0.000***		0.000***	
Adj. R squared	47.64%		47.41%		44.45%		47.63%	
Period From 2006-April 2017 Industry dummies Country and Year Fixed Effects								

Note: The table provides the results of equation 1 and 2; keeping only 1 bond contract for a specific firm in a single year, so that all firms have equal weight in the analysis. Standard errors are represented in parenthesis. ***, **, and * represent 1%, 5%, and 10% level of significance respectively.

Table 10: Results excluding years of financial crisis

	Dependent Variable: Spread			
	Main Independent Variables			
	C-score	Modified C-score	Consv_skew	Accrual Quality
Intercept	339.720 (48.192)***	376.999 (48.966)***	334.658 (47.616)***	333.309 (47.778)***
Main Independent Variable*	1.078 (0.558)*	-0.098 (0.091)	0.354 (0.241)	-125.699 (27.331)***
Log_Maturity	-42.498 (6.512)***	-40.118 (6.004)***	-48.762 (6.540)***	-41.916 (6.508)***
Log_Amount	-0.545 (3.255)	4.198 (3.025)	6.027 (3.972)	-1.043 (3.253)
Frequency	9.648 (1.471)***	10.600 (1.382)***	8.914 (1.432)***	9.590 (1.470)***
Secured	64.994 (6.396)***	53.019 (5.894)***	66.457 (6.104)***	64.693 (6.389)***
Investment_Grd	-85.677 (4.613)***	-85.167 (4.280)***	-82.153 (4.451)***	-85.011 (4.612)***
Exchange_Listed	-6.478 (6.097)	-20.265 (5.743)***	0.636 (5.912)	-6.210 (6.092)
Tangibility	33.684 (8.085)***	33.246 (7.479)***	38.810 (7.897)***	34.574 (8.081)***
ROA	30.550 (32.900)	48.868 (30.540)	43.754 (33.117)***	24.221 (32.893)
Sales_growth	0.586 (0.448)	0.330 (0.483)	1.448 (0.577)**	0.579 (0.448)
CFO	-226.553 (31.319)***	-232.243 (29.095)***	-313.938 (31.492)***	-223.191 (31.303)***
Rating	-1.838 (0.256)***	-2.168 (0.240)***	-1.553 (0.253)***	-1.793 (0.256)***
Size	-22.774 (2.801)***	-27.194 (2.633)***	-28.179 (3.179)***	-21.390 (2.817)***
VIX	0.430 (0.480)	0.096 (0.461)	0.299 (0.490)	0.431 (0.480)
TED	-30.143 (14.988)**	-30.841 (14.871)**	-25.237 (14.788)*	-28.001 (14.984)*
Corporate bond default spread	44.646 (8.543)***	39.671 (7.867)***	42.421 (8.537)***	43.906 (8.538)***
Number	11,087	9,775	9,260	11,087
Prob > F	0.000***	0.000***	0.000***	0.000***
Adj R-squared	52.68%	44.76%	42.63%	52.76%
Years: 2007, 2010-April 2017 Industry dummies Country and Year Fixed effects				

Note: The table shows the results of equation 1 excluding the years 2008 and 2009 from the analysis. The dependent variable is bond spread whereas. The first 3 columns represent the results using the 3 measures of timely loss recognition as the main independent variable. The last column represents the results using accrual quality as the main independent variable. Standard errors are represented in parenthesis. ***, **, and * represent 1%, 5%, and 10% level of significance respectively.

Table 11: Summary for main coefficients with alternative fixed effects regression models

	Estimate of C-score with spread	Estimate of accrual quality with spread
Sample =11,497 bonds in 56 countries		
Results excluding country F.E	1.321(0.380)***	-296.756(35.176)***
Bootstrapped S.E	0.881(0.718)	-114.495(38.932)***
Robust standard errors	0.881(0.240)***	-114.495(38.232***
Sample =11,228 in 33 countries		
With industry, country and year level of analysis	0.816(0.284)***	-117.946(27.000)***
Robust S.E	0.817(0.251)***	-117.946(38.691)***
Bootstrapped S.E	0.816(0.690)***	-117.946(38.119)***
excluding industry level and keeping only country and year level	0.766(0.287)***	-135.171(26.859)***
Excluding industry and keeping country and year levels with robust S.E.	0.766(0.256)***	-135.171(40.258)***

Note: We run equations (1) and (2) separately with all control variables, however, we present only the coefficient of the main variables with spread. Each row represents an independent run of equation 1 and 2 with the conditions stated in the first cell of the row. The head of the second column represents the estimates of C-score; in which spread is the dependent variable. The head of the third column represents the estimates of accrual quality; in which spread is the dependent variable. The table measures the sensitivity of the main coefficients to changes in the regression model. Standard errors are represented in parenthesis. ***, **, and * represent 1%, 5%, and 10% level of significance respectively.

Appendix A: Rating scores

Moody's	S&P	Score
Aaa	AAA	22
Aa1	AA+	21
Aa2	AA	20
Aa3	AA-	19
A1	A+	18
A2	A	17
A3	A-	16
Baa1	BBB+	15
Baa2	BBB	14
Baa3	BBB-	13
Ba1	BB+	12
Ba2	BB	11
Ba3	BB-	10
B1	B+	9
B2	B	8
B3	B-	7
Caa1	CCC+	6
Caa2	CCC	5
Caa3	CCC-	4
Ca	D	3
C	DD	2
D	DDD	1
not rated		0
WR		0
WD		0
NR		0

Note: The rating score represents the issuer rating information provided by Thomson Reuters Eikon®, this link provides details about the definition of issuer credit rating variable; https://www.reuters.com/article/ratings-guide/reuters-guide-to-credit-ratings-idUSRATINGS20070412. The variable represents the related rating for a debt issued by a firm. The rating provided is from Moody or S&P. Langohr, H., & Langohr, P. (2010) was helpful in comparing different ratings; the numerical scores and the comparisons are added by the authors.

Highlights

- Timely loss recognition has a positive significant relationship with bond spread using 3 measures of timely loss recognition.
- Accrual quality has a negative significant relationship with bond spread suggesting that accrual quality is associated with lower spread.
- The effect of accrual quality on bond spread increases with the level of country's legal enforcement and financial development.
- The effect of timely loss recognition on bond spread is more pronounced in countries with weak law enforcement.
- Results are robust when we include only 1 bond per a unique firm in a year, or when we exclude years of the financial crisis.

Noha Zaher: Conceptualization, Methodology, Software, Data curation, Writing- Original draft preparation, Visualization, Investigation, Formal analysis. Ehab K. A. Mohamed*:* Supervision, Validation, Writing-Reviewing and Editing. **Mohamed Basuony**: Writing-Reviewing and Editing.